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_{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. Mediational 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

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

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

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

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

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

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

Antecedents of Developmental Experiences

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

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

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

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

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

Consequences of Developmental Experiences

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

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

The Present Study

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

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

Method

Participants

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

Procedures

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

Measures

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

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

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

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

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

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

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

Analysis Strategy

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

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

Results

Preliminary Analysis

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

Descriptive Statistics

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

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

Main Analysis

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

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

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

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

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

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

Discussion

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

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

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

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

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

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

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

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

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

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

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

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

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*	
Self-esteem						
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	$F(5, 186) = 7.14^{***}$, $R^2 = .16$					
Positive affect						
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	$F(5, 186) = 7.53^{***}$, $R^2 = .17$					
Satisfaction with life						
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.
$^{**}p < .01$, $^{***}p < .001$