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Effects of parental support and coach-initiated motivational climate on young athletes' psychosocial behaviors and well-being

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ABSTRACT

This study examined the effect of coach-initiated motivational climate and parental support on intrinsic motivation, enjoyment of sport participation, subjective vitality, sport-related violence, and academic achievement of youth soccer players. The second purpose was to examine if intrinsic motivation mediates the impact of coach-initiated climate and parental support on the above endogenous variables. Two measurements Time 1 (T1) and Time 2 (T2) were conducted. In T1, 494 young soccer male athletes completed surveys of coach-created motivational climate, parental praise and understanding, intrinsic motivation, sport-related violence, vitality, sport enjoyment and Grade Point Average (GPA). After five months, 188 of those soccer athletes responded again to the same surveys (T2). In both measurements the findings suggest that perceived coach-initiated empowering climate and parental praise and understanding have indirect effects on sport-related violence, GPA, vitality and sport enjoyment through intrinsic motivation in sport.

Introduction

Participation in organized sports has been mostly linked with positive elements of youth development such as improvements in well-being (e.g., Valois et al., 2004), higher levels of physical activity (e.g., Vella et al., 2016), better cognitive function and academic achievement (e.g., Alvarez-Bueno et al., 2017). On the other hand, some negative effects of sport involvement on young people's healthy development have been also noted such as higher levels of performance anxiety and depression symptoms (e.g., Patel et al., 2010), unethical and violent behaviors (e.g., Sønderlund et al., 2014), adoption of unhealthy habits and doping (e.g., Laure et al., 2004; Sønderlund et al., 2014).

Several authors have suggested that participation in sport might have either positive or negative effects on athletes' psychosocial development depending on the role of socialization agents, particularly coaches and parents (e.g., Bean et al., 2014; Papaioannou et al., 2008). Recently, Dorsch et al. (2020) proposed the multidimensional "*heuristic model of the youth sport system*" according to which athlete's internal factors (e.g., age, gender, race, sexuality, socio-economic status, ability, goals), parents and siblings (referring to the *family subsystem*), coaches and peers (referring to the *team subsystem*) and organizations, communities and societies (referring to the *environmental subsystem*) have a significant, independent or combined impact on young athletes' behavior and psychosocial development.

The present study will focus on the motivational processes through which coaches and parents impact on selected indices of adolescents' psychosocial behaviors and affect across different life contexts, i.e., sport, school, peer and life in general. Accordingly, we focused on enjoyment in sport, academic achievement, fan's participation in violent events and vitality respectively. Those motivational outcomes were selected based on previous research showing that participation in regular physical activity and organized sports is positively related with enjoyment in sports (e.g., Motl et al., 2001), well-being (e.g., Valois et al., 2004), academic achievement (e.g., Alvarez-Bueno et al., 2017) but also with young fan's engagement in violent rows in sports events (e.g., Fields et al., 2010; Papaioannou, 1997; Papaioannou et al., 2004). The latter seemingly contradicts with the general notion that sport involvement is a health-promoting behavior. Papaioannou et al. (2004) found that in line with problem behavior theory (Jessor et al., 1995), fans' engagement in sport-related violence can be conceptualized as health-compromising behavior because it had strong positive relationships with other health-risks in peer settings such as smoking and drug use; interestingly though, while engagement in sport-related violence was positively linked to sport involvement, the association of attitudes towards

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sport involvement with attitudes towards engagement in sport-related violence and other health-risks was inversely related. These authors argued that although in adolescents' minds sport involvement has positive health connotations, it is the goal structure created by coaches and significant others that might eventually lead to health compromising behaviors such as engagement in violent rows. Their argument is in line with findings indicating that the positive relationship between participation in sport and fans' engagement in sport-related violence was accounted for by adolescents' goal to outperform others, while for adolescents focused on personal progress no association between sport involvement and sport-related violence existed (Papaioannou, 1997). Furthermore, according to Di Biase (2017) "*athlete violence can partially be traced to pressure from the parents and coaches to perform well in competition*" (p. 76).

Still, up to now there is no study investigating the effects of goal structures created by coaches and parents on young athletes' engagement in violent rows as fans. This will be examined here alongside the simultaneous effects of perceived coach behaviors and parental support on motivational outcomes that are inversely related to health-risks (Jessor et al., 1995), i.e., academic performance. These findings will be compared with the simultaneous effects of perceived coach behaviors and parental support on sport enjoyment and vitality. Although the latter have been examined in sport psychology literature, it would be important to know whether these patterns are similar to patterns linking coaches' behaviors and parental support with academic performance and inverse to patterns associating coaches' and parents' behavior to fans' engagement in sport violence. If the latter is true, then there is reason for optimism that instructions to coaches and parents aiming to promote sport enjoyment and well-being might have general positive connotations for the prevention of fan's related violence and maybe the prevention of other health-risks that might be examined in the future.

Climate created by coaches and parents

Initial research on motivational climate created by significant others was primarily based on Achievement Goal Theory (AGT) focused on the mastery/task-involving versus performance/ego-involving dimensions of motivational climate (e.g., Ames, 1992). This research showed that the higher the coaches' emphasis on athletes' mastery and both personal and collective progress, the more intrinsically motivated the athletes (e.g., Álvarez et al., 2012), the higher the athletes' enjoyment in sport (e.g., Jaakkola et al., 2016), and the higher their well-being (e.g., Álvarez et al., 2012; Reinboth & Duda, 2006). Some studies showed that perceived task-involving climate in youth sport is positively linked with academic achievement (e.g., Papaioannou et al., 2008) and negatively associated with unethical and antisocial behaviors (e.g., Miller et al., 2004). On the other hand, ego-involving climate in sport has been found to be either unrelated or negatively related to intrinsic motivation (e.g., Álvarez et al., 2012) and well-being (e.g., Reinboth & Duda, 2006), but positively related to antisocial behavior (e.g., Kavussanu, 2006; Miller et al., 2004).

More recently, based on Self-Determination Theory (SDT; Ryan & Deci, 2017), researchers focused on additional dimensions of climate: a) the autonomy supportive climate, when coaches emphasize athletes' satisfaction of basic psychological needs of autonomy (athletes have *choice*, can take initiatives on their own to take action related to training or game), competence (athlete feels able to *succeed at optimally challenging tasks*) and relatedness (athlete has good relations with the coach and teammates), and b) the controlling and unsupportive climate, when coaches thwart athletes' basic psychological needs (e.g., emphasizing pressure, punitive behaviors, etc.) (e.g., Adie et al., 2012; Fenton et al., 2014). Research in youth sport unveiled that an autonomy supportive climate is positively linked with satisfaction of the basic psychological needs of autonomy, competence and relatedness (e.g., Adie et al., 2012;), intrinsic motivation (e.g., Fenton et al., 2014), enjoyment (e.g., Álvarez et al., 2009), prosocial behaviors (e.g., Hodge & Gucciardi, 2015), and subjective vitality and well-being (e.g., Adie et al., 2012; Smith et al., 2010). In contrast, a controlling climate is positively linked with maladaptive variables such as controlled motivation (Fenton et al., 2014), emotional and physical exhaustion (Adie et al., 2012) and antisocial behaviors (Hodge & Gucciardi, 2015). Moreover, a controlling climate is negatively linked with youth players' well-being (e.g., Smith et al., 2010).

Recently, Duda (2013) integrated perspectives of AGT and SDT to conceptualize climate as "*Empowering*" or "*Disempowering*". Empowering refers to situations where the coaches emphasize task or mastery goals (e.g., personal improvement, self-referred ability, high effort, cooperation), autonomy support (e.g., giving choice and voice to the participants, taking into account players' perspective, involving players in decision making) and social support (e.g., showing that they care for their athlete as a person). A disempowering climate is created when coaches give emphasis on ego or performance goals (e.g., performing better than others, overcoming others, "*be the best*", ability is defined with normative criteria), social comparison and controlling (e.g., putting pressure on players, autocratic and coercive behaviors, punitive responses to mistakes, no choice or decision making) and thwarting of social relationships (e.g., being unresponsive to athletes' needs). To date, a small number of studies have been carried out using Duda's (2013) proposed dimensions of Empowering-Disempowering in youth sports. More specifically, research has shown that an empowering climate is positively linked with athletes' enjoyment and global self-esteem (Appleton & Duda, 2016), and satisfaction of autonomy and relatedness (Smith et al., 2016). In contrast, a disempowering climate is positively associated with athletes' burnout and symptoms of ill-health (Appleton & Duda, 2016), and negatively related to enjoyment (Appleton & Duda, 2016) and satisfaction of relatedness (Smith et al., 2016).

Holt et al. (2008) interviewed and observed parents in relation to their children's participated in sport and categorized over one hundred and sixty thousands parental words to their children in a continuum ranging from more supporting (i.e., love, nurturance, attachment) to more controlling (i.e., punishment, discipline, supervision). Praise and encouragement was the most supportive and least controlling category. Similarly, Dorsch and his colleagues (2015) observed that parental verbal sideline behaviors in organized youth sport focused primarily on instruction, praise/encouragement, and performance-contingent feedback and less on negative and/or derogatory comments. Research has shown that when parents support their children's autonomy providing praise and encouragement, young athletes are more self-determined and intrinsically motivated (e.g., Amorose et al., 2016), have higher levels of sport enjoyment or satisfaction (e.g., Sánchez-Miguel et al., 2013) and higher academic performance (e.g., Papaioannou et al., 2008). On the other hand, higher levels of parent pressure are associated with youth athletes' lower levels of sport enjoyment and less commitment to continue sport participation (Dunn et al., 2016) and higher levels of anxiety and burnout (Holt et al., 2008).

Intrinsic motivation as mediator between coaches/parents and motivational outcomes

According to SDT (Ryan & Deci, 2017) and its implications for coaches' behaviors (e.g., Duda, 2013) and parental behavior in sport (Bean et al., 2014), *the climate* created by coaches and parents determines athletes' intrinsic motivation in sport, which in turn has positive effects on athletes' psychosocial development. Intrinsic motivation is the most self-determined or else the most autonomous type of motivation (Ryan & Deci, 2017), which is experienced when individuals engage in activities for their own fun, or because they just like it.

Previous findings in youth sport imply that intrinsic or self-determined motivation is positively related with enjoyment (e.g., Gråstén et al., 2012), academic achievement (e.g., Areepattamannil et al., 2011), prosocial or moral behaviors (e.g., Ntoumanis & Standage, 2009), positive affect (e.g., Standage et al.,

Table 1
Participants' characteristics at T1 and T2 measurements.

T1	T2
Total participants: 494 soccer players	Total participants: 188 soccer players
Boys: 471 (23 not reported their gender)	Boys: 182 (six not reported their gender)
Ten soccer clubs	Eight soccer clubs
Age: 8 to 15 years old	Age: 9 to 15 years old
Mean age: 11.51 ± 1.58 years	Mean age: 11.69 ± 1.58 years
Elementary school pupils: 68.3%	Elementary school pupils: 60.8%

2005) and well-being (e.g., Vlachopoulos, 2012). Importantly, intrinsic or self-determined motivation was a significant mediator between motivational climate created by coaches and adaptive motivational outcomes such as enjoyment (Álvarez et al., 2009), positive affect (Standage et al., 2005) and subjective vitality (Álvarez et al., 2012).

Purpose and hypotheses

There is no research on the effects of perceived coach-initiated climate and parental support on young athletes' engagement in violent rows as fans in a sport event. While few studies examined the simultaneous association of both coach-created climate and parental support with positive or negative dimensions of youths' development (e.g., Amorose et al., 2016; Chu & Zhang, 2019; Dorsch et al., 2016) none of them focused on academic performance and the mediational role of intrinsic motivation in sport. No longitudinal study examined the simultaneous impact of coach-created empowering climate and parental support on athletes' psychosocial development. Accordingly, we decided to investigate the mediational effects of intrinsic motivation between perceived coach-created climate and parental support on fan's engagement in sport violence, athletes' academic performance, sport enjoyment and well-being, adopting both a longitudinal and a cross-sectional design. Although the former is more preferable from a methodological standpoint it is more costly, which explains the limited number of longitudinal studies in this area. Because this trend with more cross-sectional and less longitudinal designs will probably continue, we provide results stemming both from cross-sectional and longitudinal designs, allowing readers to compare the present findings stemming from the two different designs with others' in the future that might be cross-sectional or longitudinal.

To sum up, the first purpose of this study was to examine the direct effect of coach-initiated climate and parental support on the dependent variables of fan's violence, academic achievement, enjoyment in sport, vitality and intrinsic motivation in sport of youth soccer players. The second purpose was to examine if intrinsic motivation mediate the impact of coach-initiated climate and parental support on the four motivational outcomes of the present study. We hypothesized that: 1) Empowering coaching climate and parental support will be positive predictors on intrinsic motivation, academic achievement, sport enjoyment and subjective vitality of youth soccer players and negative predictors of fans' violence, and 2) Intrinsic motivation will mediate the effects of empowering and disempowering coach-initiated climate and parental support on fan's violence, academic achievement, sport enjoyment and subjective vitality. We examined these hypotheses through Structural Equation Modeling (SEM) using data stemming from a cross-sectional survey (T1) and then from a longitudinal survey with a smaller sample (T2). This approach allows the comparison of the same models when cross-sectional or longitudinal designs are adopted.

Methods

Participants and measurement procedures

T1

Athletes shown in Table 1 were from Athens, Greece, who voluntarily participated in T1 measure following a public call (social media, newspapers). Athletes completed the instruments shown below about two months after the start of the training season. Questionnaire completion was made following approval of the university ethics committee and the written consent of parents and athletes. They filled out the questionnaires immediately before a training session in a quiet place. During the questionnaire completion, a researcher was present who provided clarifications if needed.

T2

Five months after completion of T1 measures, participants shown in Table 1 responded again to the same measures of intrinsic motivation, sport-related violence, vitality and enjoyment. Most athletes in elementary schools did not report new grades since T1 measurement; hence we excluded GPA from T2 analyses. A typical youth soccer training season in Greece lasts from September to middle of June with the clubs having a small break at Christmas and Easter.

Measures

Coach-initiated motivational climate

The Greek version (Krommidas et al., 2016) of the Coach-created Empowering and Disempowering Motivational Climate Questionnaire (EDMCQ-C) (Appleton et al., 2016) was used, including the items delivered in the European PAPA project to capture motivational climate created by Greek coaches in soccer grassroots teams (Duda, 2013). Appleton et al. (2016) suggested three empowering climate factors, that is, task-involving (e.g., "*My coach encouraged players to try new skills*"), autonomy supportive (e.g., "*My coach gave players choices and options*") and social support behaviors (e.g., "*My coach really appreciated players as people, not just as athletes*"), and two disempowering climate factors, that is, ego-involving (e.g., "*My coach substituted players when they made mistakes*") and controlling behaviors (e.g., "*My coach was less supportive of players when they were not training and/or playing well*"). In Greece, a two-factor model consisted of 14 Empowering climate variables (eight task-involving items, three autonomy supportive items and three social support items) and ten Disempowering climate variables (five ego-involving items and five controlling behaviors items) fit the data well (Krommidas et al., 2016). All players' responses were given in a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

Parental support

Parental support was assessed with five items of the Greek version (e.g., Giannitsopoulou et al., 2010) of the Parental Involvement in Sport Questionnaire (Lee & MacLean, 1997). Three items captured praise and understanding ("*after a match do your parents praise you for trying hard/for the good things you did?"; "do your parents show they understand how you are feeling about your sport?"*) and two items active involvement (e.g., "*do your parents encourage you to talk to them about any problems or worries you may have in your sport*"; "*do your parents change their schedule so that you can train and go to matches?*"). All answers were given on 5-point Likert scale from 1 (*never*) to 5 (*always*).

Intrinsic motivation

Intrinsic motivation was measured using the Greek version (Viladrich et al., 2013) of the Behavioral Regulation in Sport Questionnaire (BRSQ; Lonsdale et al., 2008). This scale consisted of 4 items (e.g., "*I play football because I enjoy it*") and participants' responses were given in a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

Enjoyment of sport participation

To measure enjoyment of sport participation we used a sub-scale of the Intrinsic Motivation Inventory (IMI; McAuley et al., 1989). This subscale consisted of four items *(e.g., "During the last 3-4 weeks … I usually*

Table 2
Means, standard deviations and alpha reliabilities for scales in T1 measure and pearson correlations among scales.

				Correlations						
	Mean	**SD**	**alpha**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1. Empowering Cl.	3.97	.48	.72	1						
2. Disempowering Cl.	2.38	.66	.61	-.30***	1					
3. Parental Support	3.62	.81	.66	.35***	-.06	1				
4. Intrinsic motivation	4.41	.62	.71	.31***	-.07	.27***	1			
5. Enjoyment	4.36	.61	.71	.30***	-.18***	.26***	.47***	1		
6. Vitality	3.94	.72	.79	.33**	-.13**	.33***	.31***	.52***	1	
7. Sport-rel. Violence	1.35	.96	.89	-.19***	.11*	-.08	-.19***	-.14***	-.06	1
8. GPA	-	-	.84	.09	-.12*	.16***	.17***	.12**	.02	-.17***

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

enjoyed the activities in football") and all answers were given in a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). In Greece, a large number of studies in the area of sport and physical education have previously used the IMI (e.g., Papacharisis & Goudas, 2003).

Subjective vitality

The Greek version (Krommidas et al., 2016; Vlachopoulos, 2012) of the Subjective Vitality scale (Ryan & Frederick, 1997) was used to capture youth players' well-being. This scale consisted of five items (e.g., "*I felt full of vitality*" or "*I felt I had a lot of energy*") and participants answers were given on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

Fan's violence

Fan's violence in sport events was captured with two items (e.g., "*Do you participate in violent actions as a fan of your team?*": YES-NO; 1) *If yes, number of times in the last month*: none, 1-2, 3-4, 5-6, 7-8, 9-10 or more; 2) *If yes, number of times in the last 12 months:* none, 1-5, 5-10, 10-15, 15-20, more than 20). Papaioannou and his colleagues (2004) have previously used similar items in order to detect involvement of Greek pupils in violent actions.

Academic achievement

Finally, to measure academic achievement participants reported the grade point average (GPA) of the last school year, which is the mean grade from all academic subjects, and the Greek language grade of the last school year, which is a core academic subject in Greece (Papaioannou et al., 2008). Then, *z*-scores were calculated for all marks.

Results

T1

Confirmatory Factor analyses (CFAs)

A number of CFAs were conducted to investigate factorial validity for each measure respectively. Among the Goodness-of-Fit Indices (GFI's) we focused particularly on χ^2, RMSEA, CFI and TLI with the latter being considered relatively unaffected by sample size (Marsh et al., 1988). Across each model maximum likelihood estimation was used and no correlated residuals were permitted.

A two-factor model was constructed for coach-initiated motivational climate. Factor one consisted of the 14 empowering climate variables and factor two comprised the ten disempowering variables suggested by Krommidas and his colleagues (2016). In the present sample the GFIs for this model were poor: χ^2 = 454, df = 251, χ^2/df = 1.81, CFI = .87, TLI = .84, RMSEA = .04. Based on modification indices we eliminated two empowering variables and four disempowering variables. The resulting 12-variable empowering factor comprised six task-involving climate variables, three autonomy support variables and three social support variables. The six-variable disempowering climate factor comprised three ego-involving climate variables and three variables suggesting coaches' controlling behavior. For this 2-factor model χ^2 = 195, df = 134, χ^2/df = 1.46, CFI = .920, TLI = .91, RMSEA = .04. The 1-factor parental support model comprising 5 observed variables fit the data well: χ^2 = 10, df = 5, χ^2/df = 2.00, CFI = .98, TLI = .96, RMSEA = .05.

We constructed a four-factor motivational outcomes model, consisted of (factor one) the four intrinsic motivation variables, (factor two) the four enjoyment variables, (factor three) the five vitality variables and (factor four) the two sport-related violence variables respectively. This four-factor model fit the data well: χ^2 = 181, df = 84, χ^2/df = 2.15, CFI = .96, TLI = .94, RMSEA = .05.

Reliability and correlations analyses

Cronbach's alpha reliabilities for each scale appear in Table 2. All alphas were above .60. Pearson product moment correlations between variables (Table 2) indicated that the valence of relationships was in line with expectations. These findings support the convergent and divergent validity of the present scales.

Regression analyses

We conducted five hierarchical regression analyses. All outcome variables (intrinsic motivation, enjoyment, vitality, violence in sport events and GPA) were regressed on (Step 1) age and then on (Step 2) parent support, coach empowering climate and coach disempowering climate (Table 3). Across all analyses, age had negative effect on enjoyment and GPA and positive effect on fan's violence, suggesting that participation in sport-related violent events was increasing with age. Coach-initiated disempowering climate had no effect on any dependent variable. Therefore disempowering climate was excluded from subsequent analyses. Both parental support and coach-initiated empowering climate had unique positive contribution in the explanation of variance of intrinsic motivation, enjoyment and vitality. Parental support had positive contribution in the explanation of GPA variance, while coach-initiated empowering climate had negative contribution in the explanation of variance of fan's violence. Based on these findings we examined the mediating role of intrinsic motivation between perceptions of social agents (parents-coach) and T1 outcomes, using SEM analysis.

SEM

We computed four models using AMOS statistical software. Across all models we created (1) two exogenous latent variables, perception of coach-initiated empowering climate and parental support and (1) one mediator latent variable, intrinsic motivation. Then, for each model

Table 3
Regression of T1 measure outcomes.

	Dependent variables									
	Intrinsic motivation		Enjoyment		Vitality		Sport-related violence		Grade Point Average	
Predictor	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.00		.03**		.06***		.02		.02*	
Age *		-.05		-.17***		-.25		.12*		-.15**
Step 2	.13***		.10***		.12***		.03**		.03*	
Parents' support		.21***		.17***		.23***		.01		.17**
Coach empowering Climate		.25***		.18***		.20***		-.17**		.00
Coach disempowering Climate		.04		-.08		-.02		.05		-.04
Total R^2	.13***		.13***		.18***		.05**		.05**	

Note. *A negative sign indicates higher scores for younger students.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

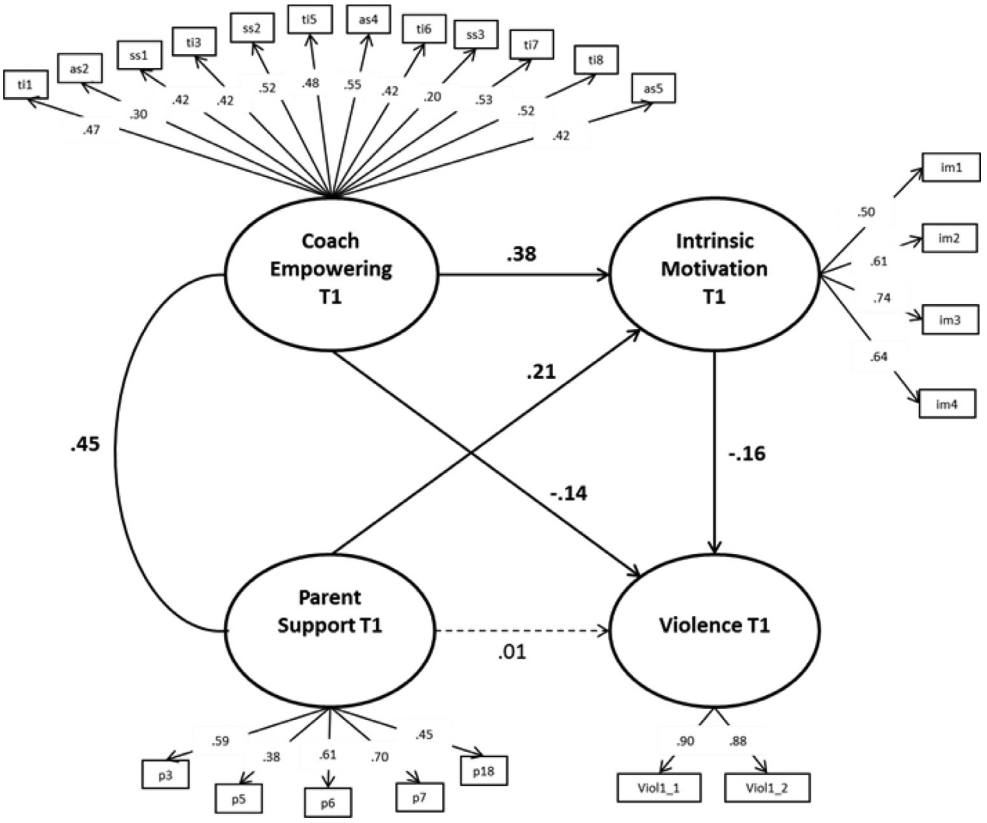

Fig. 1. Coefficients in arrows indicate standardized beta weights and the coefficient in curved line indicate correlation. For Model 1: $\beta = .38$, $p < .001$; $\beta = .21$, $p < .01$; $\beta = -.16$, $p < .03$; $\beta = -14$, $p < .06$; $r = .45$, $p < .001$.

Table 4
Goodness-of-fit indices of models 1-7.

Model	Endogenous variable	χ^2	df	χ^2/df	CFI	TLI	RMSEA
1	Violence T1	385	224	1.72	.92	.90	.04
2	GPA	367	224	1.64	.92	.90	.04
3	Vitality T1	470	293	1.60	.92	.91	.04
4	Enjoyment T1	440	269	1.64	.92	.90	.04
5	Violence T2	107	72	1.49	.96	.94	.03
6	Vitality T2	201	129	1.56	.94	.93	.03
7	Enjoyment T2	152	113	1.35	.97	.95	.03

we created one endogenous latent variable capturing violence in sport-related events, GPA, vitality and enjoyment in football respectively (Figs. 1-4). Following maximum likelihood estimation, GFIs for each model appear in Table 4.

Across all models:

- perceptions of coach-initiated empowering climate and parental support were positively related,
- the effects of both coach-initiated empowering climate and parental support on intrinsic motivation were statistically significant,
- the effect of intrinsic motivation on each endogenous variable (i.e., violence, GPA, vitality and enjoyment) was statistically significant.

These findings are in line with the assumption that perceived coach-initiated empowering climate and parental support have indirect effects on sport-related violence, GPA, vitality and enjoyment through intrinsic

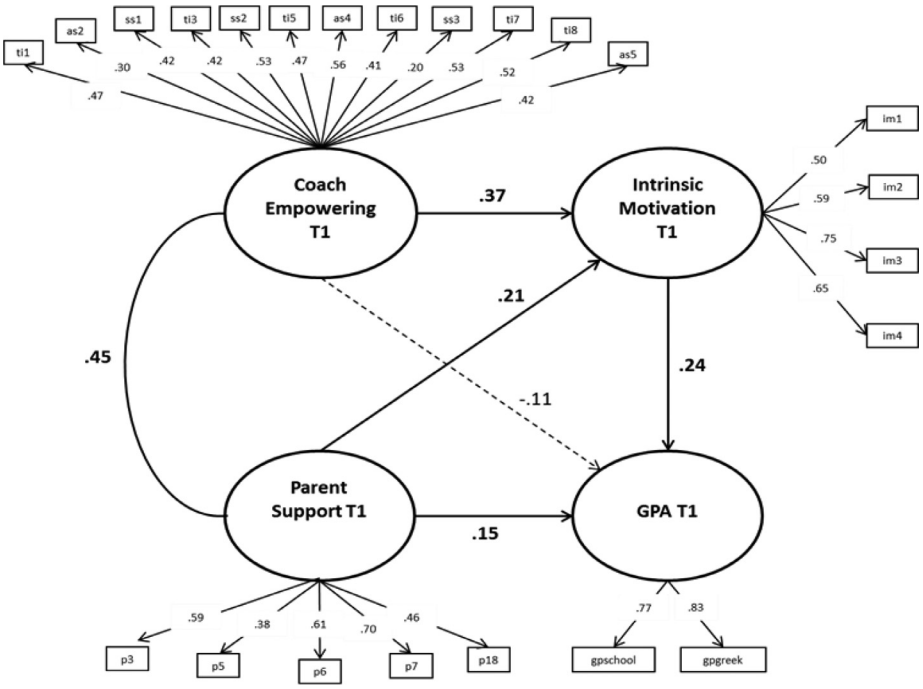

Fig. 2. Coefficients in arrows indicate standardized beta weights and the coefficient in curved line indicate correlation. For Model 2: $\beta = .37$, $p < .001$; $\beta = .24$, $p < .001$; $\beta = .21$, $p < .01$; $\beta = .15$, $p < .06$; $r = .45$, $p < .001$.

Table 5
Means, standard deviations and alpha reliabilities for scales in T2 measure and pearson correlations among scales.

Variables	Mean	SD	alpha	Correlations 1	2	3	4	5	6	7	8	9	10	11
1. Empowering Cl. T1	4.03	.46	.71	1										
2. Disempowering Cl. T1	2.36	.67	.60	-.23**	1									
3. Parents' Support T1	3.73	.84	.72	.48***	-.04	1								
4. Intrinsic motivation T1	4.55	.53	.70	.31***	-.12	.26***	1							
5. Enjoyment T1	4.41	.56	.70	.37***	-.12	.31***	.46***	1						
6. Vitality T1	4.03	.72	.83	.40***	-.13	.34***	.30**	.51**	1					
7. Sport-rel. Violence T1	1.33	.94	.91	-.20*	-.05	-.11	-.13	.00	.03	1				
8. GPA T1	-	-	.65	.10	-.18*	.14	.07	.04	-.06	.04	1			
9. Intrinsic motivation T2	4.39	.68	.76	.24**	-.15	.14	.27**	.23**	.24**	-.09	.09	1		
10 Enjoyment T2	4.30	.69	.76	.26**	-.11	.18*	.19*	.26**	.16*	-.15	.10	.51**	1	
11 Vitality T2	3.97	.75	.86	.32***	-.11	.21**	.13	.21**	.35**	-.06	-.01	.36**	.40**	1
12. Sport-rel. Violence T2	1.12	.33	.79	-.06	.08	-.05	-.02	-.11	-.09	.18*	-.09	-.26**	-.23**	.00

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

motivation. In line with hypotheses, intrinsic motivation had (1) negative effect on sport-related violence and (2) positive effects on GPA, vitality and enjoyment.

In Model 1, perceived coach-initiated empowering climate had a direct negative effect on violence but parental support did not. On the other hand, in Model 2, while parental support had a direct positive effect on GPA, coach-initiated empowering climate didn't. In Models 3 and 4, both perceived coach-initiated empowering climate and parental support had a direct positive effect on vitality and enjoyment.

T2

Correlation analysis

Pearson product moment correlations between Time 1 (T1) and Time 2 (T2) variables appear in Table 5. Although T2 variables had low correlations with T2 variables, the valence of relationships was in line with expectations.

SEM

We computed three models using T2 sport-related violence, T2 vitality and T2 enjoyment as endogenous latent variables in each model respectively (Figs. 5–7). Across all models (1) endogenous latent variables were T1 perceived parental support and T1 coach-initiated empowering climate, and (2) mediator was T2 intrinsic motivation latent variable.

Due to the relatively small sample size in T2 measurement, we reduced the number of parameters though division of the 12 observed T1 empowering climate variables to four parcels of observed variables; each parcel was the average of three T1 observed empowering climate variables that none of them were included in another parcel. For Model 5 particularly, we excluded variable one of T2 sport-related violence because inclusion of this variable resulted to non-admissible solution. Accordingly, in Model 5 endogenous variable was the observed variable two of T2 sport-related violence (Fig. 5). Following maximum likelihood estimation, GFIs for Models 5, 6 and 7 appear in Table 4.

Across all models:

- perceptions of coach-initiated empowering climate and parental support were significantly related,
- the effect of T1 coach-initiated empowering climate on T2 intrinsic motivation was statistically significant, but the effect of T1 parental support on T2 intrinsic motivation was non-significant,
- the effect of T2 intrinsic motivation on each T2 endogenous variable (i.e., violence, vitality and enjoyment) was statistically significant.

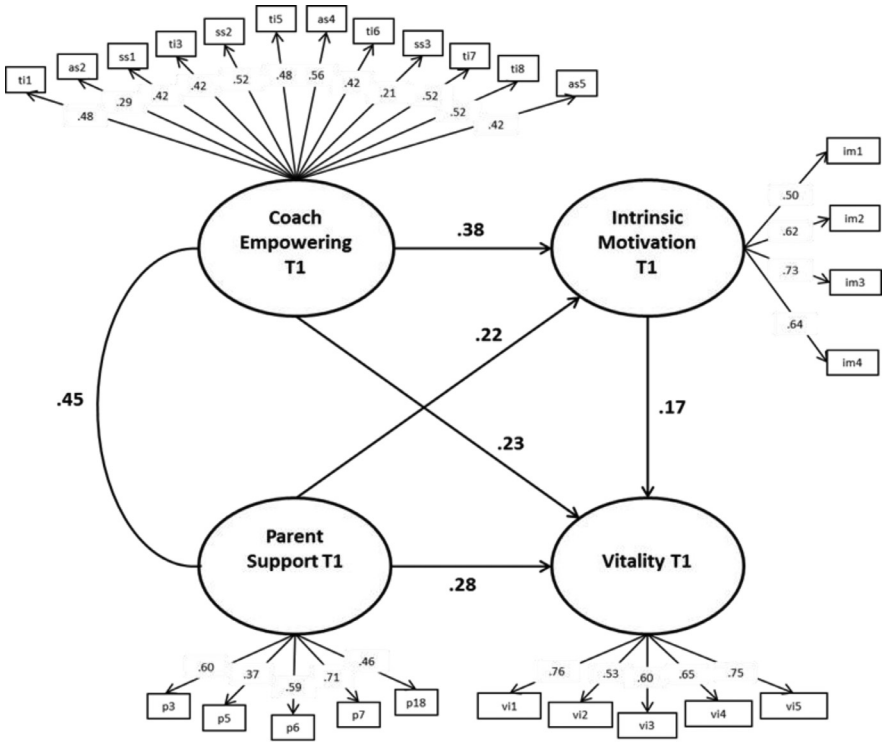

Fig. 3. Coefficients in arrows indicate standardized beta weights and the coefficient in curved line indicate correlation. For Model 3: $\beta = .38$, $p < .001$; $\beta = .28$, $p < .001$; $\beta = .23$, $p < .01$; $\beta = .22$, $p < .01$; $\beta = .17$, $p < .02$; $r = .45$, $p < .001$.

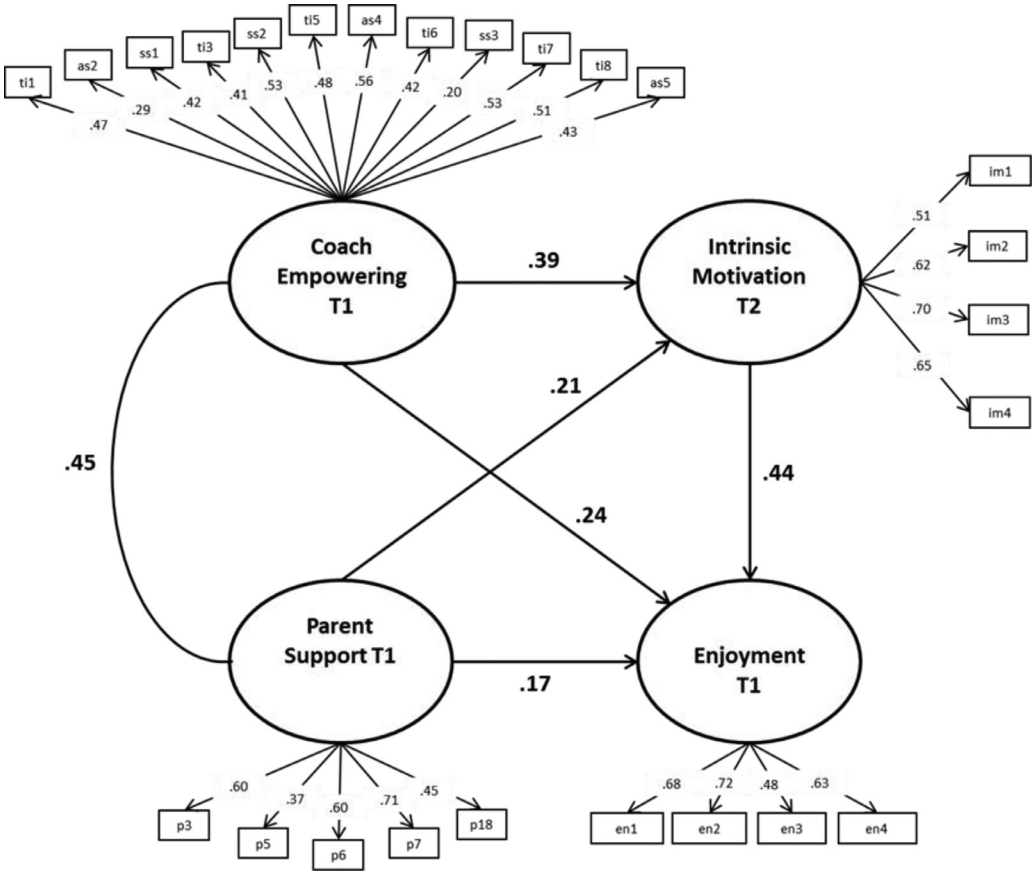

Fig. 4. Coefficients in arrows indicate standardized beta weights and the coefficient in curved line indicate correlation. For Model 4: $\beta = .44$, $p < .001$; $\beta = .39$, $p < .001$; $\beta = .24$, $p \leq .001$; $\beta = .21$, $p < .01$; $\beta = .17$, $p < .02$; $r = .45$, $p < .001$.

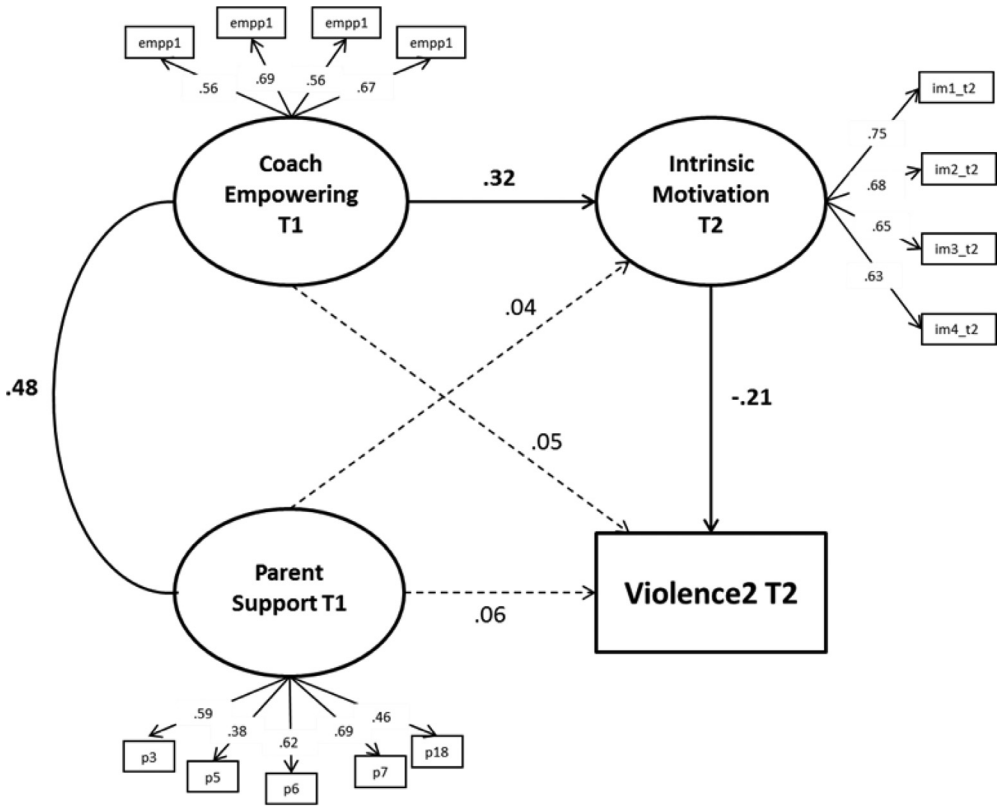

Fig. 5. Coefficients in arrows indicate standardized beta weights and the coefficient in curved line indicate correlation. For Model 5: $\beta = .32$, $p < .03$; $\beta = -.21$, $p < .04$; $r = .48$, $p < .001$.

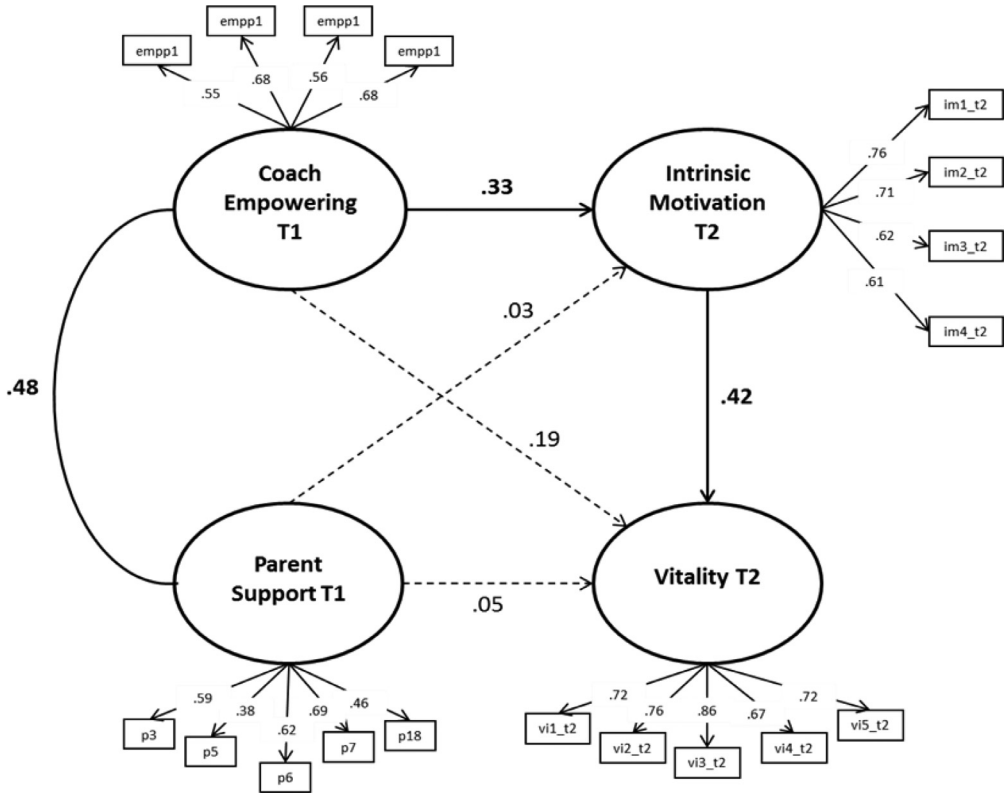

Fig. 6. Coefficients in arrows indicate standardized beta weights and the coefficient in curved line indicate correlation. For Model 6: $\beta = .42$, $p < .001$; $\beta = .33$, $p < .02$; $r = .48$, $p < .001$.

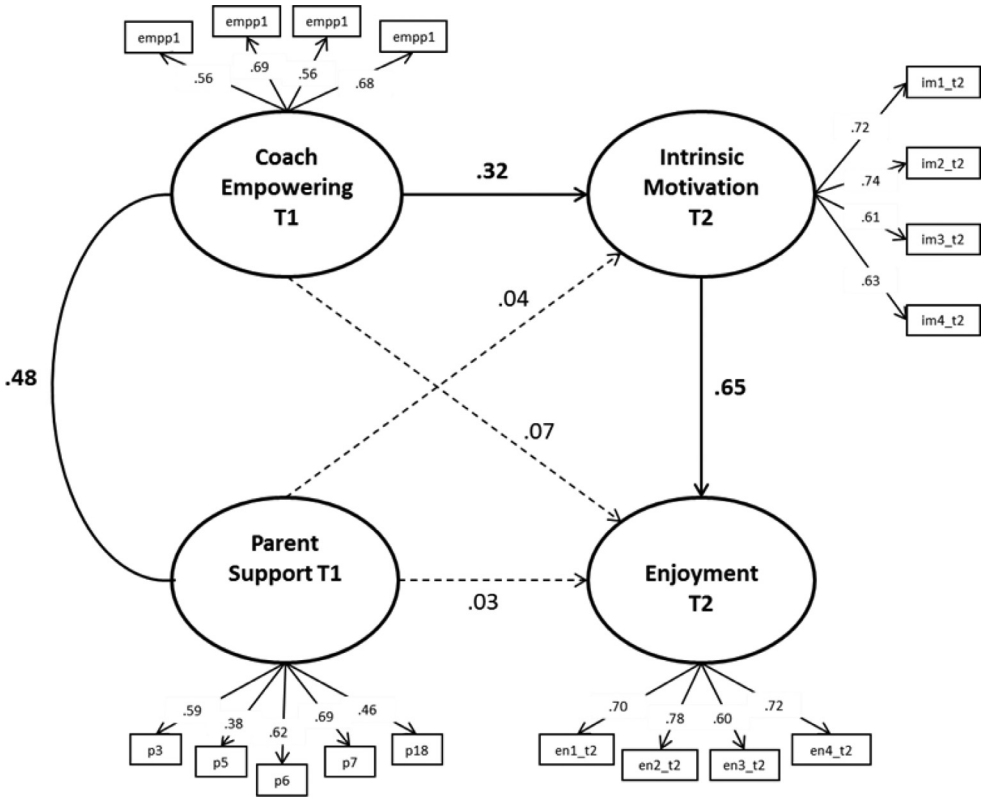

Fig. 7. Coefficients in arrows indicate standardized beta weights and the coefficient in curved line indicate correlation. For Model 7: $\beta = .65$, $p < .001$; $\beta = .32$, $p < .03$; $r = .48$, $p < .001$.

These findings imply that perceived coach-initiated empowering climate in T1 on endogenous variables in T2 were indirect through intrinsic motivation in T2. In line with predictions, T2 intrinsic motivation had a negative effect on T2 sport-related violence. Intrinsic motivation in T2 had positive effects on T2 vitality and T2 enjoyment in soccer.

Discussion

The purpose of this study was to examine whether both perceived coach-initiated empowering climate and parental support are predictors of selected outcomes in adolescence, specifically fans' involvement in sport-related violence, academic achievement, vitality and enjoyment in youth soccer. Moreover, we examined the mediating role of intrinsic motivation between coach-initiated climate and parental support on the aforementioned endogenous variables.

Results from the cross-sectional study indicated that both coach-initiated empowering climate and parental support accounted for unique variance of intrinsic motivation and motivational outcomes such as enjoyment in sport and vitality. These findings are generally in line with the first hypothesis of this study indicating that parents' praise and understanding and coaches' support of players' task-involvement, autonomy and relatedness, have additive effects on athletes' psychosocial development. Independent effects of coaches and parents might also occur. The cross-sectional data imply that coach-initiated empowering climate might contribute to the decrease of fan's involvement in sport-related violence, while parental support might contribute to the increase of academic achievement. A possible explanation might be that parents who were measured as supportive in sport are also supportive in other domains, such as academics (thus, leading to enhanced GPA). Taking into consideration that academic achievement is a preventive factor of health-risks (Jessor et al., 1995), it seems likely that while coach-initiated empowering climate might have direct effects on the prevention of fan's involvement in sport violence, parental support might have indirect effects on health-risks through the creation of an environment that boosts adaptive behaviors which are simultaneously preventive of health-risks.

On the other hand, a disempowering climate was positively related with fans' participation in sport-related violent events and negatively related with enjoyment, subjective vitality and GPA. Although these relationships were weak, the results are in line with recent findings indicating a negative relation of disempowering climate with enjoyment and well-being (e.g., Appleton & Duda, 2016). Together, these findings imply that team climates emphasizing controlling behaviors and ego-involvement do not contribute to youth athletes' psychosocial development.

The results of the cross-sectional study are also in line with our second hypothesis. Intrinsic motivation significantly mediated the effects of empowering coach climate and parental support on sport-related violence, GPA, vitality and enjoyment in sport. This result is in line with SDT and its application in sport. Bean and colleagues (2014) suggested that the climate created by coaches and parents determines athletes' intrinsic motivation in sport, which in turn has positive effects on athletes' psychosocial development.

Perception of coach-initiated empowering climate had moderate positive relationship with perceived parental support. This is the first study examining the relationship of perceived parents' praise and understanding with perceived empowering coaching climate as was conceptualized by Duda (2013). This finding is in line with previous studies investigating perceptions of mastery or autonomy supportive climates created by coaches and parents (Amorose et al., 2016; Keegan et al., 2010; Papaioannou et al., 2008). Together, these results are in line with suggestions about the existence of an "*athletic triangle*" between athlete, coach and parent (Smoll et al., 2011, p. 14). Jowett and Timson-Katchis (2005) proposed that parental support and reinforcement might influence youth athletes' perceptions *of competence* and *intrinsic motivation* and this in turn might have positive effects on the quality of their interaction, communication, cooperation, and relationship with their coaches. The present study indicates that the adaptive effects of this athletic triangle might extend to school and peer settings, benefitting academic achievement and preventing health-risks and antisocial behaviors such as fans' involvement in violent rows.

One might hypothesize that when parents realize that their children have fun, feel happy and enjoy their training and sport involvement, this

might "*motivate*" parents to support even further their children's effort in sport settings (e.g., Côté, 1999). The results of the longitudinal study did not support it. While T1 coach-initiated empowering climate was predictor of T2 intrinsic motivation, T1 parental support was not. The significant effect of T1 coach-initiated climate on T2 athletes' intrinsic motivation is in line with Jowett's and Timson-Katchis' (2005) interpretation of the "*athletic triangle*". On the other hand, the non-significant effect of T1 parental support on T2 intrinsic motivation do not provide evidence that parents perceiving intrinsically motivated children due to coach-initiated empowering climate influences them to support and motivate their kids even further. To investigate this assumption more thoroughly we need more than two time measurements, accompanied by qualitative findings stemming from interviews from athletes, parents and coaches.

Based on the results of the present longitudinal study, it seems that coaches may have a greater impact on youth soccer players' intrinsic motivation in sport and peer settings related to sport (i.e., fans' behaviors) than parents. This conclusion is not supported by Gagné (2003) who found that both parent and coach autonomy support significantly influenced youth gymnasts' autonomous motivation. However, Gagné (2003) collected data over a noncompeting period of just four weeks. On the other hand, the present scale assessing parental praise and understanding might have not captured the full array of parental climate dimensions satisfying all basic psychological needs of athletes. Unfortunately, there was no such measure of parental empowering climate when this study was conducted. Thus, more longitudinal studies are needed measuring dimensions of empowering-disempowering climate created by coaches and parents.

The present findings imply that to promote young athletes' psychosocial development and academic achievement while preventing fans' involvement in violent rows, coaches and parents should create *empowering* climates both in sport and home. Central to these climates is the emphasis on athletes' personal improvement, on the learning process, on how to increase athletes' autonomy and competence and on how to build good relations between athlete, parent, coach and peers. To avoid a disempowering climate, coach and parents should avoid giving emphasis on winning and overcoming others, on controlling behaviors and on thwarting social relationships. Educational programs, such as the *Empowering Coaching*™ program (Duda, 2013) can help coaches and parents create these environments. These psychosocial environments in sport and home promote young athletes' optimal functioning in sport, adaptive behaviors in school and peer settings and athletes' well-being in general.

A limitation in T2 measurement was the rather small sample size due to the high rate of participants' drop out. It is important to mention here that data missingness in T2 measurement was unsystematic and completely at random as "*the reason for the move was unrelated to other variables in the data set*" (e.g., participants were absent from their training when a researcher visited their sport club to collect the T2 data) (Baraldi & Enders, 2010, p. 7; Jeličić et al., 2009). According to de Leeuw (2005, p. 515) the main reasons why someone is dropping out in the longitudinal studies are the failure to locate or contact research participants and the failure to achieve cooperation. Here it was a problem of locating some athletes when researchers visited their clubs and their teammates completed questionnaires in T2.

Future research with larger sample sizes across multiple measurements might reveal significant effects that did not emerge here in T2. More than two measurements accompanied by qualitative findings are also needed to investigate causal effects and changes in motivational and behavioral outcomes due to social factors and mediating variables. Future research might also examine additional mediating variables, which might be even better predictors of athletes' academic and other health-related behaviors than intrinsic motivation in sport. Vallerands' (1997) hierarchical model of intrinsic motivation might be useful towards this research direction. Future research should also examine additional positive and negative motivational outcomes, an improved measure of disempowering climate and measures of empowering-disempowering parental climate. This research should include both young and older athletes as we did in this study, because several behavioral outcomes such as various health-risks are age-dependent.

Future research on socialization agents should also adopt research methodologies including some of the strengths of the present study: a) the use of multi-theory based concepts such as empowering-disempowering climate (Duda, 2013) instead of single theory-based concepts, b) the examination of the mediating role of person level variables, such as intrinsic motivation, between socialization factors and athletes' socio-psychological outcomes, c) the investigation of the effects of socialization agents on outcomes that have been rarely examined across various cultures, such as hooliganism, d) the use of both cross-sectional and longitudinal design. The latter might allow the comparison of findings stemming from similar methods, might unveil the limitations of both methods, and might provide guidance for the development of mixed designs. Interventions are also needed investigating how coaches and parents better empower athletes and their effects on variables similar to those of this study, in order to test the cause - effect relationships of the longitudinal significant findings of this study.

To conclude, coaches and maybe parents are significant social factors influencing youth soccer players' intrinsic motivation in sport which has positive effects on their psychosocial development and well-being. Therefore, it is important that coaches and parents collaborate between each other in order to create *empowering* environments both in home and sport settings that will help young athletes to develop *"excellence of any kind"* (Papaioannou, 2017) and experience happiness in sport and life.

Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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