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1 Running Head: DEVELOPMENTAL EXPERIENCES IN ELITE YOUTH SOCCER

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10 The Social Environment and Developmental Experiences in Elite Youth Soccer

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Abstract

Objectives: We aimed to examine social-contextual correlates of players' developmental experiences in an elite youth soccer context. Specifically, we hypothesized that player perceptions of team cohesion and coach rapport would be positively associated with psychological need fulfillment. In turn, psychological need satisfaction was proposed to be positively related to adaptive developmental experiences in youth soccer (i.e., opportunities for leadership, emotional regulation, and goal setting), and negatively related to social exclusion.

Design: Cross-sectional

Method: 133 male elite soccer players, aged between 11 and 18 years old, completed a self-report questionnaire assessing the variables of interest.

Results: Using path analysis and bootstrapping methods, we found support for the overall model fit of the hypothesized conceptual framework and specific study hypotheses.

Conclusions: This study utilizes strong theoretical foundations to underscore the role of the coach and team environment in facilitating positive youth outcomes, and highlights a potential mechanism that may explain these processes.

Keywords: positive youth development, autonomy, competence, relatedness, self-determination theory, coaching

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52 The Social Environment and Developmental Experiences in Elite Youth Soccer

53 Soccer is one of the most popular participatory sports in the United Kingdom (UK;

54 Sport England, 2010) and children who show signs of talent and potential can be recruited

55 into professional club academies from the age of eight. Within these academies children

56 usually train on three evenings per week and play competitive matches at weekends, thus,

57 soccer represents a meaningful part of these children's lives. Despite this physical,

58 psychological, and temporal investment, only a fraction will successfully make the transition

59 to adult professional soccer players. For those who do not succeed in making this switch, it is

60 important that they have developed the necessary competencies to succeed in alternative life

61 contexts, such as school, work, and interpersonal relationships. In attempting to achieve this

62 goal, coaches and peers within elite soccer academies may play a significant role (Conroy &

63 Coatsworth, 2006; Smith & McDonough, 2008). With this in mind, we tested a conceptual

64 model in which youth soccer players' perceptions of their coach's interpersonal rapport and

65 the degree to which team mates are united in pursuing team goals (i.e., task cohesion), were

66 proposed to be positively associated with fundamental psychological need satisfaction. In

67 turn, psychological need fulfillment was suggested to be positively related to players'

68 experiences of goal setting, leadership opportunities, emotional regulation; and negatively

69 related to their experiences of social exclusion.

70 Over the last decade, there has been significant interest in how organized youth sport

71 can foster positive psycho-social developmental experiences (e.g., Côté & Fraser-Thomas,

72 2011; Danish, Hodge, Heke, & Taylor, 2003; Gould & Carson, 2008). The governing body of

73 soccer in the UK (the Football Association) has also embraced this trend by supporting

74 projects, such as *Street League* and *The Goals Project* that aim to develop important life

75 skills in disadvantaged youth in parallel with soccer skills. However, this movement has

76 minimally influenced elite youth soccer in the UK, where winning matches remains the
77 primary focus (Cushion & Jones, 2006). In view of this, more attention on positive youth
78 development in soccer academies seems warranted.

79 The term positive youth development has encapsulated the general facilitation of
80 desirable consequences in young people (Damon, 2004). Within the present study, we
81 focused on four developmental experiences that may be significant for adolescents'
82 psychosocial development. First, we considered the degree to which adolescents set goals
83 because this skill is a key facet of developing the core quality of initiative (Larson, 2000).
84 Second, as controlling one's affective responses is integral to successful psychosocial
85 functioning (Zeman, Cassano, Perry-Parish, & Stegall, 2006) and sports performance (Jones,
86 2003), we examined the extent to which players successfully regulated their emotions. This
87 construct also represented the broader category of self-regulatory skills. To complement these
88 two intrapersonal skills, we also wanted to tap into interpersonal and social experiences. Thus
89 we explored adolescents' opportunities to demonstrate leadership and responsibility because
90 young athletes and coaches perceived this to be an important life skill that can be developed
91 through sport (Jones & Lavalley, 2009). Finally, given that feelings of isolation within one's
92 peer group have been highlighted as a predictor of poor psychological health among children
93 (e.g., van der Wal, de Wit, & Hirasing, 2003) and harmful interpersonal dynamics may exist
94 within professional soccer academies (Cushion & Jones, 2006), we investigated the amount
95 of social exclusion that adolescents experienced.

96 The primary objective of the present study was to provide practitioners and
97 researchers with potential ways to optimize young elite soccer players' experiences of goal
98 setting, leadership opportunities, and emotional regulation, while minimizing social
99 exclusion. In line with Gould and Carson's (2008) recommendation to base positive youth
100 development research on strong theoretical foundations, we proposed that self-determination

101 theory (SDT; Ryan & Deci, 2007) may help to explain the psychological requirements for
102 positive developmental experiences to occur. In particular, SDT proposes that environments
103 that satisfy one's innate psychological needs for autonomy, competence, and relatedness will
104 lead to more adaptive functioning and psychological growth (Ryan & Deci, 2000). Autonomy
105 refers to feelings of self-governance and the internal endorsement of one's actions
106 (deCharms, 1968). Competence refers to feelings of efficacious interaction with the
107 environment (White, 1959). Relatedness refers to a sense of connectedness with one's social
108 milieu (Baumeister & Leary, 1995).

109 SDT-based research has shown that satisfying adolescents' psychological needs may
110 promote positive developmental outcomes. For example, Coatsworth and Conroy (2009)
111 found that satisfaction of young swimmers' needs for competence was positively related to
112 their self-esteem, goal setting experiences, and the degree to which they reflected on their
113 sense of self. In a sample of adolescent female gymnasts, Gagné, Ryan, and Bargmann (2003)
114 reported that fluctuations in satisfaction of the three psychological needs positively predicted
115 changes in self-esteem. Outside of the youth setting, satisfaction of the three psychological
116 needs has been positively and indirectly related to sportspersonship, and negatively related to
117 antisocial moral attitudes in adult British athletes (Ntoumanis & Standage, 2009). Based on
118 this empirical evidence, we proposed that players who reported higher psychological need
119 satisfaction would experience more positive developmental experiences (i.e., set more goals,
120 experience more opportunities for leadership, and regulate their emotions better), and feel
121 less social exclusion, compared to their counterparts who reported lower psychological need
122 satisfaction.

123 If fulfilling soccer players' psychological need for autonomy, competence, and
124 relatedness can promote positive developmental experiences, how can coaches facilitate this
125 process? Within the present study we examined two specific facets of the coach- and player-

126 created social environment. First, we examined players' perceptions of the degree of rapport
127 that coaches attempt to foster with players by showing understanding, being a good listener,
128 and demonstrating concern for the holistic being of the player. Reinboth, Duda, and
129 Ntoumanis (2004) reported a positive relationship between perceptions of coach social
130 support and relatedness need satisfaction in a sample of adolescent cricket and soccer players.
131 Further, adolescent baseball players whose coaches had received training on supportiveness
132 and instructional effectiveness reported higher enjoyment and attraction among team mates,
133 compared to players whose coaches had not received the training (Smoll, Smith, Barnett, &
134 Everett, 1993). Developing rapport with players may also satisfy players' need for
135 competence and autonomy, as well as relatedness, given the interrelationships between the
136 three psychological needs (Hagger, Chatzisarantis, & Harris, 2006; Ryan & Deci, 2000). For
137 instance, building rapport may involve acknowledging and embracing players' values and
138 beliefs (i.e., autonomy enhancing) and cooperatively working with players to achieve goals
139 aligned with these values (i.e., competence enhancing). Indeed within the physical education
140 context, students' perceptions of positive socio-emotional behaviors exhibited by physical
141 education teachers have been positively associated with fulfillment of all three psychological
142 needs (Taylor & Ntoumanis, 2007). Building on this research we hypothesized that
143 perceptions of coach rapport will be positively related to players' psychological need
144 satisfaction.

145 As well as coaches, team mates may be significant in shaping the overall interpersonal
146 context within soccer academies; hence, we investigated the degree to which players perceive
147 their team to be united in their pursuit of task-relevant goals (i.e., task cohesion). Previous
148 research has shown a positive relationship between task cohesion and the psychological needs
149 for autonomy, competence, and relatedness in a cross-sectional sample of non-elite young
150 adult basketball players (Blanchard, Amiot, Perrault, Vallerand, & Provencher, 2009). We

151 included this social-contextual variable to explore this relationship in the unique elite youth
152 soccer environment. On the one hand, players are part of the same team and need to work as a
153 unit to achieve competitive goals (i.e. winning matches). On the other hand, individual
154 players need to stand out from their peers as they fight for the coach's respect and social
155 status (Cushion & Jones, 2006), as well as limited squad places and contracts for next season.
156 As a result, the influence of task cohesion on academy players' psychological needs seems to
157 be worth investigating.

158 To summarize, we aimed to test a conceptual model in which players' perceptions of
159 their coach's degree of rapport with players, and team's task cohesiveness were hypothesized
160 to be positively associated with psychological need fulfillment. In turn, psychological need
161 satisfaction was hypothesized to be positively related to players' goal setting, opportunities
162 for leadership, and emotional regulation, but negatively related to feelings of social
163 exclusion. *Although some benefits may exist for examining each of the psychological needs
164 independently, we examined psychological need satisfaction as a collective construct because
165 of the substantial interrelationships between the three needs (Ryan & Deci, 2000), the
166 previous empirical justification for adopting such an approach (Hagger, Chatzisarantis, &
167 Harris, 2006), and with parsimony in mind.* We also tested the indirect effects of the two
168 environmental factors on the four developmental experiences via psychological need
169 satisfaction. Scant research exists exploring how specific contextual factors can promote
170 positive youth developmental experiences in an elite sport setting. Further, the mechanisms
171 by which this process occurs have received little attention, hence, the present study offers
172 both theoretical and applied extensions to current knowledge.

173

Method

174 **Participants and Procedures**

175 Participants were 133 male soccer players from four youth academies associated with
176 professional clubs in the UK (three from the second tier and one from the fourth tier of
177 professional soccer in England). Mean age of the participants was 14.23 ($SD = 1.79$, range =
178 11-18 years). No data on ethnicity were collected; however, the participants were
179 predominantly either of Black- or White-English ethnic origin.

180 After obtaining verbal permission from the directors of participating academies,
181 parents or guardians of potential participants were contacted and an information sheet
182 explaining the study was given to them. Parents then had the opportunity to decline
183 participation on behalf of their child. Informed written assent was also obtained from the
184 participants. Following an explanation of the study at the end of a scheduled coaching
185 session, the participants were asked to anonymously and individually complete a multi-
186 section questionnaire. A coach was present in the room at all times but did not engage with
187 the participants during the data collection. The researcher responsible for data collection
188 asked participants to answer honestly and emphasized that there were no right or wrong
189 answers. Data collection lasted approximately 25 minutes.

190 **Measures**

191 **Coach rapport.** Six items from the personal rapport subscale of the Coach Behavior
192 Scale for Sport (Côté, Baker, Hay, Yardley, & Sedgwick, 1997) were used in the present
193 study. The original subscale comprised seven items, however, one item (“My coach is always
194 available when I need him/her”) was shown to be psychometrically problematic in
195 subsequent work (Côté et al., 1997). The items were answered using a 7-point scale, anchored
196 by 1 (*never*) and 7 (*always*). An example item is “My coach is a good listener”. Côté,
197 Yardley, Hay, Sedgwick, and Baker (1999) reported acceptable internal consistency, test-
198 retest reliability, and factorial validity of the subscale in a sample of child and adult athletes
199 from a variety of sports.

200 **Task cohesion.** The eight items from the task cohesion subscale of the Youth Sport
201 Environment Questionnaire (YSEQ; Eys, Loughead, Bray, & Carron, 2009) were used. The
202 items were answered using a 9-point scale anchored by 1 (*strongly disagree*) and 9 (*strongly*
203 *agree*). An example item is “We all share the same commitment to our team’s goals”. Eys et
204 al. (2009) reported acceptable factorial validity in a sample of youth athletes.

205 **Psychological need satisfaction.** The nine items from the Basic Need Satisfaction in
206 Relationships Scale (La Guardia, Ryan, Couchman, & Deci, 2000) adapted to reflect the
207 soccer context were used in the present study. The items were answered using a 7-point scale
208 anchored by 1 (*never*) and 7 (*always*). Example items are “I feel cared about” (relatedness),
209 “I have a say in what happens and I can voice my opinion” (autonomy) and “I feel like a
210 competent person” (competence). La Guardia et al. (2000; Study 2) reported acceptable
211 factorial validity and internal consistency in a sample of undergraduate students. In line with
212 these authors’ work we averaged the nine items to produce an overall composite need
213 satisfaction score.

214 **Developmental Experiences.** The four developmental experiences (i.e., goal setting,
215 emotional regulation, leadership, and social exclusion) were measured using the respective
216 subscales from the Youth Experiences Survey (version 2.0; Hansen & Larson, 2005). Each
217 subscale contained three items, with the exception of emotional regulation, which contained
218 four items. The items were answered using a 4-point scale anchored by 1 (*yes, definitely*) and
219 4 (*not at all*), however, scores were reversed prior to data analysis so that higher scores
220 reflected greater experiences. Example items are “I set goals for myself in this activity” (goal
221 setting), “I became better at handling fear and anxiety” (emotional regulation), “I learned
222 about the challenges of being a leader” (leadership), and “I felt left out” (social exclusion).
223 Hansen and Larson (2005) reported adequate factorial and convergent validity, as well as
224 acceptable internal consistency in a sample of adolescents.

Results

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Preliminary Analysis

Prior to analysis, missing values were replaced using an Expectation Maximization algorithm because no identifiable patterns in missing data were identified. Next, confirmatory factor analyses (CFA) with EQS software (version 6.1; Bentler, 2003) using the robust maximum likelihood method were carried out to examine the factorial structure of all scales. Hu and Bentler (1999) proposed that a comparative fit index (CFI) approaching .95, a standardized root-mean-square residual (SRMR) close to .08, and a root-mean-square error of approximation (RMSEA) close to .06 were indicative of satisfactory model fit. Results of the CFAs can be seen in Table 1. As shown, the subscales measuring task cohesion and emotional regulation were shown to have acceptable factor structure. However, the factorial structure of the coach rapport and psychological need satisfaction scales were poor. In such cases, removing indicators that loaded poorly on to their respective latent factor is justified because the original structure is still retained, but with only the best performing indicators (Hofmann, 1995). Inspection of the standardized loadings and modification indices suggested the removal of two items from the coach rapport subscale (“my coach shows understanding for me as a person” and “my coach is a good listener”), and the three negatively worded items in the psychological need satisfaction scale (“When I am with my coach, I often feel inadequate or incompetent”, “When I am with my coach, I often feel a lot of distance in our relationship”, and “When I am with my coach, I feel controlled and pressured to be certain ways”). These modifications resulted in both scales having an acceptable model fit. The scales measuring goal setting, leadership, and social exclusion included three items each, therefore, the number of variances and covariances within the proposed factor structure equaled the number of parameters to be estimated (i.e., six). As a result, the models had no degrees of freedom (i.e., they were just-identified) and could never be rejected, therefore,

250 examining the model fit indices had no merit. Nonetheless, examination of the factor loadings
251 revealed that all items loaded adequately on their respective latent factor (loadings ranged
252 from .48 to .83).

253 **Descriptive Statistics, Internal Reliabilities, and Correlation Coefficients**

254 As shown in Table 2, the participants reported moderate to high levels of all study
255 variables, with the exception of relatively low scores of social exclusion. The Cronbach's
256 alpha coefficients were above 0.70 for all variables indicating acceptable internal reliability.
257 All correlation coefficients were in the expected direction. Specifically, coach rapport was
258 positively correlated with psychological need satisfaction. Team cohesion was positively
259 correlated with psychological need satisfaction, goal setting, and emotional regulation.
260 Psychological need satisfaction was positively correlated with goal setting, emotional
261 regulation, leadership, and negatively correlated with social exclusion. As age did not
262 correlate with any of the outcome variables (i.e., the developmental experiences) it was not
263 included in the path analysis¹.

264 **Primary Analysis**

265 The hypothesized model was tested using the robust maximum likelihood estimation
266 method due to non-normality of the data (Mardia's normalized estimate of multivariate
267 kurtosis = 5.47). Given the sample size (N=133), observed variables were used in the
268 structural model to ensure an acceptable participants to parameter ratio. Moreover, to enhance
269 confidence in our results we used the bootstrapping method to obtain a sampling distribution
270 for each parameter based on 1000 sample replications (Kline, 2010). 95% confidence
271 intervals (CIs) for each parameter estimate were calculated from these distributions. If zero
272 did not fall within these CIs then it could be concluded that the parameter was statistically
273 significant (Shrout & Bolger, 2002). Model fit indices showed that the hypothesized model
274 was weak: Satorra-Bentler χ^2 (15) = 32.97; CFI = .80; SRMR = .10; RMSEA = .10).

275 However, examination of the modification indices suggested the addition of a covariance
276 path between the errors of emotional regulation and leadership skills. This path indicates
277 shared variance between the two developmental experiences that is not accounted for by the
278 predictors (Kline, 2010). As the developmental experiences in the path model are dependent
279 variables, their interrelationship can only be presented by correlating their errors. This
280 modification was implemented because it is conceptually defensible and did not represent an
281 addition to merely obtain acceptable model fit (Byrne, 2006; see also the Discussion section).
282 The fit of this revised model was acceptable: Satorra -Bentler χ^2 (14) = 19.51; CFI = .94;
283 SRMR = .08; RMSEA = .06). This revised model can be seen in Figure 1. Bootstrapped
284 estimates shown in Table 3 revealed that, as hypothesized, players who report more coach
285 rapport and task cohesion experienced greater psychological need satisfaction, compared to
286 players who reported less coach rapport and task cohesion. In turn, psychological need
287 satisfaction was positively associated with more goal setting experiences, leadership
288 opportunities, and better emotional regulation, as well as less social exclusion. Following the
289 guidelines offered by Preacher and Hayes (2004), we also obtained bootstrapped estimates
290 for the indirect effects of the two environmental factors on the four developmental
291 experiences via psychological need satisfaction. Results showed that coach rapport indirectly
292 predicted the four developmental experiences via psychological need satisfaction, and task
293 cohesion indirectly predicted the three adaptive developmental experiences (i.e., goal setting,
294 emotional regulation, and leadership), via psychological need satisfaction.

295 Finally, we ran a model with the direct effects from coach rapport and task cohesion
296 to the four developmental experiences included, as well as the hypothesized indirect paths.
297 CIs obtained from the bootstrapped distribution indicated that only the direct relationship
298 between coach rapport and goal setting was statistically significant ($\beta = .21$; 95% CI = .01 to
299 .39).

300 **Discussion**

301 In the present study we examined elite youth soccer players' perceptions of the extent to
302 which coaches built up a rapport with players and how cohesive their team was in pursuing task-
303 relevant goals. The relationships between these two contextual influences and players'
304 psychological need satisfaction were investigated, as well as the association between
305 psychological need satisfaction and four important developmental outcomes; namely goal
306 setting, emotional regulation, leadership and (lack of) social exclusion. Overall, evidence was
307 found for the existence of these relationships.

308 Our results supported the hypothesized positive relationship between psychological need
309 satisfaction and goal setting. Coatsworth and Conroy (2009) similarly proposed that satisfying
310 adolescent swimmers' psychological need for competence would lead to greater goal setting
311 because their self-perceptions would be enhanced. This finding has particular significance given
312 the central role goal setting plays in developing initiative (Larson, Hansen, & Moneta, 2006).
313 Having a psychologically satisfying relationship with one's coach, therefore, may be an
314 important interpersonal mechanism for the development of greater personal agency, attention,
315 and effort towards the challenges that young soccer players encounter.

316 As well as enhanced goal setting, results from the present study showed that satisfying
317 players' psychological needs was positively related to leadership and responsibility experiences.
318 This finding extends a general proposal by self-determination theorists (i.e., that psychological
319 need fulfillment will lead to optimal growth; Ryan & Deci, 2000) to the specific psycho-social
320 development of elite youth soccer players. Players who are made to feel efficacious, valued, and
321 autonomous by their coach may have a propensity to grasp opportunities to show leadership and
322 take responsibility or they may be given more opportunities by the coach, compared to players
323 whose needs are not fulfilled. Further, it seems that players who feel autonomous, specifically,

324 within the coach-player relationship may have the opportunity to further satisfy their need for
325 autonomy by taking responsibility for their own actions in the larger soccer academy context.

326 The outcomes of our analysis also shed light on the under researched processes
327 concerning how youth activities can develop emotional skills. Specifically, the findings offer
328 support for the proposed links between psychological need fulfillment and emotional regulation.
329 Ryan, La Guardia, Solky-Butzel, Chirkov, and Kim (2005) reported that individuals who feel
330 that their needs are supported in close interpersonal relationships are more likely to emotionally
331 regulate through social support, compared to individuals whose needs are not fulfilled. We
332 extend this research to the coach-athlete relationship and to more general forms of emotional
333 regulation. Thus, soccer coaches who are sensitive to players' needs for autonomy, competence
334 and relatedness may help players manage the various and fluctuating emotions associated with
335 high level soccer performance.

336 In addition to the relationships between psychological need satisfaction and the three
337 positive developmental experiences, we also found a negative relationship between
338 psychological need satisfaction and social exclusion. Of course, there is likely to be a reciprocal
339 relationship, whereby feelings of social exclusion will lead to lower fulfillment of basic
340 psychological needs (Gerber & Wheeler, 2009). Nonetheless, it is equally plausible that a sense
341 of relatedness with one's coach will lead to fewer experiences of social exclusion. Moreover,
342 highly competent and autonomous players may receive more attention and gain more social
343 capital within the soccer academy context. Given the importance of positive social experiences in
344 reducing antisocial behavior (e.g., DuBois & Silverthorn, 2005), encouraging coaches to form
345 psychologically satisfying relationships with their players seems a worthy goal.

346 Overall, the positive relationships between players' psychological need fulfillment and
347 the three positive developmental experiences, as well as the negative relationship between
348 psychological need satisfaction and social exclusion highlight the importance of coaching

349 practices that foster autonomy, competence and relatedness within academy players. Within the
350 present study, we found support for two such behaviors, as well as emphasizing the importance
351 of fostering task cohesion within teams.

352 In accordance with our hypothesis, the degree to which players perceived coaches to
353 build rapport with them was positively related to their psychological need satisfaction. Other
354 sport-based research has reported a relationship between socio-emotional support and relatedness
355 need satisfaction (Reinboth et al., 2004). However, the setting of our study may have significant
356 implications, as the professional football academy context may be somewhat devoid of
357 supportiveness, care, and warmth (see Cushion & Jones, 2006). The results found in the present
358 study imply that it may be fruitful to challenge this zeitgeist, as approachable and trustworthy
359 coaches who demonstrate concern for their players may satisfy the psychological needs of young
360 players, thus creating a foundation for positive youth development.

361 In line with research examining basketball teams (Blanchard et al., 2009), task cohesion
362 was positively related to psychological need satisfaction. As mentioned previously, players
363 within professional soccer academies are competing to some degree with teammates for social
364 status and a limited number of places on the senior teams, which may impact upon the degree of
365 cohesion within teams. The finding in the present study indicates that it may be important to
366 counterbalance this potentially damaging competition by ensuring individuals work together to
367 win matches, and are united in the pursuit of success. Coaches can achieve this by including all
368 players in regular evaluative and discursive team meetings, as well as promoting emotional
369 engagement through shared personal insights during team building activities (Holt & Dunn,
370 2006; Pain & Harwood, 2009). By enhancing cohesion in professional academies, players may
371 be more likely to experience psychological need fulfillment, which may enhance the probability
372 of positive developmental experiences.

373 As well as the hypothesized relationships, an additional path between the degree to which
374 players experienced emotional regulation and leadership was added to the final conceptual model
375 because research in workplace settings has consistently unearthed relationships between these
376 two constructs (e.g., George, 2000; Palmer, Walls, Burgess, & Stough, 2000). With this evidence
377 base in mind, we feel that the addition of this path was conceptually appropriate.

378 The collective findings in the study, including the significant indirect effects, support the
379 proposal that players on united teams whose coaches have a good rapport with them are less
380 likely to experience social exclusion, and more likely to experience successful emotional
381 regulation, goal setting, and opportunities to lead, compared to players on fractious teams with
382 emotionally distant coaches. Further, these relationships are mostly indirect through a
383 psychologically fulfilling environment that supports players' needs for autonomy, competence,
384 and relatedness. Many of these findings are unique within the youth sports setting, however,
385 these conclusions should be considered in parallel with the limitations of the study. For instance,
386 the study uses self-report data that cannot substantiate whether the coaches actually exhibited the
387 types of behavior that were considered in this research. That said, self-report data are a worthy
388 source of information because adolescents consciously engage with the social context (Hansen,
389 Larson, & Dworkin, 2003; Larson, 2000) and one's perceptions of the social environment are of
390 primary importance when considering the satisfaction of basic psychological needs (Deci &
391 Ryan, 1987). Alternative measures of coach behavior, such as ratings from independent
392 observers, may be used in future research to explore the degree of congruence between coach
393 behaviors and players' perceptions of those behaviors, as well as potential moderating variables
394 that influence the degree of congruence.

395 A second procedural limitation is the cross-sectional nature of the data; therefore, we
396 cannot establish the direction of relationships among the study variables. Despite this drawback,
397 the proposed conceptual model was well grounded on previous theorizing and empirical support,

398 therefore, we feel justified in hypothesizing such associations. Longitudinal designs over a
399 soccer season, for example, will allow researchers to explore the contextual and personal factors
400 that influence change in developmental experiences over the season. Such studies should be
401 undertaken with larger samples, compared to the present study, which will permit study variables
402 to be modeled as latent factors, therefore, accounting for measurement error. Field experiments
403 can also be utilized to establish the causality among the study variables. For example, the
404 developmental effects of an intervention aimed at promoting positive coach behaviors may be
405 compared against a control group in which coaches receive no such training.

406 Within the present study, it is important to note that we examined developmental
407 experiences within a youth elite soccer setting. While the three positive experiences are largely
408 seen as important for adolescents' development in the larger life context, they cannot be called a
409 life skill because context transference was not measured in this research (Gould & Carson,
410 2008). Similarly, just because one is excluded in the soccer social setting does not mean that
411 similar experiences will occur in the family and school domains. Future research may wish to
412 investigate this potential transference across contexts. For example, can training soccer players to
413 overcome setbacks in matches help them to do so in the classroom? Can learning how to regulate
414 one's emotions in soccer help in the face of peer provocation in leisure-time? Such extensions to
415 the present research may build upon the conclusion that players who perceive a cohesive team
416 atmosphere, that their coaches psychologically prepare them for matches and have a good
417 interpersonal rapport with them may gain positive developmental experiences because their
418 psychological needs are fulfilled.

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Footnote

¹ We also ran a model in which age was included as a covariate in the conceptual model. The Wald test (an indicator of parameters to be dropped) suggested that all the paths between age and the dependent variables should be fixed at zero (i.e. they were non-significant). The model fit was also significantly lower compared to the model without age included as a covariate ($\Delta\text{CFI} = .04$).

589 Table 1

590 Results of Confirmatory Factor Analyses for all Study Variables

Variable	Sattora-Bentler χ^2 (df)	CFI	SRMR	RMSEA
Coach Rapport	50.35 (9)	.81	.12	.19
Modified Coach Rapport	2.86 (2)	.99	.04	.06
Task Cohesion	29.32 (20)	.97	.05	.06
Psychological Need Satisfaction	68.40 (27)	.83	.09	.11
Modified Psychological Need Satisfaction	19.37 (9)	.95	.05	.10
Emotional Regulation	2.74 (2)	.99	.04	.05

591 *Note.* Results for leadership, goal setting, and social exclusion are not shown because the
592 respective factorial models were just identified (i.e., they had 0 *df*).

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Table 2

Descriptive Statistics, Cronbach's Alphas and Correlations Between all Variables

Variable	range	<i>M</i>	<i>SD</i>	α	1.	2.	3.	4.	5.	6.	7.
1. Coach Rapport	1-7	5.11	1.35	.82	–						
2. Task Cohesion	1-9	6.69	1.53	.88	.04	–					
3. Psych. Need Satisfaction	1-7	4.80	1.03	.81	.44**	.31**	–				
4. Emotional Regulation	1-4	3.08	.73	.79	.12	.17*	.29**	–			
5. Leadership	1-4	3.12	.74	.73	.02	.17	.31**	.48**	–		
6. Goal Setting	1-4	3.28	.60	.71	.01	.28**	.36**	.29**	.14	–	
7. Social Exclusion	1-4	1.58	.82	.83	-.08	-.13	-.25**	-.20*	-.23**	-.12	–
8. Age	11-18	14.2	1.79	–	-.10	-.07	-.28**	.07	.02	-.11	.00

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

Table 3

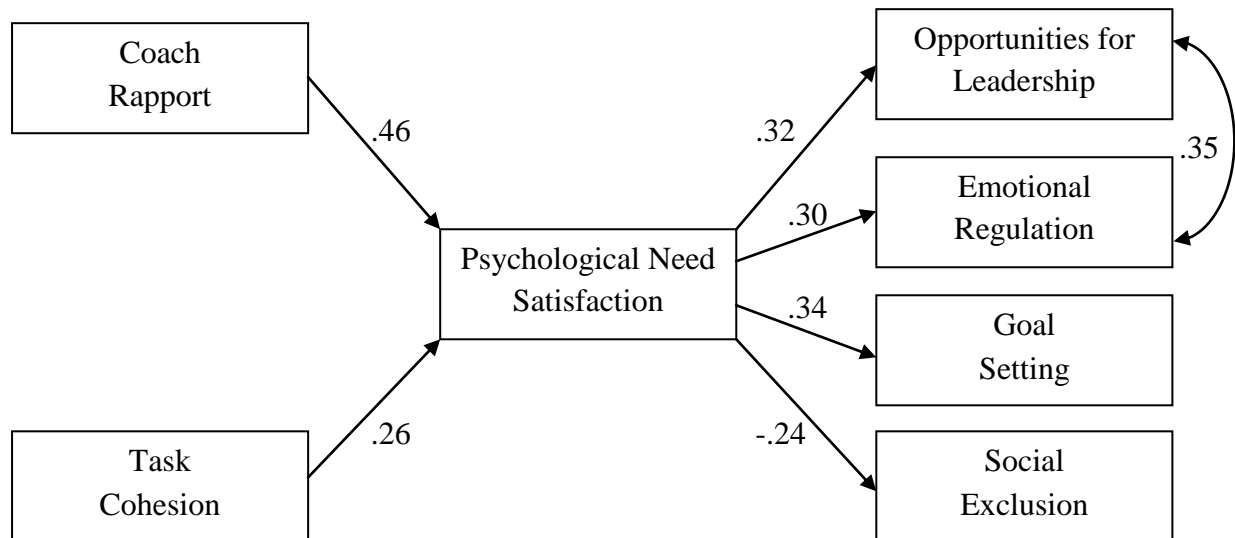
Bootstrapped Standardized Point Estimates of Direct Effects, Covariances, and Indirect Effects within the Final Model

Parameter		Point estimate (SE)	95% CI
<i>Direct Effects</i>			
Coach Rapport	→ Psych. Needs	.46 (.08)	.30 to .60
Task Cohesion	→ Psych. Needs	.26 (.08)	.11 to .41
Psych. Needs	→ Goal Setting	.34 (.08)	.17 to .51
Psych. Needs	→ Emotional Regulation	.30 (.10)	.11 to .49
Psych. Needs	→ Leadership Skills	.32 (.09)	.15 to .48
Psych. Needs	→ Social Exclusion	-.24 (.11)	.02 to .45
<i>Covariance</i>			
Leadership Skills	↔ Emotional Regulation	.35 (.09)	.15 to .54
<i>Indirect Effects</i>			
Coach Rapport	→ Goal Setting	.16 (.04)	.08 to .24
Coach Rapport	→ Emotional Regulation	.14 (.05)	.05 to .24
Coach Rapport	→ Leadership Skills	.14 (.04)	.07 to .23
Coach Rapport	→ Social Exclusion	-.11 (.06)	.01 to .23
Task Cohesion	→ Goal Setting	.09 (.04)	.03 to .17
Task Cohesion	→ Emotional Regulation	.08 (.04)	.02 to .16
Task Cohesion	→ Leadership Skills	.08 (.04)	.02 to .16
Task Cohesion	→ Social Exclusion	-.06 (.03)	-.14 to .00

Note. CI = Confidence Interval. If the CI includes zero, then the point estimate is not statistically significant ($p < .05$).

Figure 1

Revised path model of perceptions of coach behaviour, task cohesion, psychological need satisfaction, and four developmental experiences.



Note. All bootstrapped point estimates are standardized and significant ($p < .05$).