Coping profiles of adolescent football players and association with interpersonal coping: Do emotional competence and psychological need satisfaction matter?

Julie Doron, Meggy Hayotte, Fabienne d'Arripe-longueville, Chloé Leprince

Received: 24 April 2023 | Revised: 18 October 2023 | Accepted: 7 December 2023

DOI: 10.1111/sms.14550

ORIGINAL ARTICLE

WILEY

Coping profiles of adolescent football players and association with interpersonal coping: Do emotional competence and psychological need satisfaction matter?

Julie Doron[1] | **Meggy Hayotte**[2] | **Fabienne d'Arripe-Longueville**[2] | **Chloé Leprince**[3,4]

[1]Movement – Interactions – Performance, MIP, UR 4334, Nantes Université, Nantes, France

[2]Université Côte d'Azur, LAMHESS, Nice, France

[3]Centre de Recherche de la Fédération Française de Football, Centre National de Football de Clairefontaine, Clairefontaine-en-Yvelines, France

[4]Laboratory Sport, Expertise and Performance, French Institute of Sport (INSEP), Paris, France

Correspondence
Julie Doron, Nantes Université, Movement – Interactions – Performance, MIP, UR 4334, Bâtiment 24, Recteur Schmitt Bat F0 – Enseignement – Chemin de la Censive du Tertre BP 81227 44312 Nantes Cedex 3, France.
Email: julie.doron@univ-nantes.fr

Funding information
CIFRE grant from the French National Association of Research and Technology, Grant/Award Number: 2015/1174

Abstract

Using a person-centered approach, the present study aimed to investigate the coping profiles of adolescent football players involved in elite football training centers. The purposes were to (1) identify coping profiles based on the reported use of multiple coping strategies in response to competitive stress, (2) explore whether emotional competencies and psychological need satisfaction would predict coping profile membership, and (3) examine the extent to which coping profiles were differently associated with individual and team perceived stress, interpersonal coping, and subjective team performance, as well as demographic characteristics. A sample of 416 young French football players (males = 282; females = 134; M_{age} = 16.2; SD_{age} = 1.2) from 12 elite football training centers participated in this study. Latent profile analysis results yielded three coping profiles allowing players to be grouped according to their preferences for a combined use of certain strategies (i.e., low copers, high disengaged copers, and high task copers). Results provided further insight into each coping profile membership by indicating the role played by intrapersonal emotional competence and psychological need satisfaction. Finally, differences between coping profiles have been shown in terms of individual perceived stress intensity, interpersonal coping approach, and gender. These findings provide a deeper understanding of adaptive coping profiles within a population of adolescent football players involved in elite training centers. Implications for developing and tailoring psychoeducational interventions for adolescent football players exhibiting a maladaptive coping profile (i.e., disengagement-oriented coping profile) are considered.

KEYWORDS
coping skills, latent profile analysis, person-centered approach, resources, young elite athletes

Journal section: Section V: Psychology of Sport, Exercise and Health. Editor: Andreas Ivarsson.

1 | INTRODUCTION

In pursuit of excellence, adolescent athletes who train in elite centers have to deal with high physical, psychological, and social demands related to training and competition, as well as a wide range of stressors experienced in both sport and other areas of life.[1–4] This is particularly true for those who are part of a football academy or training center, exposing them to numerous stressors such as poor coach–athlete relationships, fear of failure, parental pressure, and contractual demands.[2–4] Previous research has demonstrated the importance of the ways adolescent athletes cope with these various demands, and their potential negative consequences in terms of performance, health, and well-being.[1,4] The present study, therefore, aimed to further examine coping strategies of adolescent football players in terms of profiles and determine the extent to which they indicate an ability to adapt.

Coping is traditionally defined as the "constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person."[5] The variety of coping strategies athletes may use when dealing with sport-related demands can be regrouped into three meaningful higher order coping dimensions.[6] First, task-oriented coping consists of dealing directly with the stressful situation and the resulting thoughts and emotions (e.g., effort expenditure, thought control, and mental imagery). Second, distraction-oriented coping consists of directing one's attention momentarily to cues that are unrelated to the stressful situation (e.g., distancing and mental distraction). Third, disengagement-oriented coping consists of ceasing efforts to achieve a goal or desirable outcome (e.g., disengagement/resignation, and venting of emotion). Previous sport studies have highlighted the importance of coping behaviors in the development of elite youth football academy players[2,7] and in career success in football.[8] In particular, adolescent football players tended to employ a combination of coping strategies in response to football-related demands (e.g., fear of failure).[4] Considering the multivariate nature of coping, attention has been drawn to the need to investigate athletes' coping strategies in terms of profile or combination of coping strategies endorsed by individuals rather than in isolation.[9–14] Further investigation is therefore required to quantitatively examine adolescent football players' coping profiles and provide insight into their ability to adapt.

In sport psychology literature, few studies have examined athletes' coping strategies using a person-centered approach.[11,13,14] This approach allows identification of the distinct ways individuals combine several coping strategies to deal with stressful events, and the extent to which the coping profiles are differently associated with psychological adjustment.[9–14] Studies conducted in sport contexts[11,13,14] have led to the identification of athlete coping profiles. These highlight two common coping profiles: the "engaged copers" (i.e., preference for task-oriented coping) and the "disengaged copers" (i.e., preference for disengagement-oriented coping strategies), reporting the highest psychological adjustment and the lowest, respectively. Other coping profiles have also been identified and differ between the studies due in part to the methodologies used and the characteristics of stressful situations (e.g., competition and COVID-19 outbreak). A person-centered approach enables targeting of groups of adolescents at risk of showing maladaptive coping profiles.[12] However, to date, neither the coping profiles of adolescent athletes training in elite football centers nor the effects of potential covariates have been investigated in greater depth in order to further understand coping profile membership.

There is a growing body of evidence showing that emotional competence (EC) plays an important role in sport performance.[15] EC reflects how people deal with emotional information through five main intra- and interpersonal emotional competencies: identification, expression, understanding, regulation, and use.[16] Meta-analysis results highlight the utility of EC, showing positive relationships between EC and emotions, physiological stress responses, successful use of psychological skills, and more successful athletic performance.[15] More specifically, empirical evidence indicates that EC influences the ways athletes appraise and deal with stressful situations.[15] EC has been positively associated with coping effectiveness through greater use of task-oriented coping.[17,18] EC is, therefore, viewed as an individual characteristic and resource that is necessary for successful adaptation in response to stress.[19] Given that EC is considered to be an important psychological factor for the successful progression and development of elite youth football academy players,[7] it seems relevant to examine the extent to which it may influence the coping profile membership of adolescent football players.

Beyond the role of individual characteristics and resources, it also seems important to take into account the role played by the coach's environment on athletes' adaptive functioning,[20] especially in view of the fact that adolescent football players at elite training centers evolve in a highly competitive environment.[2–4] The satisfaction of psychological needs appears particularly central in the promotion of adaptive developmental experiences in adolescent footballers.[21,22] Psychological needs are considered to be "innate psychological nutriments that are

essential for ongoing psychological growth, integrity, and well-being."[20] Social environments that satisfy the psychological needs for autonomy, competence, and relatedness are therefore thought to lead to more adaptive functioning and psychological growth.[20] In the sport domain, high need satisfaction has been shown to be positively associated with numerous indicators of adaptive functioning (e.g., emotional regulation and well-being) and negatively linked to maladaptive ones (e.g., athlete burnout).[23] Consequently, it may be relevant to consider the impact of the psychosocial factors "psychological need fulfilment" versus "thwarting" in providing a better understanding of coping profile membership of adolescent football players.

Considering that team sports such as football exist in an inherently social context involving numerous important interpersonal relationships (e.g., between teammates, coaches, staff, or parents), it also seems important to view stress and coping as a social phenomenon and move toward an interpersonal perspective of coping.[24,25] For example, it has been shown that in response to the 1999 World Cup, women soccer players used certain coping strategies involving other players (e.g., on-field task communication, social support, and encouragement from teammates).[26] In this way, interpersonal coping refers to a process whereby stressful events are appraised and acted upon in the context of close relationships such as sports teams, and it describes the way people jointly engage in collective efforts and cooperative actions to manage stressful circumstances.[24] More recently, the orientation of athletes toward interpersonal coping has been highlighted according to their individual coping profile when faced with the COVID-19 outbreak.[14] However, the specificity of the stressors encountered by athletes during the COVID-19 outbreak and their coping profiles in response to these limits the generalization of the results. Thus, it appears important to further examine the extent to which individual coping profiles are differently associated with the interpersonal coping approach when considering the social and competitive environment in which adolescent football players are embedded.

Using a person-centered approach, the present study aimed to investigate the coping profiles of adolescent football players involved in elite football training centers. The purposes were therefore to[1] identify adolescent football players' coping profiles based on their reported use of multiple coping strategies in response to competitive stress,[2] explore whether emotional competencies and psychological need satisfaction predict membership of coping profiles, and[3] examine the extent to which coping profiles are differently associated with individual and team perceived stress, interpersonal coping, and subjective team performance, as well as demographic characteristics.

2 | METHOD

2.1 | Participants

A total of 416 young French football players aged 14–20 (males = 282; females = 134; M_{age} = 16.17; SD_{age} = 1.15) volunteered to participate in this study. They were training at six national training centers belonging to professional clubs (males) and seven federal training centers (females). They all competed at national level and had a mean playing experience of 10.46 years for male footballers (SD = 2.37) and 9.28 for female footballers (SD = 2.34).

2.2 | Procedure

Forty-three football training centers were contacted by the sports science manager of the French Football Federation. Twelve centers volunteered to participate in the study. Before starting the study, the directors of each training center informed by letter the parents or a legal representative of players about the research (objectives and general procedures, and goals) and asked them to sign the informed consent forms. After obtaining approvals, players were then recruited to participate in this study. The questionnaires were administered outside of training hours, in groups of 15 players in the presence of the last author. The questionnaires were administered under conditions guaranteeing free participation, anonymity, and the confidentiality of answers. The protocol was approved by the scientific committee of the French National Association of Research and Technology and the French Football Federation (No. 2015/1174).

2.3 | Measures

2.3.1 | Individual coping

The French version of the Inventory of Coping Strategies for Competitive Sports—CICS[6] was used to measure players' coping strategies. It comprises 39 items assessing 10 individual coping strategies (i.e., thought control, mental imagery, relaxation, effort expenditure, logical analysis, seeking support, distancing, mental distraction, disengagement/resignation, and venting of emotion), which can be grouped into three higher order coping dimensions: task-oriented coping, distraction-oriented coping, and disengagement-oriented coping. Throughout the

questionnaire, players rated the extent to which they usually use each of the coping strategies when facing stressful situations in competition on a 5-point Likert scale (1 = does not correspond at all; 5 = corresponds very strongly). The Cronbach alpha coefficients are acceptable,[27] as they ranged from 0.57 to 0.86.

2.3.2 | Emotional competencies

The Profile of Emotional Competence[16] was used to assess the interpersonal and intrapersonal emotional competencies (i.e., identification, understanding, expression/listening, regulation, and use of emotions). Participants were informed that items were designed to provide a better understanding of how they deal with emotional information. They answered the 50 items on a 5-point Likert scale (1 = does not describe me at all/I never respond like this; 5 = it describes me very well/I experience this particular response very often). The Cronbach alpha coefficients are adequate,[27] as they were 0.65 for the intrapersonal EC, and 0.80 for the interpersonal EC.

2.3.3 | Psychological needs

The French version of the Basic Psychological Needs in Sport Scale,[28] measuring the perceptions of competence, autonomy, and relatedness in the sport context was administered to the participants in order to assess the extent to which they perceived their psychological needs to be (dis)satisfied. The participants were asked to respond to the items based on their current experiences, using a 7-point Likert scale (1 = do not agree at all; 7 = totally agree). The Cronbach alpha coefficients for the current study are adequate,[27] as they ranged from 0.60 to 0.67.

2.3.4 | Individual and team perceived stress

Perceived stress was assessed using a version of the stress thermometer.[29] Participants were asked to indicate the amount of stress they—as a player and as their team—usually felt in competition on two 6-point Likert scales (0 = none at all; 5 = a lot).

2.3.5 | Interpersonal coping

The Communal Coping Strategies Inventory for Competitive Team Sports[30] was used to measure four dimensions of interpersonal coping: (1) problem-focused communal efforts (i.e., logical analysis, problem solving, increasing efforts, and focusing); (2) relationship-focused coping (i.e., motivational support, compensation, and social joining strategies); (3) communal management of emotions (i.e., reassurance and interpersonal regulation of negative emotions); (4) communal goal withdrawal (i.e., venting of emotions and disengagement). Participants were asked to indicate on a 5-point Likert scale the extent to which they and their team used each of the interpersonal coping strategies when facing stressful situations in competition (1 = never used; 5 = frequently used). The Cronbach alpha coefficients are high,[27] as they ranged from 0.73 to 0.87.

2.3.6 | Subjective team performance

Participants were asked to indicate how satisfactory they considered their team performance on a 6-point Likert scale (0 = not at all; 5 = very).[31]

2.4 | Data analysis

The dataset was analyzed for missing values. Missing values were found in the following measures: (1) individual perception of stress ($n = 9$), (2) team perception of stress ($n = 1$), (3) number of years of playing experience ($n = 6$), and (4) age ($n = 4$). As all items contained <5% of missing values, they could be considered inconsequential.[32] No imputation procedures for missing data were implemented. LPA were performed using Mplus version 8.4,[33] and all other analyses were performed using IBM SPSS version 26 (IMB Corporation). There are no thumb rules of sample size required to conduct LPA. Several simulation studies have suggested sample of 300–500 participants.[34] Therefore, we have targeted a sample of a least 400 footballers.

In a first step, we used latent profile analysis (LPA) to identify adolescent footballers' coping profiles. LPA identifies naturally occurring profiles and estimates the participants' probability of membership in each profile.[35] We tested a series of models (i.e., 1 class to 5 class) to determine which model best fits the data. The selection of the best fitting model is a challenging aspect of the analyses, involving theory and a variety of statistical fit indices.[36] Therefore, we used the following indicators: the log-likelihood value, Akaike information criterion (AIC), Bayesian information criterion (BIC), adjusted BIC (ABIC), and entropy. We also used tests to compare the improvement between the model with n classes and the model with n-1 classes, using the Lo–Mendel–Rubin likelihood ratio test (LMR) and the bootstrap likelihood ratio test (BLRT). In addition, the sample size of the subgroups

was considered as a criterion. The best fitting model is the model with the lowest values from the AIC, BIC, and ABIC; the highest values of the log-likelihood value and entropy; and a significant p-value from the LMR and BLRT model comparisons. In addition, it is generally recommended to select profiles comprising more than 5% of the total sample.[37] Furthermore, parsimony, the substantive meaning of each class, and the quality of the obtained solution should be considered to select the optimal number of classes.

In the second step, psychological needs (i.e., competence, autonomy, and relatedness) and interpersonal and intrapersonal emotional competencies were incorporated in the LPA model, as covariates of adolescent footballers' coping profiles, to determine whether these variables would predict profile membership. The covariate effect estimates were expressed as a logistic regression coefficient, odds ratio, and *p*-value.

In the third step, we analyzed differences between coping profiles after extraction of the profile membership. Two multivariate analyses of variance (MANOVA) were conducted to analyze whether players with different coping profiles differed on (1) individual and team perceived stress, and (2) interpersonal coping (i.e., problem-focused communal efforts, relationship-focused coping, communal management of emotions, and communal goal withdrawal). Three univariate analyses of variance (ANOVA) were carried out to determine the differences between profiles for the number of years of playing experience, age, and subjective team performance. All variables were tested for each statistical technique and corresponding assumptions. The results were expressed as F statistics with the sphericity hypothesis method, including the degrees of freedom (df), the *p*-value, and the global effect size indicated by partial Eta squared (η^2). Benchmarks were set as follows: small ($\eta^2 = 0.01$), medium ($\eta^2 = 0.06$), and large ($\eta^2 = 0.14$) effects.[38] When MANOVA or ANOVA revealed significant differences ($p < 0.05$), the post-hoc Bonferroni method was then applied. The Bonferroni method is widely applied as a post-hoc test in analyses of variance to limit the Type I error rate due to multiple comparisons tests.[39] A chi-squared test was performed to examine the gender differences between coping profiles.

3 | RESULTS

3.1 | Coping profiles of adolescent footballers

Table 1 presents the fit indices of the LPA models with 1–5 classes. AIC, BIC, and ABIC showed big differences between 1 class and 2 classes, between 2 classes and 3 classes, and between 3 classes and 4 classes. The entropy was higher for 3 classes than for 2 classes and continued to increase for 4 classes and 5 classes. The LMR found that 2 classes fit better than 1 class. The BLRT reported that 5 classes fit better than 4 classes, which fit better than 3 classes, which fit better than 2 classes, which fit better than 1 class. For models with 1 to 5 classes, each subgroup contained more than 5% of the total sample. As a result, 2-class, 3-class, and 4-class models could be considered. The substantive meaning of each class was

TABLE 1 Fit indices for latent profile analysis models with 1–5 classes.

Number of classes	1 class	2 classes	3 classes	4 classes	5 classes
Number of free parameters (*n*)	20	31	**42**	53	64
Log likelihood	−5070.09	−4842.72	**−4727.41**	−4640.56	−4605.50
AIC	10180.17	9747.45	**9538.82**	9387.12	9338.99
BIC	10260.79	9872.40	**9708.11**	9600.75	9596.95
ABIC	10197.32	9774.03	**9574.84**	9432.57	9393.87
Entropy	NA	0.73	**0.80**	0.81	0.83
LMR	NA	447.97*	**227.20**	171.12	69.09
BLRT	NA	454.73*	**230.62***	173.70*	70.13*
Sample size of subgroups	C1 = 416	C1 = 164 C2 = 252	**C1 = 136** **C2 = 208** **C3 = 72**	C1 = 82 C2 = 58 C3 = 208 C4 = 68	C1 = 74 C2 = 216 C3 = 34 C4 = 56 C5 = 36

Note: Bold entries reflect the selected model.

Abbreviations: AIC, akaike information criteria; ABIC, adjusted BIC; BIC, Bayesian information criterion; BLRT, bootstrap likelihood ratio test; C, class; LMR, Lo–Mendell–Rubin likelihood ratio test; NA, not applicable.

*$p < 0.05$, significant difference between the model with *n* classes and the model with *n*-1 classes.

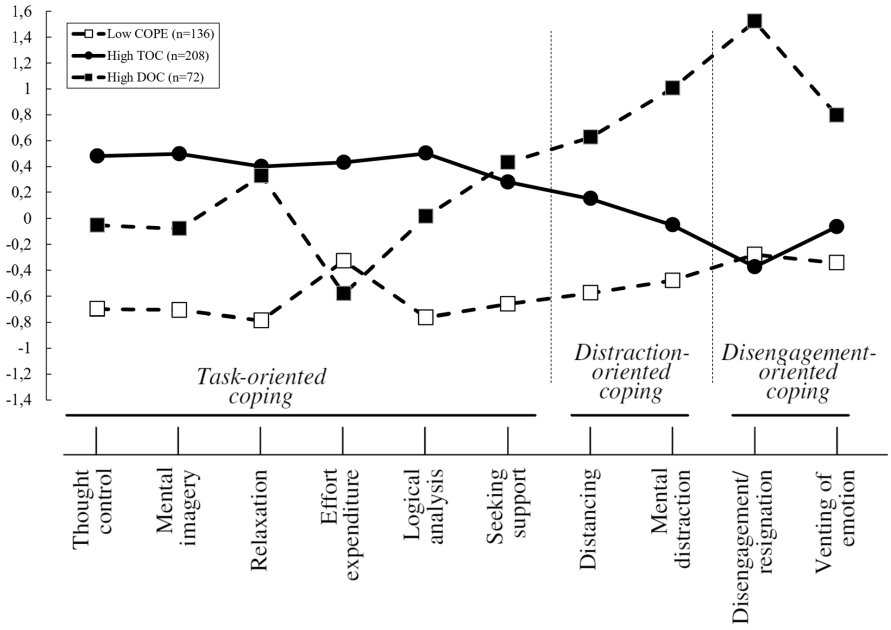

FIGURE 1 Standardized scores of the three profiles of footballers' coping strategies.

TABLE 2 Effect of covariates on membership of adolescent footballers' coping profiles.

Covariates	Low COPE $N=136$ M (SD)	High TOC $N=204$ M (SD)	High DOC $N=76$ M (SD)
Intrapersonal emotional competence	3.28 (0.41)	3.44 (0.35)	3.05 (0.35)
Interpersonal emotional competence	3.25 (0.49)	3.42 (0.45)	3.21 (0.40)
Need for autonomy	4.09 (0.99)	4.59 (1.06)	4.13 (1.03)
Need for relatedness	5.53 (0.79)	5.73 (0.78)	5.17 (0.88)
Need for competence	5.21 (0.85)	5.31 (0.85)	4.60 (0.88)
	Low COPE versus high DOC	**High TOC versus high DOC**	**High TOC versus low COPE**
	LRE (OR)	**LRE (OR)**	**LRE (OR)**
Intrapersonal emotional competence	1.61* (5.01)	2.44* (11.45)	0.83 (2.29)
Interpersonal emotional competence	−0.35 (0.70)	0.14 (1.15)	0.49 (1.64)
Need for autonomy	−0.35 (0.71)	−0.01 (0.99)	0.34* (1.40)
Need for relatedness	0.42 (1.52)	0.56* (1.76)	0.15 (1.16)
Need for competence	0.67* (1.96)	0.61* (1.84)	−0.06 (0.94)

Abbreviations: LRE, logistic regression estimates; OR, odds ratio.

*$p < 0.05$.

analyzed and revealed that the 4-class model added no substantial information compared to the 3-class model. In contrast, the 3-class model added more information than the 2-class model. Therefore, we selected the 3-class model. Figure 1 presents the z-scores of each coping strategy for the three coping profiles of adolescent footballers. We labeled the three coping profiles drawing on previous research using the CICS measure of coping.[11,13] The first profile, labeled "low COPE," concerned low utilization of all coping strategies, and represented 32.69% of the sample. The second profile, labeled "high TOC," related to high utilization of task-oriented coping strategies, and represented 50.00% of the sample. The third profile, labeled "high DOC," concerned high utilization of disengagement-oriented coping strategies, and represented 17.31% of the sample.

3.2 | Coping profile membership: Investigation of emotional competencies and psychological need satisfaction as covariates

Table 2 presents the descriptive statistics and covariate effect estimates of the intrapersonal and interpersonal emotional competencies, as well as the needs for autonomy,

relatedness, and competence of adolescent footballers in the three profiles (after extraction of profile membership). These estimates reveal that players in the "low COPE" (logistic regression coefficient = 1.61, $p = 0.023$) and "high TOC" (logistic regression coefficient = 2.44, $p < 0.001$) profiles tended to have higher intrapersonal emotional competence than players in the "high DOC" profile. Footballers in the "high TOC" profile tended to have higher autonomy need satisfaction (logistic regression coefficient = 0.34, $p = 0.035$) than footballers in the "low COPE" profile. Footballers with high relatedness need satisfaction were more likely to belong to the "high TOC" profile than the "high DOC" profile. Footballers with high competence need satisfaction were more likely to belong to the "low COPE" (logistic regression coefficient = 0.67, $p = 0.012$) or "high TOC" (logistic regression coefficient = 0.61, $p = 0.028$) profiles than the "high DOC" profile.

3.3 | Coping profile differences after extraction of profile membership

Table 3 presents the descriptive statistics of the individual and team perceptions of stress, the four dimensions of interpersonal coping, the number of years of playing experience, age, and subjective team performance according to the three profiles. The results of the two MANOVAs, the three ANOVAs, and post-hoc comparisons are also presented in Table 3. Footballers belonging to the three coping profiles differed on individual perception of stress ($F_{(2,\ 404)} = 8.78$, $p < 0.001$, partial $\eta^2 = 0.042$), problem-focused communal efforts ($F_{(2,\ 413)} = 16.13$, $p < 0.001$, partial $\eta^2 = 0.072$), relationship-focused coping ($F_{(2,\ 413)} = 9.59$, $p < 0.001$, partial $\eta^2 = 0.044$), communal management of emotions ($F_{(2,\ 413)} = 9.72$, $p < 0.001$, partial $\eta^2 = 0.045$), and communal goal withdrawal ($F_{(2,\ 413)} = 15.87$, $p < 0.001$, partial $\eta^2 = 0.071$). Footballers in the "high DOC" profile reported significantly higher individual perception of stress than the footballers in the "high TOC" and "low COPE" profiles. Footballers in the "high TOC" profile reported significantly higher use of problem-focused communal efforts and relationship-focused coping than the "low COPE" and the "high DOC" profiles, and significantly higher communal management of emotions than the "low COPE" profile. Footballers in the "high DOC" profile reported significantly higher use of communal goal withdrawal than footballers in the "low COPE" and "high TOC" profiles. Gender differences between the three groups were observed ($\chi^2_{(2)} = 17.91$, $p < 0.001$). Girls were more frequently present in the "high TOC" profile (39.71%), followed by the "low COPE" profile (31.62%) and the "high DOC" profile (13.16%).

TABLE 3 Means and standard deviations of main study variables and their multivariate and univariate tests.

	Low COPE (1) $N = 136$ M (SD)	High TOC (2) $N = 204$ M (SD)	High DOC (3) $N = 76$ M (SD)	F-value	p-Value	Partial η^2	Bonferroni post-hoc
Perceptions of stress				5.05	<0.001	0.024	NA
Individual perceived stress	1.78 (1.25)	2.06 (1.33)	2.58 (1.40)	8.78	<0.001	0.042	3 > 1, 2
Team perceived stress	2.06 (1.01)	2.17 (1.12)	2.14 (1.09)	0.46	0.63	0.002	NA
Interpersonal coping				8.24	<0.001	0.074	NA
Problem-focused communal efforts	3.69 (0.53)	3.98 (0.47)	3.70 (0.54)	16.13	<0.001	0.072	2 > 1, 3
Relationship-focused coping	3.41 (0.62)	3.69 (0.61)	3.44 (0.64)	9.59	<0.001	0.044	2 > 1, 3
Communal management of emotions	2.81 (0.59)	3.09 (0.56)	2.96 (0.59)	9.72	<0.001	0.045	2 > 1
Communal goal withdrawal	2.06 (0.75)	2.00 (0.68)	2.52 (0.68)	15.87	<0.001	0.071	3 > 1, 2
Age	16.20 (1.22)	16.14 (1.16)	16.23 (0.99)	0.20	0.82	0.001	NA
Number of years of playing experience	10.38 (2.17)	10.02 (2.56)	9.65 (2.45)	2.25	0.11	0.011	NA
Subjective team performance	3.55 (0.91)	3.64 (1.01)	3.68 (0.96)	0.59	0.56	0.003	NA

Abbreviations: M, mean; NA, not applicable; SD, standard deviation.

4 | DISCUSSION

Using a person-centered approach, the present study sheds light on the different coping profiles when dealing with competitive stress of adolescent football players involved in elite training centers. Three coping profiles (i.e., low copers, high disengaged copers, and high task copers—see Figure 1) emerged from the LPA, making it possible to differentiate football players according to their preferences for a combined use of certain strategies. These results strengthen previous research examining coping profiles among athlete populations[11,13,14] and among general adolescent populations.[12] Moreover, the results provide further insight into each coping profile membership by indicating the role played by intrapersonal emotional competence and psychological need satisfaction. Finally, differences between coping profiles have been shown in terms of individual perceived stress intensity, interpersonal coping orientation, and gender. In this way, the findings provide a deeper understanding of the adaptiveness of each coping profile within a population of adolescent football players involved in elite training centers.

The LPA reveals three distinct groups of adolescent football players, who differed in the degree to which they combined coping strategies when dealing with competitive stress. The "high TOC" profile represented the largest number of players (50% of the sample). It was characterized by players using a combination of strategies related to high task-oriented coping, moderate distraction-oriented coping, and low disengagement-oriented coping. It echoes previous research in other sport contexts identifying coping profiles with a similar pattern.[11,13,14] Next, the "low COPE" profile accounted for 32.69% of the sample, representing athletes with a preference for low levels of all coping strategies. The last coping profile, labeled "high DOC," represented the smallest number of players (17.31% of the sample). Players who endorsed this profile used high levels of disengagement-oriented coping strategies. The "low COPE" and "high DOC" profiles exhibited similar patterns of athlete coping profiles as previous sport studies.[11,13] Furthermore, the three coping profiles obtained in the present study corroborate some common patterns of coping profiles previously identified in studies conducted in non-sport populations such as engaged/active copers, low copers, or avoidant/disengaged copers.[9,10,12] Although the measures of coping and the characteristics of participants and of the stressful situations differ between studies, this may indicate the potential for generalization of certain coping profiles across different contexts and populations.

Furthermore, the effects of covariates (i.e., emotional competencies and psychological need satisfaction) on membership of coping profiles were examined. Results show that intrapersonal EC and psychological need satisfaction accounted for engagement in specific coping profiles. Players who reported the highest levels of intrapersonal EC were more inclined to engage in the "low COPE" and "high TOC" profiles, while players who reported the lowest levels of intrapersonal EC were more inclined to engage in the "high DOC" profile. These results provide additional support for the associations between EC and greater use of task-oriented coping and less use of disengagement-oriented coping.[17,18] In addition, players evolving in a social environment that fulfilled psychological needs for autonomy, competence, and relatedness were more inclined to engage in "high TOC" profile. More specifically, players with high need satisfaction for autonomy and relatedness were more inclined to engage in "high TOC" profile than "low COPE" and "high DOC" profiles, respectively. Additionally, players with high competence need satisfaction were more inclined to engage in "low COPE" and "high TOC" profiles, while players with unsatisfied competence need were more inclined to engage in "high DOC" profile. These results provide additional evidence of the role played by psychological need fulfillment versus thwarting in the different ways athletes deal with stress.[22] By exploring the effects of individual and social resources on profile membership, the present study provides further insight into the coping profiles of adolescent football players and, more generally, of athletes under significant stress.[11,13,14]

Lastly, the present study explored the adaptiveness of coping profiles by investigating whether they differed in terms of individual and team perceived stress intensity, interpersonal coping orientation, subjective team performance, as well as demographic characteristics. The findings show that "high TOC" profile differed significantly from the other two in terms of individual perceived stress, engagement in interpersonal coping strategies and gender. Players with "High TOC" profile displayed lower levels of individual perceived stress intensity and greater engagement in interpersonal coping strategies (i.e., problem-focused communal efforts, relationship-focused coping, and communal management of emotions). These findings replicate previous sport studies by indicating that a coping profile related to greater use of task-oriented coping and lower use of disengagement-oriented coping was associated with better adjustment[11,13,14] and adaptive interpersonal coping approach.[14] Players endorsing a "high TOC" profile appeared to have more adaptive responses to competitive stress. This may be explained by the individual and social resources at their disposal,[7,19,22] especially in the context of elite football training centers. In addition, the high proportion of girls in this profile is also consistent with previous studies showing that girls/women prefer to use high levels of active coping and support seeking strategies when dealing with stress.[12,14]

Conversely, players endorsing a "high DOC" profile experienced the highest levels of individual perceived stress intensity and engaged more in maladaptive interpersonal coping strategies (i.e., communal goal withdrawal). These results corroborate previous research showing that athletes using preferentially high levels of disengagement-oriented coping in combination with low levels of task-oriented coping were characterized by lower psychological adjustment[11,13,14] and greater engagement in maladaptive interpersonal coping.[14] As players in the "high DOC" profile have inadequate individual and social resources, this may further explain why they engaged in maladaptive coping when faced with competitive stress, individually and collectively.[7,19,22] Furthermore, this profile contained a higher proportion of boys than other coping profiles. This confirms that adolescent boys are more likely to rely on disengagement-oriented coping strategies.[12] Gender differences in the composition of "high TOC" and "high DOC" profiles may reflect girls' tendency to place a higher value on interpersonal relationships,[40] which may also explain why athletes in both these profiles have opposing interpersonal coping orientations.

Finally, the "low COPE" profile was associated with a low level of individual perceived stress intensity and low engagement in interpersonal coping strategies. As previously indicated, low copers may use coping strategies to a lesser extent because they perceive sport competition as less challenging and unthreatening.[11] The fact that they individually felt less concerned by competitive stress may also explain why they were less oriented toward interpersonal coping. However, this profile deserves additional consideration given that the results of previous sport studies are somewhat ambiguous as regards its adaptiveness.[11,13] Nevertheless, low copers seemed to benefit from more individual and social resources (i.e., intrapersonal emotional competence and competence need satisfaction) than disengaged copers, which may have helped them to adapt more effectively to the competitive environment of elite training centers. No differences were found between coping profiles in terms of age, experience playing football, team perceived stress, and subjective team performance, which may reflect the homogeneity of the sample.

The results should be interpreted in the context of study limitations. First, although the results suggest a potential generalization of certain coping profiles across different contexts and populations, the specificity of the sample, composed exclusively of adolescent football players, may preclude hasty generalization to other team sports and/or to the population of adult players. Second, given the various stressors adolescent athletes experience in sport as well as other areas of their life, only measuring coping strategies in competition may limit the investigation of coping profiles of adolescent athletes involved in elite training centers. Future research might also focus on the most common measures of coping in sport to facilitate comparison of athletes' coping profiles across studies.[11,13] Finally, this study adopted a cross-sectional design, where data were collected at a single point. Thus, conclusions cannot be drawn regarding causal relationships among variables. Use of a longitudinal design and the monitoring of coping strategies at multiple points in time could provide a more detailed portrait of the dynamic of coping profiles over the course of a competitive season or a career. In that way, the effects of individual and social resources, such as emotional competence and psychological need satisfaction, on the evolution of coping profile membership and its associated adaptiveness could be further examined in accordance with the fluctuating demands of a competitive season for athletes involved in elite training centers.

5 | PERSPECTIVES

Overall, the present study contributes to a better understanding of the distinct ways in which adolescent football players involved in elite training centers combine coping strategies when dealing with competitive stress.[1–4] Moreover, additional evidence of the adaptiveness of the three identified coping profiles was provided based on differences in experiencing individual stress, engaging in interpersonal coping, and gender.[11,13,14] Further, the role played by individual (i.e., emotional competence) and social resources (i.e., psychological need satisfaction) on coping profile membership provides further insight into athletes' coping profiles in the context of elite training centers. Consequently, the results of this study have implications for the development and tailoring of psychoeducational interventions and/or mental training for adolescent football players exhibiting maladaptive coping profiles (i.e., high DOC). A coping profile approach may provide researchers and sport psychology practitioners with a useful way of identifying players at risk of maladaptive coping and, subsequently, assist in shaping interventions to suit the unique characteristics of the targeted group. In addition, this could help coaches create a supportive training environment to foster athletes' adaptive functioning, especially in elite football training centers.[22]

ACKNOWLEDGEMENTS

The authors would like to express sincere gratitude to French Football Federation who supported the present article and male and female players who participated in this study.

FUNDING INFORMATION

This research was supported by a CIFRE grant (no. 2015/1174) from the French Football Federation and the French National Association of Research and Technology.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available upon request from the corresponding author.

ORCID

Julie Doron https://orcid.org/0000-0002-3967-709X
Meggy Hayotte https://orcid.org/0000-0003-3418-3485
Fabienne d'Arripe-Longueville https://orcid.org/0000-0002-1176-3279
Chloé Leprince https://orcid.org/0000-0002-1541-3559

REFERENCES

1. Holt NL, Hoar S, Fraser SN. How does coping change with development? A review of childhood and adolescence sport coping research. *Eur J Sport Sci*. 2005;5(1):25-39. doi:10.1080/17461390500076915
2. Reeves CW, Nicholls AR, McKenna J. Stressors and coping strategies among early and middle adolescent premier league academy soccer players: differences according to age. *J Appl Sport Psychol*. 2009;21(1):31-48. doi:10.1080/10413200802443768
3. Saby Y, Pupier Y, Guillet-Descas E, Nicolas M, Martinent G. Longitudinal emotional process among adolescent soccer player in intensive training Centre. *J Sports Sci*. 2020;38(11–12):1368-1379. doi:10.1080/02640414.2019.1662538
4. Sagar SS, Busch BK, Jowett S. Success and failure, fear of failure, and coping responses of adolescent academy football players. *J Appl Sport Psychol*. 2010;22(2):213-230. doi:10.1080/10413201003664962
5. Lazarus R, Folkman S. *Stress, Appraisal, and Coping*. Springer Publishing; 1984.
6. Gaudreau P, Blondin JP. Development of a questionnaire for the assessment of coping strategies employed by athletes in competitive sport settings. *Psychol Sport Exerc*. 2002;3(1):1-34. doi:10.1016/S1469-0292(01)00017-6
7. Mills A, Butt J, Maynard I, Harwood C. Identifying factors perceived to influence the development of elite youth football academy players. *J Sports Sci*. 2012;30(15):1593-1604. doi:10.1080/02640414.2012.710753
8. Van Yperen NW. Why some make it and others do not: identifying psychological factors that predict career success in professional adult soccer. *Sport Psychol*. 2009;23(3):317-329. doi:10.1123/tsp.23.3.317
9. Doron J, Trouillet R, Maneveau A, Neveu D, Ninot G. Coping profiles, perceived stress and health-related behaviors: a cluster analysis approach. *Health Promot Int*. 2015;30(1):88-100. doi:10.1093/heapro/dau090
10. Eisenbarth C. Coping profiles and psychological distress: a cluster analysis. *North Am J Psychol*. 2012;14:485-496.
11. Gaudreau P, Blondin JP. Different athletes cope differently during a sport competition: a cluster analysis of coping. *Personal Individ Differ*. 2004;36(8):1865-1877. doi:10.1016/j.paid.2003.08.017
12. Herres J. Adolescent coping profiles differentiate reports of depression and anxiety symptoms. *J Affect Disord*. 2015;186:312-319. doi:10.1016/j.jad.2015.07.031
13. Martinent G, Nicolas M. A latent profile transition analysis of coping within competitive situations. *Sport Exerc Perform Psychol*. 2016;5(3):218-231. doi:10.1037/spy0000062
14. Pété E, Leprince C, Lienhart N, Doron J. Dealing with the impact of the COVID-19 outbreak: are some athletes' coping profiles more adaptive than others? *Eur J Sport Sci*. 2022;22(2):237-247. doi:10.1080/17461391.2021.1873422
15. Laborde S, Dosseville F, Allen MS. Emotional intelligence in sport and exercise: a systematic review: emotional intelligence. *Scand J Med Sci Sports*. 2016;26(8):862-874. doi:10.1111/sms.12510
16. Brasseur S, Grégoire J, Bourdu R, Mikolajczak M. The profile of emotional competence (PEC): development and validation of a self-reported measure that fits dimensions of emotional competence theory. García O, ed. *PLoS One*. 2013;8(5):e62635. doi:10.1371/journal.pone.0062635
17. Cowden RG. Mental toughness, emotional intelligence, and coping effectiveness: an analysis of construct interrelatedness among high-performing adolescent male athletes. *Percept Mot Skills*. 2016;123(3):737-753. doi:10.1177/0031512516666027
18. Laborde S, Dosseville F, Guillén F, Chávez E. Validity of the trait emotional intelligence questionnaire in sports and its links with performance satisfaction. *Psychol Sport Exerc*. 2014;15(5):481-490. doi:10.1016/j.psychsport.2014.05.001
19. Compas BE, Connor-Smith JK, Saltzman H, Thomsen AH, Wadsworth ME. Coping with stress during childhood and adolescence: problems, progress, and potential in theory and research. *Psychol Bull*. 2001;127(1):87-127. doi:10.1037/0033-2909.127.1.87
20. Deci EL, Ryan RM. The "what" and "why" of goal pursuits: human needs and the self-determination of behavior. *Psychol Inq*. 2000;11(4):227-268. doi:10.1207/S15327965PLI1104_01
21. Quested E, Ntoumanis N, Viladrich C, et al. Intentions to drop-out of youth soccer: a test of the basic needs theory among European youth from five countries. *Int J Sport Exerc Psychol*. 2013;11(4):395-407. doi:10.1080/1612197X.2013.830431
22. Taylor IM, Bruner MW. The social environment and developmental experiences in elite youth soccer. *Psychol Sport Exerc*. 2012;13(4):390-396. doi:10.1016/j.psychsport.2012.01.008
23. Ng JYY, Lonsdale C, Hodge K. The basic needs satisfaction in sport scale (BNSSS): instrument development and initial validity evidence. *Psychol Sport Exerc*. 2011;12(3):257-264. doi:10.1016/j.psychsport.2010.10.006
24. Leprince C, D'Arripe-Longueville F, Doron J. Coping in teams: exploring Athletes' communal coping strategies to Deal with shared stressors. *Front Psychol*. 2018;9:1908. doi:10.3389/fpsyg.2018.01908
25. Tamminen KA, Neely KC. We're in this together: dyadic and interpersonal aspects of emotions, coping, and emotion regulation in sport. *Feelings in Sport: Theory, Research, and Practical Implications for Performance and Well-Being. Routledge Psychology of Sport, Exercise and Physical Activity*. Routledge/Taylor & Francis Group; 2021:58-69. doi:10.4324/9781003052012-8

26. Holt NL, Hogg JM. Perceptions of stress and coping during preparations for the 1999 Women's soccer world cup finals. *Sport Psychol*. 2002;16(3):251-271. doi:10.1123/tsp.16.3.251
27. Taber KS. The use of Cronbach's alpha when developing and reporting research instruments in science education. *Res Sci Educ*. 2018;48(6):1273-1296. doi:10.1007/s11165-016-9602-2
28. Gillet N, Rosnet E, Vallerand RJ. Développement d'une échelle de satisfaction des besoins fondamentaux en contexte sportif. *Can J Behav Sci Rev Can Sci Comport*. 2008;40(4):230-237. doi:10.1037/a0013201
29. Kowalski KC, Crocker PRE. Development and validation of the coping function questionnaire for adolescents in sport. *J Sport Exerc Psychol*. 2001;23(2):136-155. doi:10.1123/jsep.23.2.136
30. Leprince C, d'Arripe-Longueville F, Chanal J, Doron J. Development and preliminary validation of the communal coping strategies inventory for competitive team sports. *Psychol Sport Exerc*. 2019;45:101569. doi:10.1016/j.psychsport.2019.101569
31. Pensgaard AM, Duda JL. Sydney 2000: the interplay between emotions, coping, and the performance of Olympic-level athletes. *Sport Psychol*. 2003;17(3):253-267. doi:10.1123/tsp.17.3.253
32. Schafer JL. Multiple imputation: a primer. *Stat Methods Med Res*. 1999;8(1):3-15. doi:10.1177/096228029900800102
33. Muthén LK, Muthén BO. *Mplus: Statistical Analysis with Latent Variables: User's Guide (Version 8)*. Muthén & Muthén; 2017.
34. Ferguson SL, Moore EWG, Hull DM. Finding latent groups in observed data: a primer on latent profile analysis in Mplus for applied researchers. *Int J Behav Dev*. 2020;44(5):458-468. doi:10.1177/0165025419881721
35. Lanza ST, Bray BC, Collins LM. An introduction to latent class and latent transition analysis. *Handbook of Psychology*. Vol 2. Wiley; 2013:691-716.
36. Berlin KS, Williams NA, Parra GR. An introduction to latent variable mixture modeling (part 1): overview and cross-sectional latent class and latent profile analyses. *J Pediatr Psychol*. 2014;39(2):174-187. doi:10.1093/jpepsy/jst084
37. González-García H, Martinent G. Perceived anger profiles in table tennis players: relationship with burnout and coping. *Psychol Sport Exerc*. 2020;50:101743. doi:10.1016/j.psychsport.2020.101743
38. Cohen J. *Statistical Power Analysis for the Behavioral Sciences*. Routledge; 2013. doi:10.4324/9780203771587
39. Lee S, Lee DK. What is the proper way to apply the multiple comparison test? *Korean J Anesthesiol*. 2018;71(5):353-360. doi:10.4097/kja.d.18.00242
40. Rudolph KD. Gender differences in emotional responses to interpersonal stress during adolescence. *J Adolesc Health*. 2002;30(4):3-13. doi:10.1016/S1054-139X(01)00383-4

How to cite this article: Doron J, Hayotte M, d'Arripe-Longueville F, Leprince C. Coping profiles of adolescent football players and association with interpersonal coping: Do emotional competence and psychological need satisfaction matter? *Scand J Med Sci Sports*. 2023;00:1-11. doi:10.1111/sms.14550