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Isabel Balaguer, Lorena González, Priscila Fabra, Isabel Castillo, Juan Mercé & Joan L. Duda

University of Valencia, Faculty of Psychology, Valencia, Spain
University of Valencia, Department of Physical Education, Valencia, Spain
University of Birmingham, School of Sport and Exercise Sciences, College of Life and Environmental Sciences, Edgbaston, Birmingham, United Kingdom

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Coaches’ interpersonal style, basic psychological needs and the well- and ill-being of young soccer players: A longitudinal analysis

ISABEL BALAGUER¹, LORENA GONZÁLEZ¹, PRISCILA FABRA¹, ISABEL CASTILLO¹, JUAN MERCE², & JOAN L. DUDA³

¹University of Valencia, Faculty of Psychology, Valencia, Spain, ²University of Valencia, Department of Physical Education, Valencia, Spain, and ³University of Birmingham, School of Sport and Exercise Sciences, College of Life and Environmental Sciences, Edgbaston, Birmingham, United Kingdom

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Abstract
This study entailed a longitudinal test of basic psychological needs theory, a sub-theory in the self-determination framework (Deci & Ryan, 2000), in young soccer players. We examined whether changes in soccer players’ perceptions of the coaches’ interpersonal style (autonomy supportive and controlling) predicted changes in the players’ need satisfaction/need thwarting, and in turn, variability in their reported subjective vitality and burnout over the course of a season. Young male soccer players (M = 12.58 ± 0.54 years) completed a questionnaire at two time points in the season [n(T1) = 725; n(T2) = 597]. Changes in the players’ perceptions of an autonomy supportive environment significantly predicted changes in psychological need satisfaction (positively) and in psychological need thwarting (negatively). Changes in psychological need satisfaction positively predicted changes in subjective vitality and negatively related to cross-time variation in global burnout scores. In contrast, changes in the players’ perceptions of a controlling coach-created environment were positively associated with changes in psychological need thwarting that corresponded to increases in player burnout. Finally, results provided support for the assumed mediational roles of psychological need satisfaction and need thwarting in the social environment to well- and ill-being relationships.

Keywords: autonomy support, controlling style, self-determination theory, subjective vitality, burnout

Introduction
Sport participation is considered to be an inherently rewarding activity that contributes to psychological well-being (Ryan & Frederick, 1997). However, when competition is involved, children and adolescents do not always receive the potential benefits of practising sport. On some occasions, participating in sport requires intense physical demands and high psychological pressures that some athletes perceive as a struggle to handle, potentially leading to negative consequences.

Variations in the psychological environment created by significant others (such as the coach) and their impact on athletes’ motivational processes are key determinants of the quality of sport engagement and whether participation leads to positive and/or maladaptive outcomes. Basic psychological needs theory, a sub-theory of the self-determination framework (Deci & Ryan, 2000), provides a conceptual lens by which we can explore the social environmental and motivation-related antecedents of experiences of well-being and ill-being in athletes. The present work is grounded in basic psychological needs theory and centres on predicting the quality of participation in a large sample of young soccer players through two indicators, namely, players’ feelings of subjective vitality and reported burnout.

Heightened subjective vitality is one’s conscious experience of possessing energy and aliveness (Ryan & Frederick, 1997) and is assumed to characterise individuals who are experiencing well-being (Ryan & Deci, 2001). Athlete burnout is defined in terms of players’ feelings of emotional and physical exhaustion, reduced sense of accomplishment, and an uncaring and cynical attitude towards sport participation, and is a key indicator of ill-being in athletes (Raedeke & Smith, 2001).

According to self-determination theory, such positive as well as negative outcomes can be better
understood by considering the degree to which the environment satisfies versus thwarts people’s basic psychological needs (Deci & Ryan, 2000; Ryan & Deci, 2000b). These needs – the need for competence (concerns an individual’s need to feel that he/she can meet the demands of the activity), autonomy (feelings that one is the perceived origin of one’s action) and relatedness (feelings of being connected to and being accepted by significant others) – are considered innate and universal for psychological growth and optimal functioning (Deci & Ryan, 2000; Ryan & Deci, 2000a). In contrast, self-determination theory proposes that when the needs are not satisfied or are thwarted, ill-being and dysfunction are likely to be witnessed (Ryan & Deci, 2000b).

Self-determination theory (Deci & Ryan, 2000), and in particular basic psychological needs theory, postulates that people function and develop more successfully as a consequence of social environmental support for their basic psychological needs. With respect to social environmental factors that are assumed to be important for need satisfaction and ensuing well-being (Ryan & Deci, 2000b), emphasis has been placed on the degree of autonomy support (Deci & Ryan, 1987) provided by significant others. Basic psychological needs theory also considers the potential impact of controlling interpersonal styles on diminished or even frustrated need satisfaction and resulting ill-being (Ryan & Deci, 2000b).

Previously, when sport researchers have explored the degree to which the environment satisfies or frustrates participants’ basic psychological needs and the ensuing consequences for well-being/ill-being, it was assumed that low need satisfaction is equivalent to a thwarting of the psychological needs (see Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011, p. 78). However, low need satisfaction is not the same as having one’s psychological needs actively frustrated. In the former, athletes feel that their needs are not satisfied (e.g., athletes have low satisfaction of autonomy because they are not feeling they have much input in decision making on the team). With respect to need thwarting, athletes perceive that their need satisfaction has been actively impeded (e.g., athletes feel without autonomy because they feel pushed to behave in certain ways).

Assuming that need satisfaction and need thwarting are separate (albeit inversely related) concepts allows us to explore different antecedents and consequences of each of these constructs. Specifically, we can examine the assumptions that need satisfaction is the key mechanism that links positive dimensions of the social environment to indices of well-being and optimum development, while need thwarting is a central process linking negative dimensions of the social environment to compromised functioning (Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011; Ryan & Deci, 2000b).

**Coaches’ interpersonal styles and implications for athletes’ basic psychological needs**

Two dimensions of coaches’ behaviours have been considered in the literature; namely, the autonomy supportive and controlling features of their interpersonal style. Autonomy supportive coaches are more likely to consider the athlete’s or team’s perspective, offer a rationale, promote choice and encourage decision-making (Deci & Ryan, 1985, 1987; Mageau & Vallerand, 2003). It is assumed that this interactive style will lead to greater satisfaction of psychological needs. Coaches manifesting a controlling interpersonal style behave in a coercive, pressuring, and authoritarian way to impose a specific and preconceived way of thinking and behaving upon their athletes. Controlling coaches actively impede their athletes’ experience of the basic needs (Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2010; Deci & Ryan, 1985). In these situations, athletes are likely to exhibit negative affective, cognitive and behavioural responses (Deci & Ryan, 2000).

Regarding the implications of coaches’ interpersonal style, basic psychological needs theory-grounded research in the sport domain has predominantly explored the consequences of autonomy supportive coach behaviours on need satisfaction (e.g., Adie, Duda, & Ntoumanis, 2008; Álvarez, Balaguer, Castillo, & Duda, 2009; Amorose & Anderson-Butcher, 2007; Balaguer, Castillo, & Duda, 2008; Gagné, Ryan, & Bargmann, 2003; Mageau & Vallerand, 2003). This line of work, involving samples of youth through adult age athletes, has revealed a positive association between coach-provided autonomy support and the satisfaction of the need for autonomy (e.g., Reinboth, Duda, & Ntoumanis, 2004), the needs for autonomy and relatedness (e.g., Balaguer et al., 2008), and for the three basic psychological needs (e.g., Adie et al., 2008) or for a composite measure of need satisfaction (Álvarez et al., 2009; Bartholomew, Ntoumanis, Ryan, Bosch et al., 2011).

Until recently, sport research has not concurrently addressed the implications of both coach autonomy supportive and controlling styles to athletes’ psychological need satisfaction as well as need thwarting. In two cross-sectional studies, Bartholomew, Ntoumanis, Ryan, Bosch et al. (2011) revealed perceptions of an autonomy supportive atmosphere to be a positive predictor of need satisfaction and a negative predictor of need thwarting. A perceived controlling style emerged as a positive predictor of need thwarting. In the current research, we extend the
work of Bartholomew, Ntoumanis, Ryan, Bosch et al. (2011) by testing relationships between both dimensions of coaches’ interpersonal style and psychological need satisfaction and need thwarting over one competitive season.

Need satisfaction/need thwarting and athletes’ subjective vitality/burnout

Aligned with the tenets of basic psychological needs theory (Deci & Ryan, 2000), sport research has provided evidence for a positive link between psychological need satisfaction and reported subjective vitality in athletes (e.g., Adie et al., 2008; Gagné et al., 2003; Reinboth & Duda, 2006; Reinboth et al., 2004). In the present study, we examined the degree to which young soccer players’ feelings of personal energy and aliveness are predicted by their degree of need satisfaction when participating in their sport over the course of one season.

Basic psychological needs theory (Ryan & Deci, 2000b) has been considered to be a promising conceptual lens in which to explore the possible antecedents of athletes’ burnout symptoms (i.e., Hodge, Lonsdale, & Ng, 2008; Perreault, Gaudreau, Lapointe, & Lacroix, 2007). Raedeke (1997) proposed that a lack of autonomy contributes to athlete burnout, and Cresswell and Eklund (2006) argue that low satisfaction of the need for competence is a determinant of a reduced sense of accomplishment, a key element of the burnout experience. Relatedness has also been deemed to be involved in the development of athlete burnout, but is assumed to hold a less important role than autonomy and competence (Hodge et al., 2008). In a study of young Canadian athletes, the three psychological needs negatively predicted global burnout (Perreault et al., 2007). In longitudinal research on vocational dancers, increases in global burnout scores were negatively predicted by changes in satisfaction of the three needs (Quested & Duda, 2011).

Bartholomew and her colleagues (Bartholomew, Ntoumanis, Ryan & Thøgersen-Ntoumani, 2011; Bartholomew, Ntoumanis, Ryan, Bosch et al., 2011), utilising a cross-sectional design, tested the consequences of psychological need satisfaction and need thwarting on athletes’ reported well-being and ill-being. In one study, they found young athletes’ feelings of vitality to be positively predicted by need satisfaction and negatively related to need thwarting. However, reported frustration of the psychological needs emerged as the only (and positive) significant predictor of emotional and physical exhaustion (the unique dimension of burnout included in that study). In a second study in which global burnout was assessed, need thwarting positively and need satisfaction negatively predicted this indicator of ill-being. A third investigation involving female athletes revealed need satisfaction to be a positive predictor of athletes’ subjective vitality. However, the results indicated that need thwarting was not significantly related to this indicator of well-being. Thus, the limited results to date are inconsistent regarding the implications of need thwarting for experiences of well-being and the role of need satisfaction in predicting ill-being. As this design provides more powerful information regarding prediction and allows for analysis of change over time, we conducted a longitudinal study to examine the links between youth soccer players’ degree of satisfaction and thwarting of the three psychological needs and their reported vitality and global burnout.

In sum, the present study extended the literature by adopting a longitudinal methodology and determining whether changes in subjective vitality and global burnout co-varied with changes in our hypothesised antecedents, namely, players’ perceptions of the coaches’ interpersonal style (i.e. the autonomy support and controlling aspects) and the degree to which players’ perceived their psychological needs to be satisfied and/or thwarted. We also tested whether need satisfaction and need thwarting served as mediators in the relationships between the two dimensions of the coach interpersonal style and players’ subjective vitality and global burnout.

We hypothesised that: (1) changes in the players’ perceptions of autonomy support and psychological need satisfaction would positively predict changes in subjective vitality and negatively relate to changes in reported burnout, over time; (2) changes in the players’ perceptions of controlling behaviours and psychological need thwarting would positively predict changes in reported burnout and negatively correspond to changes in subjective vitality, over time; (3) changes in perceptions of autonomy support would negatively predict changes in need thwarting, while changes in perceptions of controlling style would be a negative predictor of changes in need satisfaction; (4) we also expected any relationship between changes in the targeted dimensions of coaches’ interpersonal styles and indicators of young players’ well- and ill-being to be mediated by changes in psychological needs (i.e., their satisfaction as well as thwarting).

Method

Participants

The participants were at time one (T1), 725 male soccer players aged between 11 and 14 years old ($M = 12.57$, $s = 0.54$), representing 27 different soccer schools from the Valencian Soccer Federation. Five hundred and ninety-seven of these initial participants completed the questionnaire pack at
time two (T2; $M = 12.58$ years, $s = 0.54$). Using dummy-coding (stay vs. dropout) to test for possible differences among those athletes who took part in the second data collection (T2) and those who did not, we conducted a one-way multivariate analysis of variance (MANOVA) with coaches’ interpersonal styles, need satisfaction, need thwarting and our targeted indices of well-/ill-being as the dependent variables. No significant differences emerged ($F(6, 718) = 0.24$, $P > 0.10$). The overall sample is representative of the Infantil soccer division from the Valencian Community Youth Soccer League in Valencia, Spain. On average, participants had played competitively with their respective club development programmes for 3 years.

After selecting the teams randomly by area within the Valencian Community from the list provided by the Valencian Soccer Federation, we sent a letter to the sports director of each of the soccer schools, informing them about the goals of the investigation and requesting their collaboration. All the schools contacted expressed interest in participating in the investigation. All participants and their parents were provided with verbal information about the investigation and provided informed consent before data collection. The questionnaires were responded to anonymously and voluntarily, and were completed by the players at the different soccer schools during a 45-minute interval, before beginning their normal training session, in a room made available for this purpose. The questionnaires were administered by at least one investigator simultaneously to all the team members who participated in the investigation. Neither the coach nor the sports director of the club was present at any time during questionnaire administration. Players were encouraged to answer honestly and ask the investigator present if they had any questions. The Time 1 questionnaire pack was administered when approximately the first two months of the season had passed, so the players had enough time to develop their views regarding their coaches’ prevailing interpersonal styles. Time 2 questionnaires were completed at the end of the season. At each time point, players were requested to answer in terms of how they were perceiving the situation/feeling at that point in time.

**Instruments**

*Coach autonomy support.* Players’ perceptions of the degree of autonomy support provided by their coach were assessed via the 15 item Spanish version (Balaguer, Castillo, Duda, & Tomás, 2009) of the Sport Climate Questionnaire (http://www.psych.rochester.edu/SDT/). Each item starts with the phrase: “On my soccer team...” and the responses are rated on a 7-point Likert scale ranging from $1$ (not at all true) to $7$ (very true). An example item is “I feel that my coach provides me choices and options”.

*Coach controlling interpersonal style.* Players’ perceptions of the degree to which their coach manifested a controlling style were measured using the Spanish version (Castillo et al., 2010) of the Controlling Coach Behaviours Scale (Bartholomew et al., 2010). The 15-item scale is comprised of four sub-dimensions (controlling use of rewards, conditional regard, intimidation, and excessive personal control). Players provided their responses, on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree), in terms of how they viewed their coach. Examples of items from each of the subscales are “My coach tries to motivate me by promising to reward me if I do well” (controlling use of rewards), “My coach is less friendly with me if I don’t make the effort to see things his/her way” (conditional regard), “My coach shouts at me in front of others to make me do certain things” (intimidation), and “My coach expects my whole life to centre on my sport participation” (excessive personal control). Consistent with Bartholomew and colleagues (Bartholomew, Ntoumanis, Ryan, Bosch et al., 2011), a composite coach controlling behaviour variable was created.

*Psychological need satisfaction.* To assess the satisfaction of the need for competence, we used the Spanish version (Balaguer et al., 2008) of the 5-item subscale of Perceived Competence from the Intrinsic Motivation Questionnaire (McAuley, Duncan, & Tammen, 1989). An example item is “I think I’m pretty good at soccer”. Satisfaction of the need for autonomy was assessed using the Spanish version (Balaguer et al., 2008) of the 10 items used by Reinboth and Duda (2006). A sample item is “When I play soccer, I feel I can give a lot of input into deciding what activities/skills I want to practice”. Responses to these two scales were provided on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). To assess the satisfaction of the need for relatedness, we used the Spanish version (Balaguer et al., 2008) of the 5-item Acceptance subscale of the Need for Relatedness Scale (Richer & Vallerand, 1998). An example item is “When I play soccer, I feel supported”. The responses were rated on a 5-point Likert scale ranging from 1 (totally disagree) to 5 (totally agree). Aligned with previous work (e.g., Alvarez et al., 2009), the three need satisfaction subscales were used as indicators of a general need satisfaction variable.

*Psychological need thwarting.* Psychological need thwarting was measured using the Spanish version (Balaguer et al., 2010) of the Psychological Need Thwarting Scale (Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011). The 12-item
instrument is divided into three 4-item subscales assessing the perceived thwarting of personal feelings of autonomy, competence and relatedness in the sport setting. Examples of items of each subscale are “I feel forced to follow training decisions made for me” (autonomy), “There are times when I am told things that make me feel incompetent” (competence), and “I feel I am rejected by those around me” (relatedness). Referring to how they typically experienced playing on their soccer team, players provided their responses on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). For this study, and aligned with the analytic approach adopted by Bartholomew, Ntoumanis, Ryan, and Thøgersen-Ntoumani (2011), an overall psychological need thwarting variable was created.

Subjective vitality. Players’ feelings of positive energy were assessed with a Spanish version (Balgue, Castillo, Álvarez, & Duda, 2005) of the six-item version of the Subjective Vitality Scale (Ryan & Frederick, 1997). An example item is, “I feel alive and full of vitality”. Responses were provided on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Burnout. To assess reported burnout symptoms, we used a Spanish version of the 15-item Athlete Burnout Questionnaire (Raedeke & Smith, 2001) modified for the population. The instrument contains three 5-item subscales that measure players’ perceived emotional and physical exhaustion (e.g., “I feel overly tired from my soccer participation”), degree of devaluation (“I am not into soccer like I used to be”) and reduced sense of accomplishment (“I am not achieving much in soccer”). Responses were provided on a 5-point scale ranging from 1 (almost never) to 5 (almost always). For this study, we used a composite scale score reflecting global burnout.

Analytic strategy
Analyses were based on 597 respondents who had reasonably completed data for the study variables, in that they had missing values for no more than 1 of the items on each of the scales. The percentage of missing data was very small (0.5%).

To examine the hypothesised model, we followed the two-step approach recommended by Anderson and Gerbing (1988). First, confirmatory factor analyses with LISREL (Version 8.54; Jöreskog & Sörbom, 2003) were performed in regard to the hypothesised measurement model to determine whether the indicators were related to the latent factors in a satisfactory manner. Second, after a satisfactory fit was achieved for the measurement model, we tested the fit of the structural model.

To determine the fit of the model, we considered different indices of fit that included chi-square ($\chi^2$), the non-normative fit index (NNFI), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA). Values of CFI and NNFI higher than 0.90 indicate an acceptable fit (Hu & Bentler, 1995). For RMSEA, values between 0.05 and 0.10 are considered acceptable, equal to or lower than 0.08 is optimal (Cole & Maxwell, 1985).

On account of the number of parameters in the proposed model (see Figure 1), mean scores were employed as indicators of the targeted variables and a path model was tested. As was the case in examining the factor structure of each scale, the examination of the goodness of fit of the model was done considering various indices. As our focus was on change in the targeted variables, we controlled Time 1 values for each variable in our hypothesised model by including paths between the Time 2 variables and their corresponding Time 1 measure.

A further objective was to determine whether the association between changes in coaches’ interpersonal style (i.e., the autonomy supportive and controlling features) and indices of players’ welfare (subjective vitality and burnout) were mediated by changes in psychological need satisfaction and thwarting over the soccer season. Accordingly, the procedural recommendations of Holmbeck (1997) were employed to test the total mediating effect of the needs (satisfaction and thwarting).

![Figure 1. Hypothesised structural model of the associations between perceptions of autonomy support and controlling style, need satisfaction, need thwarting, vitality and burnout.](image-url)
Results

All the scales had satisfactory fit indices (CFI range = 0.93–0.99, NNFI = 0.91–0.98; RMSEA = 0.03–0.08), and adequate factor loadings. The Cronbach internal reliability coefficients of all scales/subscales were satisfactory (z range = 0.77–0.92).

Mean scores indicated that, at Time 1, the players perceived their coaches to offer relatively high autonomy support. On average, the players indicated that they experienced relatively high psychological need satisfaction and subjective vitality. At Time 1, the participants perceived their coaches to exhibit a low controlling style, and reported low psychological need thwarting and low levels of burnout. When comparing means scores at the end of the season (Time 2), perceptions of autonomy support provided by the coach were higher than the perceived controlling style manifested (t = 35.72, P < 0.01, Cohen’s d = 2.36). Players perceived more need satisfaction than need thwarting (t = 34.27, P < 0.01, Cohen’s d = 2.29) and their well-being was higher than their ill-being (t = 54.44, P < 0.01, Cohen’s d = 2.43).

When comparing the responses of the participants over time, repeated measures multivariate analysis of variance (MANOVA) (F (591, 6) = 17.901, P < 0.001, η² = 0.15) indicated that the players perceived their coaches to offer less autonomy support over the course of the season. The players’ reported satisfaction of the psychological needs also significantly decreased, whereas reported global burnout increased over the season (see Table I).

At Time 1 and Time 2, autonomy support was positively correlated with psychological need satisfaction and subjective vitality. These three variables were negatively related with burnout. A perceived controlling style was positively related with need thwarting and burnout. Subjective vitality and burnout were negatively related, and this negative relationship also was observed in the case of the autonomy support and controlling style dimensions, and psychological need satisfaction and need thwarting (see Table II).

The hypothesised model (see Figure 1) presented an adequate fit to the data. Specifically, χ²(43) = 122.79, P < 0.01, χ²/df = 2.85, RMSEA = 0.07, NNFI = 0.94, and CFI = 0.95. The parameters of the standardised solution are displayed in Figure 2. Changes in the players’ perceptions of an autonomy supportive environment were a significant predictor of changes in psychological need satisfaction (positively) and in psychological need thwarting (negatively). This change in psychological need satisfaction significantly predicted changes in subjective vitality (positively) and in global burnout (negatively). Results also indicated that changes in the players’ perceptions of a controlling style significantly and positively predicted the changes in psychological need thwarting that, in turn, positively predicted changes in global burnout over the course of the season (see Figure 2). Results from the proposed model significantly predicted 48% of the variance in changes in psychological need satisfaction, 35% of the variability in change in psychological need thwarting, 38% of the variance in changes in subjective vitality and 42% of the variability in change in reported burnout over the season.

In order to determine whether the association between changes in coaches’ interpersonal style and indicators of players’ welfare were mediated by changes in psychological need satisfaction and thwarting over the course of the season, we first tested a model estimating the direct path from coach interpersonal style (autonomy support and controlling style) to subjective vitality and burnout. The model provided a good fit to the data: χ² (15) = 53.21, P < 0.01; CFI = 0.95; NNFI = 0.94; RMSEA = 0.07. The first mediation criterion is evidenced in the significant direct paths between perceptions of autonomy support and controlling style with subjective vitality (β = 0.26, P < 0.01 and β = −0.08, P < 0.05, respectively), and between perceptions of autonomy support and controlling style with burnout (β = −0.16, P < 0.01 and β = 0.19, P < 0.01, respectively).

The next step in testing mediation was to confirm the fit of the constrained model (Holmbeck, 1997). As reported earlier (see Figure 2), significant relationships were evident between autonomy support and psychological need satisfaction and thwarting, between controlling style and need thwarting, between need satisfaction and both outcomes (subjective vitality and burnout) and between need thwarting and burnout. The path from need thwarting to subjective vitality was not significant.

Table I. Mean scores, standard deviations for all study variables at Time 1 and Time 2.

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<thead>
<tr>
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<th>Time 1</th>
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<td>Range</td>
<td>M</td>
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<td>M</td>
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<tr>
<td>Autonomy Support</td>
<td>1–7</td>
<td>5.35</td>
<td>0.95</td>
<td>4.97</td>
<td>1.10</td>
</tr>
<tr>
<td>Controlling Style</td>
<td>1–7</td>
<td>2.42</td>
<td>0.92</td>
<td>2.45</td>
<td>1.04</td>
</tr>
<tr>
<td>Need Satisfaction</td>
<td>1–7</td>
<td>5.42</td>
<td>0.78</td>
<td>5.32</td>
<td>0.87</td>
</tr>
<tr>
<td>Need Thwarting</td>
<td>1–7</td>
<td>2.77</td>
<td>1.17</td>
<td>2.86</td>
<td>1.25</td>
</tr>
<tr>
<td>Subjective Vitality</td>
<td>1–7</td>
<td>5.47</td>
<td>1.00</td>
<td>5.43</td>
<td>1.13</td>
</tr>
<tr>
<td>Burnout</td>
<td>1–5</td>
<td>1.89</td>
<td>0.70</td>
<td>1.98</td>
<td>0.75</td>
</tr>
</tbody>
</table>

*** P < 0.001
Therefore, it was only possible to test the meditational effects of need satisfaction from autonomy support to both outcomes, need thwarting from autonomy support to burnout, and need thwarting in terms of the relationship between perceptions of a controlling interpersonal style and burnout.

The third and final step was to examine an unconstrained model by adding a direct path from autonomy support and controlling style to subjective vitality and burnout (as established in the first model). Similar to the constrained model, the fit of the unconstrained model was good: \( \chi^2 (35) = 108.86, P < 0.01; CFI = 0.96; NNFI = 0.95; RMSEA = 0.08 \). It should be noted that in the unconstrained model however, the paths from autonomy support to subjective vitality and to burnout were non-significant (\( \beta = 0.07 \) and \( \beta = -0.01, P > 0.05, \) respectively). The same results occurred with the observed paths from controlling style to subjective vitality and to burnout being non-significant (\( \beta = 0.01 \) and \( \beta = 0.02, P > 0.05, \) respectively). These results provided evidence of a total mediation effect in the case of need satisfaction and need thwarting.

Finally, the \( \chi^2 \) difference test indicated that the unconstrained model did not offer a superior representation of the data to the mediation model (\( \chi^2 \) difference = 13.93, \( P = 0.15 \)). The indirect effects indicated that autonomy support positively influenced subjective vitality (\( \beta = 0.14, P < 0.05 \) through

Table II. Correlations between study variables.

<table>
<thead>
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<th></th>
<th>1</th>
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<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Autonomy Support T1</td>
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<td>7. Need Thwarting T1</td>
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<td>10. Subjective Vitality T2</td>
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<td>0.00</td>
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<td>11. Burnout T1</td>
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<td>-0.23**</td>
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<td>-0.34**</td>
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<td>12. Burnout T2</td>
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<td>-0.33**</td>
<td>0.37**</td>
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<td>0.44**</td>
<td>0.59**</td>
<td>-0.13**</td>
<td>-0.19**</td>
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** \( P < 0.01; * P < 0.05 \)

Figure 2. Structural model of the associations between perceptions of autonomy support and controlling style, need satisfaction, need thwarting, vitality and burnout at Time 2 while controlling for corresponding Time 1 values. Note. All coefficients are standardised and significant (\( z > 1.96 \))
psychological need satisfaction and negatively influenced burnout ($\beta = -0.13$, $P < 0.05$) through psychological need satisfaction and need thwarting. Moreover, a perceived controlling interpersonal style had a positive effect on burnout ($\beta = 0.09$, $P < 0.05$) through psychological need thwarting.

**Discussion**

Extending the literature, this study entailed a longitudinal test of basic psychological needs theory and examined changes in perceptions of coach-provided autonomy support, need satisfaction, and indicators of well- and ill-being in a large group of young soccer players across one competitive season. Furthermore, as this is another key dimension of (leader) interpersonal highlighted within self-determination theory (Deci & Ryan, 1985, 1987, 2000), we considered players’ views of the degree to which their coaches were controlling.

In previous studies (for two exceptions, see Bartholomew, Ntoumanis, Ryan, Bosch et al., 2011; Bartholomew, Ntoumanis, Ryan, & Thogersen-Ntoumani, 2011), need satisfaction was the sole variable assumed to be a proximal predictor of variability in athletes’ reported well-being and ill-being. In the current work, we added to the recent extension evident in basic psychological needs theory-based research in sport by including both need satisfaction and need thwarting in the longitudinal model tested in the case of young soccer players.

Four hypotheses were formulated to test the proposed model, which predicted a basic psychological needs theory-based motivational sequence between changes in athletes’ perceptions of their coaches’ autonomy supportive and controlling behaviours, need satisfaction and thwarting, and the targeted indicators of the athletes’ welfare. First, the expected association between perceived provision of autonomy support by the coach and psychological need satisfaction emerged and was aligned with previous research on athletes (Adie et al., 2008; Álvarez et al., 2009; Amorose & Anderson-Butcher, 2007; Bartholomew, Ntoumanis, Ryan, Bosch, et al., 2011) and vocational dancers (Quested & Duda, 2010, 2011). Our results indicated that when coaches were deemed to encourage players’ opportunities for input and decision making, provide a rationale for their requests and recommendations, and consider the players' perspectives, the players’ reported psychological need satisfaction was enhanced.

In line with our hypotheses, we found that increases in autonomy support and need satisfaction predicted positive changes in subjective vitality and negative changes in burnout from the beginning to the end of the season. These results are consonant with past cross-sectional sport research (Bartholomew, Ntoumanis, Ryan, Bosch et al., 2011) and longitudinal research involving vocational dancers (Quested & Duda, 2011), and suggest that young soccer players’ burnout risk is exacerbated when coaches do not foster and sustain an autonomy supportive interpersonal style.

We expected that changes in the soccer players’ perceptions of coaches’ controlling style and psychological need thwarting would positively predict changes in reported burnout and correspond negatively to changes in subjective vitality over the course of the youth soccer season. We found increases in coach controlling style and need thwarting to be associated with increases in burnout during the season but not to be significantly related to changes in players’ feelings of vitality. These results regarding the concomitants of changes in need thwarting over the season and player well-being are not completely in accordance with findings reported by Bartholomew, Ntoumanis, Ryan and Thøgersen-Ntoumani (2011). In their cross-sectional study, a weak, negative but significant path emerged between athletes’ perceptions of the active countering of their psychological needs by their coaches and subjective vitality. However, the present findings stemming from a longitudinal analysis are in line with the theorising of Deci and Ryan (2000) and Bartholomew and colleagues (Bartholomew et al., 2010; Bartholomew, Ntoumanis, Ryan, Bosch et al., 2011), who suggested that coach controlling behaviours would be particularly relevant to indicators of compromised health and functioning in athletes. Our findings suggest that when we consider changes in need thwarting and player burnout in contrast to feelings of vitality over time, this seems to be the case.

It was also proposed that changes in perceptions of autonomy support would negatively predict changes in need thwarting, while changes in perceptions of controlling style would be a negative predictor of changes in need satisfaction. Results provided evidence for the expected relationships in the case of autonomy support and its associations with both need satisfaction and need thwarting. In terms of the predicted relationships between perceptions of controlling coach behaviours and psychological need satisfaction and need thwarting (negative and positive, respectively), only the latter path was significant. These results are in accordance with the two cross-sectional studies conducted recently by Bartholomew, Ntoumanis, Ryan, Bosch et al. (2011). However, in the research of Bartholomew, Ntoumanis, Ryan, Bosch et al., the path values from autonomy support to need satisfaction were considerably larger ($i.e., \beta$ between 0.66 and 0.69) than...
the observed paths between autonomy support and need thwarting (i.e., $\beta$ between $-0.22$ and $-0.31$). This was not the case in our study as the absolute values of these two paths were less discrepant (for autonomy support–need satisfaction ($\beta = 0.39$) and autonomy support–need thwarting ($\beta = -0.21$)). Also in the present research, the values of the coefficients for the paths between each of the targeted dimensions of coaches’ interpersonal style to need thwarting were quite similar in strength (albeit different in direction, see Figure 2). Our results suggest that when soccer coaches behave in a coercive, pressuring and autocratic manner, players are more likely to feel oppressed, inadequate, and/or rejected. The findings also imply that, in a controlling environment, players would be prone to feel like their basic psychological needs are being actively obstructed rather than not being appeased. Moreover, results indicate that not only the presence of a controlling interpersonal style predicts need thwarting in young soccer players. It seems that when such youth sport athletes perceive their coaches to engage in limited autonomy supportive behaviours, they also tend to feel their needs are impeded.

These results reflecting differential prediction, and the observed low negative correlations between soccer players’ perceptions of the autonomy supportive and controlling features of their coaches’ interpersonal style at both Time 1 and Time 2 (i.e., 6–9% shared variance), imply that these two social environmental dimensions may be inversely related but are not two ends of one continuum. Drawing from our findings, and in line with previous research (e.g., Bartholomew et al., 2010, Pelletier, Fortier, Vallerand, & Brière, 2001), it seems important in future studies for researchers to consider both the autonomy supportive and controlling behaviours of the coach when we want to study how the coach-created social context shapes both the positive and negative experiences of athletes.

In accordance with our fourth hypothesis, changes in psychological need satisfaction mediated the association between changes in perceptions of autonomy support and the targeted indicators of well- and ill-being. Consonant with these predictions, changes in need thwarting mediated the association between changes in perceptions of both dimensions of coaches’ interpersonal style and global burnout. Consonant with what has been argued in recent work (Bartholomew et al., 2010; Bartholomew, Ntoumanis, Ryan, Bosch et al., 2011), the present findings point to the relevance of incorporating need thwarting as a different and separate variable to need satisfaction in our models of motivation-related processes. The inclusion of both need satisfaction and need thwarting allows us to better understand and differentiate the mechanisms by which the social atmosphere created by coaches can impact the experiences of well-being and/or ill-being in their athletes.

When reflecting upon the observed mean values, our results indicate that over the course of the season, the soccer players sampled perceived that their coaches interacted with them using both interpersonal styles (i.e., they were viewed as exhibiting both autonomy supportive and controlling behaviours with autonomy support being the predominant environmental characteristic). The young soccer players also indicated greater need satisfaction than need thwarting and their reported levels of well-being were elevated when compared to levels of ill-being. Therefore, as a group, this large sample of youth soccer players was characterised by positive emotional health and functioning and tended to view the coach-created environment as relatively adaptive. However, it is important to note that there was variation in the responses provided by these young athletes. Furthermore, and aligned with the work of Quested and Duda (2011) on vocational dancers, the findings revealed an overall decline in indicators of optimal environmental conditions and player functioning as the season progressed. Specifically, we found that the young athletes’ perceptions of coach-provided autonomy support and need satisfaction decreased and reported burnout increased over time. Such findings fuel concerns for the optimal development and sustained engagement of such young players. In future work, it would be interesting to explore whether this is a time related change associated with the length of season (e.g., the players feel and coaches behave differently at the end of a season perhaps due to fatigue, etc.) or whether there are particular pressures or demands at the end of the season (e.g., league championships) that contribute to the observed differences in coaches’ interpersonal style, players’ feelings of competence, autonomy, and relatedness as well as their feelings of being burned out.

When the expected mediation between coach interpersonal style and positive and negative indices of athletes’ overall welfare was tested, the present findings gave a more prominent mechanistic role to need satisfaction over need thwarting. This is because the former emerged as a complete mediator between autonomy support and players’ reported feelings of energy and reported burnout. Need thwarting only mediated the relationship between perceptions of both dimensions of coaches’ interpersonal style and burnout. However, the path between need thwarting and global burnout was stronger than the path between need satisfaction and reported burnout symptoms. Thus, aligned with Bartholomew, Ntoumanis, Ryan, Bosch, et al. (2011), it seems important to consider the active
frustration of basic needs when we seek to better understand contributors to “the dark side” of sport participation. In contrast, variability in player need satisfaction appears relevant in terms of whether players experience optimal or debilitated functioning in soccer in a much broader sense.

From an applied perspective, our findings underline the importance for coaches to work toward using more autonomy supporting strategies, such as providing a rationale for their requests, seeking players’ input into decision making where and when possible, allowing some choice in terms of training activities, and acknowledging how players are feeling in practice and competitive situations. Through the creation of such more adaptive environments, soccer coaches can potentially have a wider effect regarding the promotion of well-being and prevention of ill-being in their players. The results also point to the value of coaches aiming to curtail the use of controlling behaviours, with an eye towards attenuating the risk of young players burning out and possibly dropping out.

In the context of youth soccer, the present study provided a longitudinal test of basic psychological needs theory and accounted for variations in the variables of interest in order to predict changes in players’ reported well- and ill-being. The focus was on changes in individual players’ views on their coaches’ behaviours and their thoughts and feelings in football over the course of the season. However, it is important to consider in future work that players participate in teams and this nesting effect could be tested (e.g., using multi-level analysis which considers team and individual level variables). While in the present study we have used composite indicators of coaches’ controlling interpersonal style, need satisfaction, need thwarting, and burnout, it would be informative in subsequent research to consider the role of specific controlling behaviours, particular needs (whether satisfied and/or thwarted) and also aim to predict the different sub-dimensions of burnout (e.g., reduced accomplishment, physical and emotional exhaustion; Quested & Duda, 2011). Such work would provide further insight into the inter-relationships between motivationally-relevant aspects of the coach-created environment, players’ needs, and hallmarks of their psychological, emotional and physical health in youth sport settings.

Acknowledgments

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References


Coaches’ interpersonal style