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Developmental Experiences and Well-Being in Sport:  
The Importance of the Coaching Climate

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### Abstract

The present study explored the relationships between the coaching climate, youth developmental experiences (personal and social skills, cognitive skills, goal setting, and initiative) and psychological well-being (self-esteem, positive affect, and satisfaction with life). In total, 202 youth sport participants ( $M_{\text{age}} = 13.4$ ,  $SD = 1.8$ ) completed a survey assessing the main study variables. Findings were consistent with Benson and Saito's (2001) framework for youth development. In all analyses, the coaching climate was related to personal and social skills, cognitive skills, goal setting, and initiative. Mediation analysis also revealed that the development of personal and social skills mediated the relationships between the coaching climate and all three indices of psychological well-being (self-esteem, positive affect, and satisfaction with life). Interpretation of the results suggests that coaches should display autonomy-supportive coaching behaviors because they are related to the developmental experiences and psychological well-being of youth sport participants.

*Keywords:* positive youth development, life skills, autonomy support, youth sport

49 Positive youth development refers to “strength-based and asset-building approaches to  
50 developmental research in which youth are viewed as resources to be developed rather than  
51 problems to be solved” (Holt, Sehn, Spence, Newton, & Ball, 2012, p. 98). Youth sport is  
52 acknowledged as an ideal setting to promote positive youth development (Holt & Sehn,  
53 2008). Millions of children and youth worldwide participate in sports programs (De Knop,  
54 Engström, & Skirstad, 1996). It is not just the high participation numbers that make youth  
55 sport an ideal setting for development; it is the interactive, emotional, and socially involved  
56 nature of sports that provide opportunities for development (Danish, Forneris, Hodge, &  
57 Heke, 2004; Fraser-Thomas, Côté, & Deakin, 2005; Hellison, Martinek, & Walsh, 2008).

58 Previous research has shown sport to be related to a variety of developmental  
59 experiences. Using both qualitative and quantitative methodologies, researchers have found  
60 sport to be related to developmental experiences in the following areas: social skills,  
61 teamwork, motivation (Holt & Sehn, 2008), problem solving, decision making (Petitpas, Van  
62 Raalte, Cornelius, & Presbrey, 2004), goal setting, initiative (Camiré, Trudel, & Forneris,  
63 2009), communication, and leadership (Dworkin, Larson, & Hansen, 2003). Essentially,  
64 these developmental experiences refer to the learning experiences, strengths, or skills young  
65 people learn by taking part in sport. For a thorough review of the developmental experiences  
66 young people have through sport, see Johnston, Harwood, and Minniti (2013).

67 The above research provides evidence that young people are having a variety of  
68 developmental experiences through sport. However, little is known about either the  
69 antecedents or consequences of such developmental experiences. A particular model which  
70 focuses on the antecedents and consequences of developmental experiences is Benson and  
71 Saito’s (2001) conceptual model for youth development. When developing their model, these  
72 researchers began with this working definition: “youth development mobilizes programs,  
73 organizations, systems and communities to build developmental strengths in order to promote

74 health and well-being” (Benson & Saito, 2001, p. 144). Using this definition, they developed  
75 a model which suggested that youth development inputs (e.g., the coaching climate) are  
76 related to young people developing their strengths; which, in turn, are related to young  
77 people’s health and well-being. A major strength of this model is that it allows researchers to  
78 investigate how the coach or climate can affect developmental experiences and whether these  
79 developmental experiences are related to other health and well-being outcomes. This is  
80 important as positive youth development incorporates three key aspects: the developmental  
81 climate (Catalano et al., 1998), young people’s developmental experiences (Larson, 2000),  
82 and participant’s health and well-being (King et al., 2005). However, previous studies in  
83 sport have failed to investigate how these three aspects of positive youth development  
84 interact. Thus, the purpose of this study is to investigate both the antecedents and  
85 consequences of developmental experiences within youth sport.

86         The present study focused on the following developmental experiences: personal and  
87 social skills, cognitive skills, goal setting, and initiative. Learning these particular skills is  
88 important because they are related to a variety of positive outcomes. To begin with, personal  
89 skills such as controlling one’s emotions are related to adolescent’s psychological well-being  
90 and academic achievement (Humphrey et al., 2011). Social skills are associated with young  
91 people’s relationship development, social acceptance (Matson et al., 2010), and self-esteem  
92 (Riggio, Throckmorton, & DePaola, 1990). Cognitive skills such as problem solving are  
93 related to positive outcomes such as greater academic performance (Elliot, Godshall, Shrout,  
94 & Witty, 1990) and physical health (Elliott & Marmarosh, 1994). Goal-setting is an  
95 important skill which young people can use to improve their performance in school  
96 (Zimmerman, Bandura, & Martinez-Pons, 1992), the workplace (Locke & Latham, 1984),  
97 and sport/exercise (Burton, Naylor, & Holliday, 2001). Lastly, according to experts in the  
98 field of youth development (e.g., Larson, 2000), initiative is an essential skill for young

99 people to develop as it is a core component of other skills such as creativity, leadership,  
100 altruism, and civic virtue. Despite the importance of such developmental experiences, further  
101 research is needed to explore how sport can promote these experiences.

### 102 **Antecedents of Developmental Experiences**

103         Given the central role coaches play in sport, the coaching climate is one factor that  
104 influences young people's sports experiences (Smith & Smoll, 1996). In essence, the  
105 coaching climate refers to the environment the coach creates for their athletes. Two recent  
106 studies have shown that certain aspects of the coaching climate are related to developmental  
107 experiences. In a study with underserved youth sport participants, Gould, Flett, and Lauer  
108 (2012) found that the more coaches created a mastery-oriented and caring climate, the more  
109 positive developmental experiences the participants had. Another study by Vella, Oades, and  
110 Crowe (2012) found that coach transformational leadership behaviors and the quality of the  
111 coach-athlete relationship were related to positive developmental experiences in youth  
112 soccer. Building on such research, this is the first study to investigate the relationship  
113 between coach autonomy support and developmental experiences in youth sport.

114         Autonomy support is part of self-determination theory and refers to the willingness of  
115 the coach to provide a rationale for tasks, inquire about and acknowledge athlete's feelings,  
116 provide choice in training, allow athletes to take the initiative and work independently, and  
117 create a non-controlling environment (Mageau & Vallerand, 2003). Self-determination  
118 theory is an ideal theory to draw upon when researching youth development, as it explores  
119 the environmental factors that lead to both optimal development and wellness (Ryan & Deci,  
120 2000). The present study only focused on the environment (i.e., coach autonomy support) as  
121 the primary purpose of the study was to test Benson and Saito's (2001) framework for youth  
122 development. According to self-determination theory, activity involvement generally has  
123 positive effects when combined with autonomy support. Within physical education,

124 Standage and Gillison (2007) found that teacher autonomy support was related to student's  
125 self-esteem. Another study found that coach autonomy support was related to both positive  
126 affect and life satisfaction in adult athletes (Smith, Ntoumanis, & Duda, 2007). In line with  
127 Benson and Saito's (2001) framework for youth development, the present study investigated  
128 if coach autonomy support was related to psychological well-being through developmental  
129 experiences.

130         When investigating this mediation model, it was important to explore why coach  
131 autonomy support would be related to these developmental experiences. To begin with,  
132 previous research has found that teacher autonomy support has a positive effect on student  
133 learning (Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). Furthermore, in their  
134 framework for life skills interventions, Hodge, Danish, and Martin (2012) proposed that  
135 satisfaction of the needs for autonomy, competence, and relatedness play a vital role in life  
136 skills development. Self-determination theory suggests that autonomy support leads to the  
137 satisfaction of the needs for autonomy, competence, and relatedness; which, in turn, leads to  
138 optimal development and well-being (Ryan & Deci, 2001). These causal mechanisms  
139 provide a rationale for why coach autonomy support would be related to developmental  
140 experiences. Firstly, by displaying autonomy-supportive coaching behaviors such as  
141 listening to their athletes, accepting their athletes, and allowing their athletes to share their  
142 feelings, it is likely that coaches will create a climate where athletes need for relatedness is  
143 satisfied and they develop their personal and social skills. Secondly, a coach who allows  
144 athletes to ask questions, provides choices, and encourages athletes to take the initiative, will  
145 satisfy athlete's need for autonomy and ensure athletes to develop their cognitive skills and  
146 initiative. Thirdly, a coach who provides non-controlling competence feedback, makes sure  
147 an athlete understands the goals of their sport involvement and displays trust in their athlete

148 will satisfy their need for competence/autonomy and encourage them to develop their goal  
149 setting skills.

### 150 **Consequences of Developmental Experiences**

151 In their framework for youth development, Benson and Saito (2001) suggested that  
152 developing young people's strengths also promotes their health and well-being. The present  
153 study focused on young people's psychological well-being. Although, there is no agreed  
154 upon definition of psychological well-being, most definitions have emphasized positive  
155 psychological states as opposed to the absence of negative cognitions and feelings (Reinboth  
156 & Duda, 2006). It is generally accepted that psychological well-being is best represented by  
157 multiple indicators (Wilson, Longley, Muon, Rodgers, & Murray, 2006); therefore, indicators  
158 of self-esteem, positive affect, and satisfaction with life were used in this study. Previous  
159 studies have investigated psychological well-being using these particular indicators (e.g.,  
160 Adie, Ntoumanis, & Duda, 2010; Smith et al., 2007).

161 In this study, self-esteem was defined as "a person's evaluation of, or attitude toward,  
162 him- or herself" (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004, p. 435).  
163 Positive affect "represents the extent to which an individual experiences pleasurable  
164 engagement with the environment" (Crawford & Henry, 2004, p. 246). Finally, satisfaction  
165 with life is "a global assessment of a person's quality of life according to his/her chosen  
166 criteria" (Shin & Johnson, 1978, p. 478). Numerous studies have highlighted the importance  
167 of self-esteem, positive affect and satisfaction with life for enabling young people to lead  
168 healthy and happy lives (e.g., Arrindell, Meeuwesen, & Huyse, 1991; Lyubomirsky, King, &  
169 Diener, 2005).

### 170 **The Present Study**

171 The general purpose of this study was to investigate the relationships between coach  
172 autonomy support, developmental experiences within sport and psychological well-being.

173 The first aim of this study was to assess whether coach autonomy support was positively  
174 related to participant's developmental experiences (personal and social skills, cognitive skills,  
175 goal setting, and initiative). In accordance with previous youth sport studies (e.g., Gould et  
176 al., 2012), it was expected that coach autonomy support would be positively related to all four  
177 developmental experiences. The second aim was to assess whether developmental  
178 experiences were positively related to participant's psychological well-being. In this regard,  
179 we expected the four developmental experiences to be positively related to participant's self-  
180 esteem, positive affect, and satisfaction with life. The final aim of this study was to  
181 investigate whether developmental experiences mediate the relationships between coach  
182 autonomy support and psychological well-being. Based on Benson and Saito's (2001)  
183 framework for youth development, it was expected that developmental experiences would  
184 mediate the relationships between coach autonomy support and psychological well-being.

## 185 **Method**

### 186 **Participants**

187 A sample of 202 British youth sport participants between the ages of 10-19 years  
188 took part in this study ( $M_{\text{age}} = 13.4$ ,  $SD = 1.8$ ). The sample comprised more male ( $n = 127$ )  
189 than female participants ( $n = 75$ ). A total of 13 sports were represented in the sample.  
190 Swimming (31.2%) was the most represented sport, followed by tennis (17.8%), basketball  
191 (10.9%), track and field (9.9%), rugby (8.9%), and soccer (7.4%). Cricket, badminton, field  
192 hockey, gymnastics, Olympic handball, curling, and ice hockey were all represented at  
193 frequencies below 5%. The participants played sport recreationally for an average of 4.7  
194 hours per week ( $SD = 3.7$ ), with an average of 5.5 years ( $SD = 2.8$ ) playing experience. As it  
195 includes a variety of sports across the youth sport age range, this sample is a good  
196 representation of youth sport participants.

### 197 **Procedures**

198           Following approval from the institution's ethics committee, participants were  
199 recruited from local youth sports clubs. Prior to completing the survey, parental consent  
200 was obtained from all participants. All participants completed the online survey at home.  
201 Research points to the equivalence of online and paper-and-pencil surveys for sport  
202 psychology research. For example, Lonsdale, Hodge, and Rose (2006) obtained similar  
203 results for perceptions of burnout when they administered surveys online or in paper-and-  
204 pencil format. Each participant answered questions regarding their coach's autonomy  
205 support, their developmental experiences within that sport, and psychological well-being.  
206 To ensure anonymity and facilitate honest responses, participants were not asked for their  
207 name or squad number.

## 208 **Measures**

209           **Coach autonomy support.** Perceptions of coach autonomy support were assessed  
210 with the Sport Climate Questionnaire (Deci, 2001). This 15-item questionnaire allows  
211 athletes to rate their coach in terms of autonomy support (e.g., "I feel that my coach provides  
212 me with choices and options" and "My coach encouraged me to ask questions"). Each item  
213 is rated on a 7-point scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Scores  
214 for this scale are calculated by averaging the individual item scores. Scores can range from 1  
215 to 7, with higher scores representing a greater level of perceived autonomy support. This  
216 scale has previously displayed adequate reliability and discriminant validity with 11-16 year  
217 old youth sport participants (Jõesaar, Hein, & Hagger, 2012). In the current sample, the scale  
218 displayed a Cronbach's alpha coefficient of .93, which is above the .70 deemed acceptable  
219 for the psychological domain (Nunnally & Bernstein, 1994).

220           **Developmental experiences.** Positive developmental experiences were measured  
221 using the positive subscales of the Youth Experiences Survey for Sport (YES-S; MacDonald,  
222 Côté, Eys, & Deakin, 2012). These subscales assess: personal and social skills (14 items;

223 e.g., “Learned that working together requires some compromising”), cognitive skills (5 items;  
224 e.g., “Improved skills for finding information”), goal setting (4 items; e.g., “Learned to find  
225 ways to reach my goals”), and initiative (4 items; e.g., “Learned to push myself”). Each item  
226 is rated on a 4-point scale ranging from 1 (*Not at all*) to 4 (*Yes, definitely*). Scores for each  
227 subscale are calculated by averaging the individual item scores. Scores can range from 1 to 4  
228 with higher scores representing a greater level of developmental experiences. The YES-S has  
229 previously displayed adequate model fit and reliability with 9-19 year old youth sport  
230 participants (MacDonald et al., 2012). For the current sample, all subscales demonstrated  
231 acceptable internal consistency with Cronbach’s alpha coefficients ranging from .76-.83.

232       **Self-esteem.** Self-esteem was measured using the general-self subscale of the Self-  
233 Description Questionnaire II (Marsh, Parker, & Barnes, 1985). Five items of the subscale are  
234 phrased positively and five items are written to reflect low self-esteem (e.g., “Overall, I have  
235 a lot to be proud of” and “I feel that my life is not very useful”). Participants respond on a 7-  
236 point scale ranging from 1 (*False*) to 7 (*True*). After reverse scoring the negatively worded  
237 items, scores are calculated by averaging the individual item scores. Scores can range from 1  
238 to 7, with higher scores indicating a greater level of self-esteem. The reliability of this scale  
239 has previously been supported with 11-18 year old youth sport participants (Adie et al.,  
240 2010). The Cronbach’s alpha coefficient was .89 for the current sample.

241       **Positive affect.** Positive affect was assessed using the positive subscale of the  
242 Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988). This 10-item  
243 scale asks participant to rate how a word (e.g., ‘alert’ or ‘excited’) describes their feelings “in  
244 general”. The participant rates the extent to which they feel that way on a 5-point scale  
245 ranging from 1 (*Very slightly or not at all*) to 5 (*Extremely*). Scores for this scale are  
246 calculated by averaging the individual item scores. Scores can range from 1 to 5, with higher  
247 scores indicating greater levels of positive affect. This scale has previously displayed

248 adequate reliability and model fit with 10-17 year old youth sport participants (Crocker,  
249 1997). The current sample displayed a Cronbach's alpha coefficient of .92.

250       **Satisfaction with life.** Satisfaction with life was measured using the Satisfaction  
251 With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985). This 5-item scale asks  
252 participants to indicate their agreement with certain statements (e.g., "In most ways my life is  
253 close to my ideal"). Participants respond on a 7-point scale ranging from 1 (*Strongly*  
254 *disagree*) to 7 (*Strongly agree*). Scores for this scale are calculated by averaging the  
255 individual item scores. Scores can range from 1 to 7, with a score of 4 (*neither agree nor*  
256 *disagree*) indicating that a respondent is about equally satisfied and dissatisfied with life.  
257 Higher scores indicate an increasing level of satisfaction with life, whereas lower scores  
258 indicate an increasing dissatisfaction with life. This scale has previously displayed adequate  
259 model fit and reliability with 11-15 year old adolescents (Pons, Atienza, Balaguer, & Garcia-  
260 Merita, 2000). The Cronbach's alpha coefficient was .88 for the current sample.

### 261 **Analysis Strategy**

262       We tested the mediation hypotheses for all three dependent variables: self-esteem,  
263 positive affect, and satisfaction with life. As statistical techniques to test mediation (e.g.,  
264 Baron & Kenny method, 1986) suffer from problems including: low statistical power, a lack  
265 of quantification of the intervening effect, and the inability to test multiple mediators  
266 simultaneously (Hayes, 2009), we employed non-parametric bootstrapping analysis  
267 developed by Hayes (2013). This analysis allows one to estimate direct and indirect effects  
268 in models with multiple proposed mediators and has been shown to perform better than other  
269 techniques (e.g., Baron & Kenny, 1986) in terms of statistical power and Type I error control  
270 (Hayes, 2009). Additionally, as it is not based on large-sample theory, it can be applied to  
271 smaller sample sizes (e.g., 143 participants; see Gonzales, Reynolds, & Skewes, 2011) with  
272 greater confidence (Preacher & Hayes, 2004). To test for mediation we used the PROCESS

273 macro for SPSS (Hayes, 2013) with 20,000 bootstrap resamples and 95% bias corrected  
274 confidence intervals (CIs). There is evidence of mediation, or a specific indirect effect, when  
275 zero is not included within the lower and upper bound confidence intervals. This approach to  
276 mediation analysis with cross-sectional data has previously been used within sport  
277 psychology research (e.g., Gustafsson, Skoog, Podlog, Lundqvist, & Wagnsson, 2013).

## 278 **Results**

### 279 **Preliminary Analysis**

280 The data was screened for univariate and multivariate outliers, with 10  
281 multivariate outliers deleted from the sample. The remaining data ( $n = 192$ ) were  
282 screened for normality. Skewness values ranged from -1.19 to 0.45 and kurtosis values  
283 ranged from -0.71 to 0.91, indicating reasonable normality. As participants ranged from  
284 10-19 years (a wide age range), we decided to compare 10-14 ( $n = 139$ ) and 15-19 ( $n =$   
285 53) year olds on all variables. Independent samples  $t$ -tests revealed that mean scores only  
286 differed for positive affect,  $t(188) = 3.30, p = .001$ , and satisfaction with life,  $t(188) =$   
287 2.51,  $p = .014$ , with younger participants scoring higher on both. As there was no  
288 difference between 10-14 and 15-19 year olds on the other six variables, particularly the  
289 four developmental experiences, we decided to conduct all further analysis on the whole  
290 sample.

### 291 **Descriptive Statistics**

292 Table 1 presents the means, scale ranges, standard deviations, reliability coefficients  
293 and bivariate correlations for all variables. The mean score for coach autonomy support was  
294 5.61 on the 1-7 scale, indicating that participants felt their coaches were displaying a high  
295 level of autonomy supportive behaviors. The mean scores on the individual subscales of the  
296 YES-S revealed that participants reported developmental experiences through playing sport.  
297 For personal and social skills, goal setting, and initiative, participants rated themselves above

298 3 (*Quite a bit*) on the 1-4 scale. In contrast, a score of 2.11 suggests that participants felt they  
299 were learning less about cognitive skills. For psychological well-being, mean scores revealed  
300 that participants displayed high levels of self-esteem (5.24 on the 1-6 scale), positive affect  
301 (4.21 on the 1-5 scale), and satisfaction with life (5.86 on the 1-7 scale). Overall, the  
302 correlations revealed that coach autonomy support was positively related to all four  
303 developmental experiences and the three indices of psychological well-being. In general, the  
304 four developmental experiences were positively correlated with the three psychological well-  
305 being indicators.

### 306 **Main Analysis**

307 Figure 1 displays unstandardized regression coefficients for each of the three  
308 mediation models. The three models allow for the investigation of the relationships between  
309 all measured variables. In all models, coach autonomy support was included as the  
310 independent variable. Personal and social skills, cognitive skills, goal setting, and initiative  
311 were included as parallel mediators. The first model included self-esteem as the dependent  
312 variable (panel A). The second model had positive affect as the dependent variable (panel  
313 B). The third model included satisfaction with life as the dependent variable (panel C).  
314 Results of the indirect effects are presented in Table 2. The values in the Table show whether  
315 there is a total indirect effect and what effect, if any, each of the four mediators are having.

316 From the three models in Figure 1, one can see that coach autonomy support was  
317 related to all four mediators: personal and social skills ( $\beta = .17, p < .001$ ), cognitive skills ( $\beta$   
318  $= .20, p = .001$ ), goal setting ( $\beta = .25, p < .001$ ), and initiative ( $\beta = .11, p < .001$ ). However,  
319 in all three models only personal and social skills were related to each psychological well-  
320 being indicator: self-esteem ( $\beta = .43, p < .001$ ), positive affect ( $\beta = .40, p < .001$ ), and  
321 satisfaction with life ( $\beta = .49, p < .05$ ).

322 The first model included self-esteem as the dependent variable (Figure 1, panel A).

323 According to the bootstrap procedure, the total effect of coach autonomy support on self-  
324 esteem was significant ( $\beta = .15, p < .001$ ). When the mediators were entered into the model,  
325 the direct effect of coach autonomy support on self-esteem was non-significant, suggesting a  
326 mediating effect ( $\beta = .08, p = .06$ ). Of the proposed mediators (see Table 2) only personal  
327 and social skills displayed a significant indirect effect,  $\beta = .07, p = .002, 95\% \text{ CI} = [.03, .13]$ .  
328 Thus, the effect of coach autonomy support on self-esteem was fully mediated by personal  
329 and social skills.

330 The second model included positive affect as the dependent variable (Figure 1, panel  
331 B). According to the bootstrap procedure, the total effect of coach autonomy support on  
332 positive affect was significant ( $\beta = .14, p = .002$ ). When the mediators were entered into the  
333 model, the direct effect of coach autonomy support on self-esteem was non-significant,  
334 suggesting a mediating effect ( $\beta = .04, p = .344$ ). Of the proposed mediators (see Table 2)  
335 only personal and social skills displayed a significant indirect effect,  $\beta = .07, p = .005, 95\%$   
336  $\text{CI} = [.02, .13]$ . Thus, the effect of coach autonomy support on positive affect was fully  
337 mediated by personal and social skills.

338 The third model included satisfaction with life as the dependent variable (Figure 1,  
339 panel C). According to the bootstrap procedure, the total effect of coach autonomy support  
340 on satisfaction with life was significant ( $\beta = .21, p = .003$ ). When the mediators were entered  
341 into the model, the direct effect of coach autonomy support on satisfaction with life was still  
342 significant ( $\beta = .16, p = .033$ ), although reduced, suggesting partial mediation. Again, of the  
343 proposed mediators (see Table 2) only personal and social skills displayed a significant  
344 indirect effect,  $\beta = .08, p = .03, 95\% \text{ CI} = [.02, .17]$ . Thus, the effect of coach autonomy  
345 support on positive affect was partially mediated by personal and social skills.

## 346 Discussion

347 Previous studies have found that the coaching climate is related to positive

348 developmental experiences in youth sport (Gould et al., 2011; Vella et al., 2012). In line  
349 with previous research, this study found that coach autonomy support was related to the  
350 following developmental experiences: personal and social skills, cognitive skills, goal  
351 setting, and initiative. These findings suggest that coach autonomy support plays an  
352 important role in ensuring that youth sport participants have positive developmental  
353 experiences. In practice, these results indicate that coaches should: listen to their athletes,  
354 allow athletes to share their feelings, offer choice in training, encourage athletes to ask  
355 questions and show initiative, provide non-controlling feedback on competence, and  
356 display confidence in their athletes. The application of self-determination theory to life  
357 skills research would suggest that coach autonomy support will satisfy athlete's needs for  
358 autonomy, competence, and relatedness; and encourage them to develop their life skills  
359 (Hodge et al., 2012). However, given that the three needs were not measured in the present  
360 study, future research is required to investigate such causal mechanisms.

361         This study adds to the literature by showing that learning personal and social skills  
362 within sport was related to participants' self-esteem, positive affect, and satisfaction with  
363 life. In doing so, this study was the first one in youth sport to provide some support for  
364 Benson and Saito's (2001) proposition that the development of strengths is related to young  
365 people's well-being. This finding is in agreement with non-sport research which has shown  
366 personal and social skills to be related psychological well-being (Humphrey et al., 2011;  
367 Riggio et al., 1990) and other positive outcomes such as relationship development and  
368 social acceptance (Matson et al., 2010). It is actually quite plausible that relationship  
369 development and social acceptance account for the association between personal and social  
370 skills and psychological well-being found in this study. By developing personal and social  
371 skills, young people learn the skills necessary to develop relationships and gain social  
372 acceptance; which, in turn, has a positive impact on their psychological well-being.

373 However, future research is needed to investigate if this is the case.

374 Unlike personal and social skills, cognitive skills, goal setting, and initiative were  
375 unrelated to self-esteem, positive affect, and satisfaction with life when tested within the  
376 mediational models. This result was surprising given that previous research has shown  
377 these skills to be related to other positive outcomes. For instance, previous research has  
378 found cognitive skills to be related to academic performance (Elliott et al., 1990). It is  
379 possible that measurement issues could have hindered this study's ability to detect  
380 relationships between the variables in question. For example, cognitive skills items  
381 included in the YES-S (e.g., "improved academic skills" and "improved computer/ internet  
382 skills") could be deemed irrelevant to youth sport experiences. Supporting such an idea is  
383 the fact that participants scored lowest on the cognitive skills subscale. The same low  
384 scoring for cognitive skills was also evident in other studies using the YES-S (MacDonald  
385 et al., 2011; Vella et al., 2012). Thus, it seems plausible that measurement problems could  
386 hinder the ability of the YES-S to detect relationships using the cognitive skills subscale. It  
387 is also plausible that school sports – which have a more educational mandate than the club  
388 sports used in this study – are more likely to develop young people's cognitive skills.  
389 Therefore, future studies may obtain different results using a sample of school sport  
390 participants.

391 Of importance for this study was investigating if developmental experiences  
392 mediate the relationships between coach autonomy support and psychological well-being.  
393 Past studies have shown coach autonomy support to be related to indices of psychological  
394 well-being such as self-esteem (Standage & Gillison, 2007), positive affect, and life  
395 satisfaction (Smith et al., 2007). The present study corroborated such findings in youth  
396 sport. Building on previous research, this study also showed that experiences which  
397 develop personal and social skills mediate the relationships between coach autonomy

398 support and participant's psychological well-being. This was the case for self-esteem,  
399 positive affect, and satisfaction with life.

400 Overall, the results of this study provide partial support for Benson and Saito's  
401 (2001) framework for youth development. This framework suggests that developmental  
402 inputs (e.g., the coaching climate) are related to young people developing their strengths  
403 (e.g., personal and social skills); which, in turn, are related to young people's well-being.  
404 Although this study supported personal and social skills as a mediator, we also found that  
405 cognitive skills, goal setting and initiative did not mediate the relationships between coach  
406 autonomy support and each indicator of psychological well-being. This suggests that  
407 personal and social skills may be more important when explaining why coach autonomy is  
408 related to psychological well-being, as compared to cognitive skills, goal setting and  
409 initiative. Based on this finding, we would suggest that coaches put particular emphasis on  
410 encouraging team/group members to develop their personal and social skills. For instance,  
411 coaches could provide opportunities for athletes to learn personal skills, such as working  
412 with others, by having groups of athletes responsible for organizing/maintaining the  
413 training equipment. Additionally, coaches could encourage athletes to develop their social  
414 skills by providing opportunities for social interaction through off-field activities (e.g.,  
415 team-building events).

416 It is important to note that this study is not without limitations. Firstly, the  
417 measurement issue highlighted above was a possible limitation for this study. Secondly,  
418 with any self-report data there is concern with social desirability and the truthfulness of  
419 responses. However, the effects of the above concerns were held to a minimum through  
420 assurances of anonymity and requests for honesty in responding. Thirdly, it is important to  
421 highlight that this study was cross-sectional in design; therefore, the issue of causality could  
422 not be examined.

423           With these limitations in mind, future research should examine more closely the  
424 measurement of developmental experiences within sport. For reasons elaborated on earlier,  
425 this is especially the case with the cognitive skills subscale of the YES-S. Future research  
426 should also use Benson and Saito's (2001) framework to investigate positive youth  
427 development through sport. In particular, future studies could investigate the relationships  
428 between other aspects of the coaching climate (e.g., the coach-athlete relationship), other  
429 skills that young people develop through sport (e.g., communication and leadership), and  
430 other well-being outcomes (e.g, physical health). Such research should help explain how  
431 exactly young people develop positively through taking part in sport. Finally, experimental  
432 or longitudinal studies should investigate the causal relationships between the coaching  
433 climate, developmental experiences, and well-being.

434           Overall, this study provides partial support for Benson and Saito's (2001) framework  
435 for youth development. Based on these findings, youth sport coaches should be encouraged  
436 to create an autonomy-supportive climate as such an environment is related to young people's  
437 development and well-being. In practical terms, coaches could be trained to display  
438 autonomy supportive behaviors such as listening to their athletes, fostering athlete's  
439 independence, and providing choice within the training environment. Furthermore, coaches  
440 should endeavor to provide athletes with opportunities to develop their personal and social  
441 skills, cognitive skills, goal setting and initiative. For example, coaches could help athletes to  
442 develop personal skills such as controlling their emotions (e.g., after an official makes a bad  
443 call), provide opportunities for athletes to develop their social skills (e.g., through team  
444 parties/functions), ensure that athletes learn to develop their cognitive skills (e.g., by  
445 analyzing their competition tactics), teach athletes the basic principles of goal setting (e.g.,  
446 SMART goals), and offer opportunities for athletes to develop initiative (e.g., give athletes

447 responsibility for organizing the training equipment). By creating such an environment,  
448 coaches will help facilitate positive youth development through sport.

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Table 1

*Summary of intercorrelations, scale ranges, means, standard deviations and reliability estimates*

	1	2	3	4	5	6	7	8
1. Autonomy Support	-							
2. Personal & Social Skills	.38***	-						
3. Cognitive Skills	.24***	.43***	-					
4. Goal Setting	.36***	.57***	.53***	-				
5. Initiative	.29***	.49***	.19**	.49***	-			
6. Self-Esteem	.25***	.36***	.08	.18*	.26***	-		
7. Positive Affect	.23**	.39***	.22**	.31***	.22**	.50***	-	
8. Life Satisfaction	.21**	.23***	.08	.05	.15*	.59***	.46***	-
Scale Range	1-7	1-4	1-4	1-4	1-4	1-6	1-5	1-7
Mean	5.61	3.29	2.11	3.18	3.73	5.24	4.21	5.86
Standard deviation	0.95	0.43	0.81	0.66	0.37	0.56	0.59	0.94
Cronbach's alpha	.93	.81	.83	.77	.71	.87	.89	.83

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

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Table 2

*Indirect effects of coach autonomy support on psychological well-being (self-esteem, positive affect, and satisfaction with life) through each mediator*

	Bootstrap effect	Normal effect	Normal theory tests			95% CI
			SE	z	p	
<b>Self-esteem</b>						
Total effect	.07					[.02, .12]
Personal & social skills	.07	.07	.02	3.04	.00	[.03, .13]
Cognitive skills	-.01	-.01	.01	-0.87	.38	[-.04, .01]
Goal setting	-.01	-.01	.02	-0.69	.49	[-.06, .02]
Initiative	.02	.02	.02	1.20	.23	[-.01, .05]
Model	$F(5, 186) = 7.14^{***}, R^2 = .16$					
<b>Positive affect</b>						
Total effect	.10					[.05, .15]
Personal & social skills	.07	.07	.02	2.80	.01	[.02, .13]
Cognitive skills	.00	.00	.01	0.21	.83	[-.02, .03]
Goal setting	.03	.03	.02	1.13	.26	[-.02, .08]
Initiative	.00	.00	.02	.00	.99	[-.04, .03]
Model	$F(5, 186) = 7.53^{***}, R^2 = .17$					
<b>Satisfaction with life</b>						
Total effect	.05					[-.02, .12]
Personal & social skills	.08	.08	.04	2.16	.03	[.02, .17]
Cognitive skills	.01	.01	.02	0.32	.75	[-.03, .05]
Goal setting	-.07	-.07	.04	-1.74	.08	[-.15, .01]
Initiative	.02	.02	.03	0.86	.39	[-.02, .07]
Model	$F(5, 186) = 3.65^{**}, R^2 = .09$					

*Note.* Bootstrap generated confidence intervals. CI = confidence interval.

\*\* $p < .01$ , \*\*\* $p < .001$

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