

INFLUENCE OF MOTIVATIONAL PROCESSES ON ENJOYMENT, BOREDOM AND INTENTION TO PERSIST IN YOUNG SPORTSPERSONS

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ABSTRACT

The aim of the study was to examine the influence of motivational processes on enjoyment, boredom and intention to persist in the sport context. A total of 985 sportspersons ranging in age from 10 to 16 years (14.34 ± 2.52), and from 24 different sport modalities participated in the research. A structural equation model was constructed using the robust maximum likelihood estimation. The model showed that the perception of 'support and satisfaction' of the basic psychological needs for competence predicted autonomous motivation. Both of these variables also emerged as positive predictors of 'enjoyment' and 'intention to persist'. Moreover, a greater satisfaction of the basic psychological needs for relatedness negatively predicted 'amotivation' and, therefore, 'boredom'. Thus, social factors related to the coach and 'self-determined motivation' emerged as positive predictors of 'enjoyment' and the 'intention to persist' in the sport.

Key words: Youth sport; Self-determination; Basic psychological needs; Persistence.

INTRODUCTION

Physical activity and sport practise have been shown to have a positive impact on the development of children and adolescents, both physically (Liese *et al.*, 2012) and holistically, benefiting cognitive and social systems (Sousa *et al.*, 2006). Thus, socialisation through sport and physical activity introduces the youth to an environment in which significant individuals (parents, coaches and peers) become powerful role models and their physical activity is increased and optimised through participation and involvement in sport. This study aimed to examine the importance of social factors (coaches) on the motivational processes of young sportspersons, assessing the ability of these variables to explain and predict adaptive consequences, such as enjoyment, boredom and intention to persist.

Motivational processes are best understood within a theoretical framework. The Self-Determination Theory (SDT) (Deci & Ryan, 1985; Ryan & Deci, 2000), is a macro-theory of motivation, that has been used to understand motivation within the context of physical activity. SDT theorists propose that motivation lies on a continuum, and they distinguish three types of behavioural regulation that are associated with varying degrees of self-

determined motivation: autonomous motivation; controlled motivation; and amotivation (Ryan & Deci, 2000).

Autonomous motivation is the highest degree of self-determined motivation and is governed by three types of regulation: intrinsic regulation (engaging in activities for the feelings of enjoyment, pleasure, interest and satisfaction that result); integrated regulation (occurring when regulations are fully assimilated with self so they are included in the person's self-evaluation and beliefs on personal needs) (Vallerand & Rosseau, 2001); and identified regulation, which is believed to be an autonomous form of external motivation (understanding and valuing an activity and the outcomes associated with the activity). In contrast, SDT posits that *controlled motivation* comprises two behavioural regulations: introjected regulation (engagement in an activity to avoid feelings of guilt and shame or to achieve feelings related to personal ego, such as pride); and external regulation (behaviours controlled by contingencies external to the individual, such as rewards, punishments, or external expectations). Finally, *amotivation* represents the absence of motivation, either intrinsic or extrinsic (engaging in an activity without intention or volition).

Central to SDT is the concept that self-determined motivation is driven by the desire to satisfy three Basic Psychological Needs (BPN), namely autonomy, competence and relatedness. *Autonomy satisfaction* is the need to experience volition and free will, or the sense that an individual has personal control of his or her own life. *Competence satisfaction* refers to the need to effectively carry out a behaviour to achieve a desired outcome and the ability to manage situational demand. Finally, *relatedness satisfaction* refers to the need to interact with and feel connected to and accepted by others (Deci & Ryan, 2000).

The Hierarchical Model of Motivation (Vallerand, 2001) explains the motivational process in a variety of contexts (sport, physical education, workplace), and at different levels (global, contextual and situational). It explains how social contextual variables can influence the BPN of sportspersons with regard to satisfaction and consequently their motivation quality. Furthermore, this model indicates that greater levels of self-determination promote more positive/adaptive outcomes (Torregrosa *et al.*, 2008; Álvarez *et al.*, 2009; Riley & Smith, 2011), whereas lower levels of self-determination are associated with negative/maladaptive outcomes (Isoard-Gauthier *et al.*, 2012; Ramis *et al.*, 2013).

Many studies have assessed the importance of significant relationships in the motivational processes of sportspersons; however, most of these studies have focused on analysing the influence of the coaches. Notably, Balaguer *et al.* (2008) showed that the perceived level of autonomy support from coaches predicted a greater satisfaction with the need for autonomy and relatedness, self-determined motivation and higher self-esteem and life satisfaction. Similarly, Ramis *et al.* (2013) demonstrated that the role of the coach was more important in the perception of autonomy support among sportspersons than the role of peers and parents. Moreover, the researchers concluded that autonomy support was the antecedent of intrinsic motivation. Another important study was conducted by Álvarez *et al.* (2009), who showed that the perception of autonomy support from coaches predicted satisfaction of BPN, intrinsic motivation, enjoyment and boredom.

Furthermore, several studies (Almagro *et al.*, 2011; Jöessar *et al.*, 2011; García-Calvo *et al.*, 2012) have treated intention to continue practising a sport as a dependent variable. These studies demonstrated the relevance of direct agents, such as coaches, on the motivational processes of sportspersons and their intention to continue participating in the sport to the satisfaction of the BPN of sportspersons, self-determined motivation and the intention to persist in the sport.

RESEARCH PROBLEM

Although many studies have examined the importance of the coach in the motivational processes of the sportsperson, specifically, no studies have measured the effect of sportspersons' perception of the support of the coach on the satisfaction with the need for autonomy, competence and relatedness. Therefore, the main aim of this study was to test the motivational model of Vallerand, including to seek support for the BPN of competence and relatedness as motivational antecedents, as well as examine the influence of motivational antecedents (perceptions of support and satisfaction of the BPN), on the motivation of and outcomes for sportspersons, such as enjoyment, boredom and intention to persist.

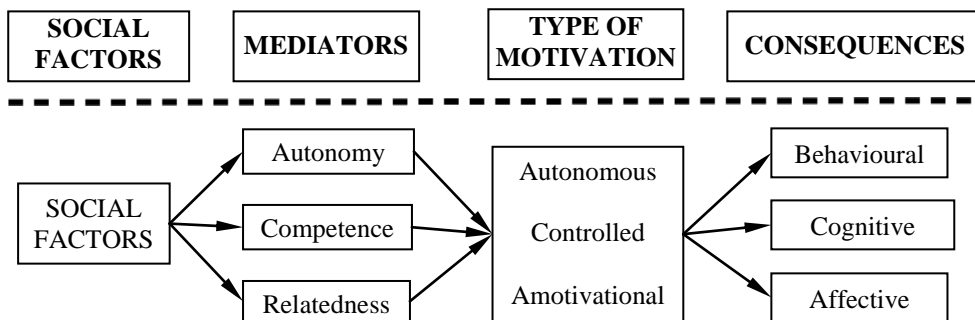


FIGURE 1. HIERARCHICAL MODEL OF MOTIVATION APPLIED TO GLOBAL, CONTEXTUAL AND SITUATIONAL LEVEL
(Vallerand, 2007:257)

The following hypotheses were proposed:

- that the perception of sportspersons regarding their need for autonomy, competence and relatedness were supported and would predict greater satisfaction with the three BPN and higher levels of self-determination, enjoyment and intention to persist in the physical activity;
- that high BPN satisfaction among the sportspersons would be a strong positive predictor of autonomous motivation, enjoyment and intention to persist;
- that autonomous motivation would positively predict enjoyment, whereas controlled motivation and amotivation would predict boredom;
- that enjoyment would positively predict and that boredom would negatively predict the intention of sportspersons to persist in the physical activity.

METHOD

Participants

Participants comprised a total of 985 sportspersons from various training categories, ranging in age from 10 to 16 years (14.34 ± 2.52), where 620 of the sportspersons were male, and 365 were female. Participants belonged to 24 different sport codes, including individual ($n=452$) and team sports ($n=533$). All participants were from the Extremadura region in Spain. They were systematically and randomly selected by cluster where variables, such as age, gender and the geographical distribution of the sportspersons were taken into account.

Instruments

Basic Psychological Needs Support (BPNS)

To assess autonomy support, competence support and relatedness support, a version of the Basic Psychological Needs Support in Physical Education Scale (BPNS-PE) (Sánchez-Oliva *et al.*, 2013), was adapted to the sport context by modifying the introductory phrases. For instance, “During my Physical Education classes, my teacher...” was replaced by “During my training sessions, my coach...”. In addition, words referring to a physical education context were replaced by words referring to the sport context. This instrument comprises 12 items, 4 for each of the basic psychological needs of support types: autonomy support (“Often asks us about our preferences with respect to the activities we engage in”); competence support (“Offers us activities based on our skill level”); and relatedness support (“Promotes good relationships between teammates at all times”). This instrument was validated (Confirmatory Factor Analysis), and its internal consistency revealed: $\chi^2/df=5.12$; CFI=0.96; TLI=0.95; GFI=0.96; SRMR=0.04; and RMSEA=0.06.

Perceived Need Satisfaction (PNS)

The Spanish version of the Basic Psychological Needs in Exercise Scale (BPNES) (Vlachopoulos & Michailidou, 2006; Moreno *et al.*, 2008), was used in this study. All references to a physical education context were replaced by references to a sport context (“I think I carry out the tasks effectively” was replaced by “I think I carry out the training effectively”). Participants responded to “During sports practice...” statements by rating the 12 items on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Four items represented each of the basic psychological needs: autonomy (“...we perform exercises that are of interest to me”); competence (“...I carry out the exercises effectively”); and relatedness (“...my relationship with my teammates is friendly”). This questionnaire was validated (Confirmatory Factor Analysis), and their internal consistency revealed: $\chi^2/df=5.32$; CFI=0.95; TLI=0.94; GFI=0.96; SRMR=0.04; and RMSEA=0.06.

Type of Motivation (MPES)

Behavioural regulation types were assessed using an adapted version of the Physical Education Motivation Scale (MPES) (Sánchez-Oliva *et al.*, 2012). The original words referring to physical education were replaced by words referring to sport (“I believe it is not beneficial to continue attending physical education classes” was replaced by “I do not believe that it is beneficial to continue attending the training sessions”). The questionnaire contains

20 items, each preceded by the statement, "I participate in this sport...". There are 4 items per behavioural regulation: intrinsic motivation ("Because this sport is fun"); identified regulation ("Because I can learn skills that could be used in other areas of my life"); introjected regulation ("Because I feel bad if I am not involved in such activities"); external regulation ("Because I want the coach to think that I am a good athlete"); and amotivation ("But I think that I'm wasting my time with this sport"). Items were rated on a 5-point Likert scale (1=strongly disagree to 5=strongly agree). This instrument was validated (Confirmatory Factor Analysis), and their internal consistency revealed: $\chi^2/df=4.80$; CFI=0.92; TLI=0.91; GFI=0.93; SRMR=0.05; and RMSEA=0.06.

Enjoyment and Boredom (EBSS)

The Enjoyment/Boredom in Sport Scale (Duda & Nicholls, 1992), adapted into Spanish by Baena-Extremera *et al.* (2012), was administered. The original words referring to physical education were again modified ("In Physical Education, I usually hope the class will end quickly" was replaced by "When I practice, I usually hope the training will end quickly"). The original instrument comprised 8 items of which 4 items assessed enjoyment and 4 items assessed boredom. Only 6 items were used in this study because the factorial analysis showed that 2 of the items did not have adequate factor loadings (>.30). This scale was validated (Confirmatory Factor Analysis), and its internal consistency revealed: $\chi^2/df=6.30$; CFI=0.99; TLI=0.98; GFI=0.99; SRMR=0.02; and RMSEA=0.06. All responses were given on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Intention to Persist with physical activity (IPS)

The intention to persist in the sport was measured by the following question: "How long do you think you are going to persist in this sport?". Four choices followed: 1 ("less than 1 year"); 2 ("between 1 and 2 years"); 3 ("between 3 and 4 years"); and 4 ("more than 4 years").

Procedure

In this study, a correlation methodology with a transversal design was applied. The study received ethical approval from the University of Extremadura. The study followed the American Psychological Association ethics guidelines regarding consent, confidentiality and anonymity of responses. Before data collection, informed consent was obtained from coaches, players and the players' parents and the general purpose of the study was explained. Data collection took place at the clubs in a group setting under the supervision of trained research assistants. Participants completed the questionnaires in the changing room before the start of the training. Thus, the sportspersons were required to be there earlier to complete the questionnaires individually, which took approximately 15-20 minutes. This took place under non-distracting conditions, in the absence of their coach and supervised by the research assistants.

Statistical analysis

The Statistical Package for the Social Sciences (SPSS 18.0) was used to obtain the descriptive statistics and internal consistency estimates for all of the study variables. The Confirmatory Factor Analysis (CFA) was also performed on the data of the questionnaires to test their psychometric properties using the SPSS add-on programme, AMOS. After performing these

2 tests, the Structural Equation Modelling (SEM) with maximum likelihood estimation to test the hypotheses was used.

Using SEM, the multivariate normality of the data, using Mardia's multivariate kurtosis coefficient, was evaluated. First, the measurement model was examined to assess the relationship between the observed indicators and their respective latent constructs. The subscale scores were used as indicators of the need support, need satisfaction, autonomous motivation and controlled motivation latent factors. For amotivation, enjoyment, boredom and importance of participation in sport, 2 parcel items were generated that served as indicators for each respective latent variable.

The model fit index was examined using the chi-square statistic, the Goodness-of-Fit Index (GFI), the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA) and the standardised root mean-square residual (SRMR). A non-significant χ^2 value indicates that the specified model is not significantly different from the data and, thus, is a good fit. Hu and Bentler (1999) proposed that values of 0.90 or higher on the CFI and IFI and values less than or equal to 0.08 and 0.06 on the SRMR and RMSEA, respectively, are indicative of good model fit (Browne & Cudeck, 1993).

DISCUSSION OF RESULTS

Preliminary analysis

First, the questionnaires were validated (CFA) and their internal consistency (Cronbach's Alpha coefficient) established. The internal consistency scores indicated that all of the instruments achieved adequate (between 0.72 and 0.88) Cronbach's alpha values. Specifically, the reliability indexes were 0.78 for autonomy support, 0.72 for competence support and 0.83 for relatedness support. The satisfaction of BPN values were 0.73 for satisfaction of the need for autonomy, 0.76 for the need for competence and 0.83 for the need for relatedness. The motivation scores were: 0.72 for intrinsic motivation; 0.77 for identified regulation; 0.80 for introjected regulation; 0.80 for external regulation; and 0.85 for amotivation. Finally, a value of 0.84 was achieved for enjoyment and 0.88 for boredom.

Descriptive and correlation analysis

Table 1 shows the descriptive statistics. The relationship between the perception of support and the BPN of the sportspersons was strong, with slightly more emphasis on competence support than on relatedness or autonomy, respectively. In addition, a strong relationship was found between satisfaction and the need for relatedness. Furthermore, with the exception of external regulation, high levels of self-determination, progressively decreasing across the motivational continuum, were found. Enjoyment had high scores, whereas boredom yielded modest scores.

The bivariate correlation results showed that each of the perceptions of BPN support variables was positively associated with the 3 BPN satisfaction variables. The 3 BPN satisfaction variables were also positively associated with intrinsic, identified and external regulation, though the association was stronger for the first 2 variables, indicating higher levels of self-determination. Satisfaction with the needs for autonomy and competence, however, was significantly correlated with introjected regulation.

TABLE 1. DESCRIPTIVE STATISTICS OF AND SIGNIFICANT CORRELATIONS BETWEEN SUBSCALES

Subscales of constructs	M±SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Autonomy Support	3.79±0.89	–												
2. Competence Support	4.50±0.71	0.53**	–											
3. Relatedness Support	4.49±0.69	0.54**	0.71**	–										
4. Autonomy Satisfaction	3.96±0.75	0.62**	0.48**	0.51**	–									
5. Competence Satisfaction	4.34±0.62	0.42**	0.51**	0.55**	0.61**	–								
6. Relatedness Satisfaction	4.59±0.61	0.34**	0.46**	0.58**	0.44**	0.58**	–							
7. Intrinsic	4.54±0.59	0.32**	0.37**	0.41**	0.38**	0.48**	0.40**	–						
8. Identified	4.28±0.71	0.28**	0.37**	0.33**	0.32**	0.41**	0.30**	0.54**	–					
9. Introjected	2.99±1.17	0.16**	0.09**	0.06*	0.17**	0.12**	0.03	0.22**	0.28**	–				
10. External	3.20±1.12	0.18**	0.16**	0.14**	0.20**	0.22**	0.09**	0.30**	0.30**	0.60**	–			
11. Amotivation	1.50±0.92	0.10**	-0.06*	0.11**	0.05	-0.08**	-0.11**	-0.16**	-0.07*	0.34**	0.28**	–		
12. Enjoyment	4.74±0.57	0.31**	0.42**	0.46**	0.40**	0.54**	0.48**	0.60**	0.40**	0.11**	0.16**	-0.24**	–	
13. Boredom	1.44±0.90	-0.02	-0.18**	-0.21**	-0.06	-0.19**	-0.23**	-0.24**	-0.14**	0.20**	0.13**	0.69**	-0.41**	–

** p<0.01

* p<0.05

Furthermore, amotivation was negatively associated with enjoyment and positively associated with boredom. In addition, amotivation was positively associated with introjected regulation and amotivation. Finally, enjoyment was positively related to all variables, especially the need for competence and intrinsic motivation.

Structural Equation Modelling Analysis

Based on the Self-Determination Theory (Deci & Ryan, 2000; Ryan & Deci, 2000), a structural equation model with the following structure was developed:

- (1) the relationship between the sportspersons' perception of the support of the coaches and the 3 BPN acted as the social factors (perception of support to autonomy, competence and relatedness);
- (2) the satisfaction of the sportspersons' BPN variables acted as mediators (satisfaction of autonomy, competence and relatedness);
- (3) motivational regulation types (autonomous regulation, controlled motivation and amotivation); and
- (4) enjoyment, boredom and intention continued to represent consequences.

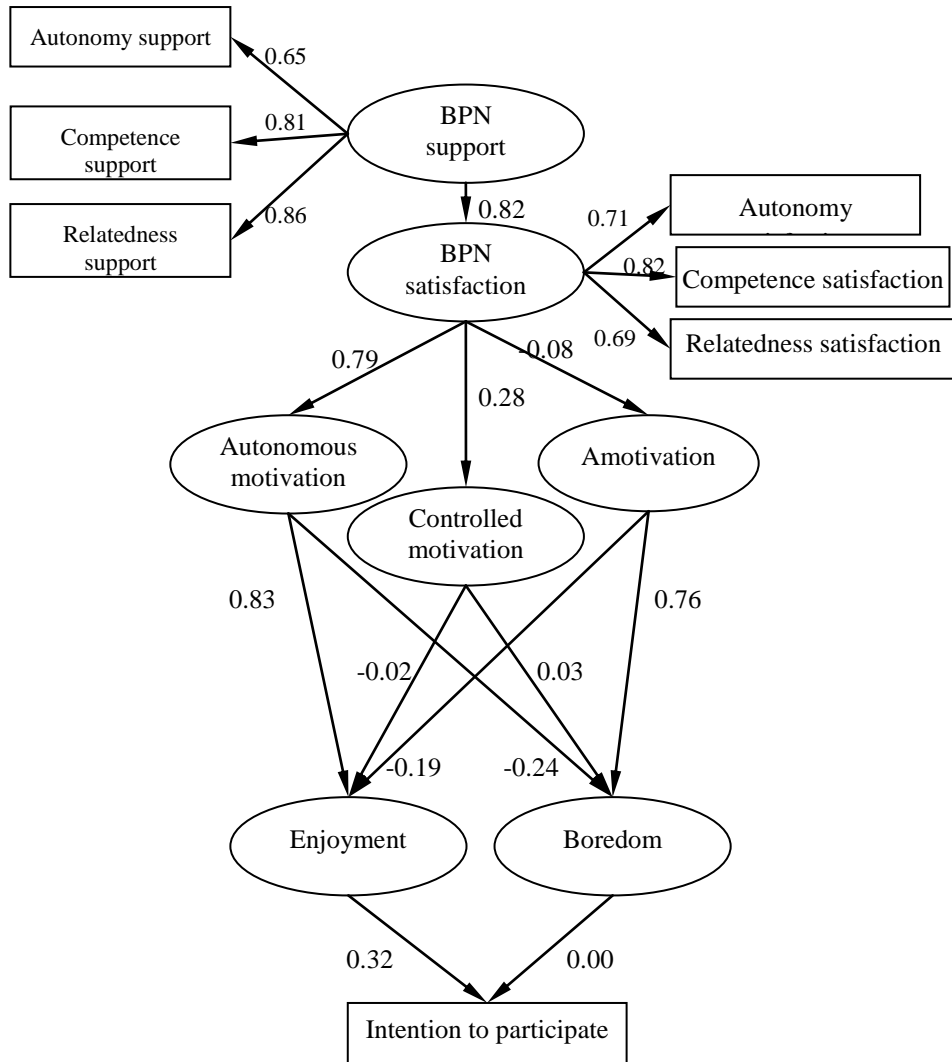
The latent BPN support variables, BPN satisfaction and amotivation yielded 2 parcels with 2 randomly grouped items as indicators. For autonomous motivation and controlled motivation, the average values obtained for regulation types (intrinsic and identified regulation for autonomous motivation and introjected and external regulation for controlled motivation), of each variable were used as indicators. The average values of the 3 items included in each enjoyment and boredom factor, were used as indicators.

To verify the adaptation of the indicated model, a 2-step procedure (Anderson & Gerbing, 1988) was performed. First, a CFA test was conducted to correlate the combination of latent variables. The fit index indicated that the measurement model adequately described the data: $\chi^2/df=5.02$; CFI=0.95; TLI=0.93; GFI=0.94; SRMR=0.07; and RMSEA=0.06.

Secondly, to test the proposed structural equation model, the maximum likelihood estimation method was used in conjunction with the bootstrapping procedure. This process confirmed that the results of the estimators were not affected by the lack of normality, and they were consequently considered to be sufficiently robust (Byrne, 2001). In the initial model, the 3 BPN support variables were associated with the 3 BPN satisfaction variables. Moreover, these 3 variables were associated with the 3 types of motivation. The 3 types of motivation were, in turn, associated with enjoyment and boredom, and these variables were associated with the intention to persist. The model yielded the following data: $\chi^2/df=5.01$; CFI=0.83; TLI=0.80; GFI=0.82; SRMR=0.11; and RMSEA=0.09. These results indicate that the model did not have an adequate fit to the data. Furthermore, in the relationships between the BPN support variables and the BPN satisfaction variables, multi-collinearity problems were found.

The model was, therefore, run again. Specifically, BPN satisfaction as a single latent variable was grouped, while the 3 support variables were isolated with respect to that variable. The fit indexes were as follows: $\chi^2/df=5.42$; CFI=0.85; TLI=0.81; GFI=0.86; SRMR=0.07; and RMSEA=0.15. Therefore, the 3 perceptions of support were also grouped as a latent variable formed by the predictive power of the 3 needs factors. The fit index indicated that the re-

evaluated measurement model adequately fitted the data: $\chi^2/df=6.56$; CFI=0.93; TLI=0.91; GFI=0.92; SRMR=0.06; and RMSEA=0.07.



All standardised estimates $\beta > \pm 0.13$ are significant ($p < 0.05$).
 Indicators are not shown for the purpose of simplicity.
 BPN= Basic Psychological Needs

FIGURE 2. STRUCTURAL EQUATION MODEL

Figure 2 shows the standardised parameters, which indicate that perception of BPN support emerged as a strong positive predictor of BPN satisfaction. Moreover, the model emphasised BPN satisfaction as a predictor of autonomous and controlled motivation, whereas no prediction of amotivation was found. Autonomous motivation then emerged as a positive strong predictor of enjoyment and a negative predictor of boredom. Amotivation, however, positively predicted boredom and negatively predicted enjoyment. Enjoyment emerged as a predictor of the intention to participate.

TABLE 2. INDIRECT EFFECTS

Constructs and subscales	Effects
<i>BPN Support</i>	
→ Autonomy satisfaction	0.59
→ Competence satisfaction	0.67
→ Relatedness satisfaction	0.57
→ Autonomous motivation	0.65
→ Controlled motivation	0.23
→ Amotivation	-0.07
→ Enjoyment	0.54
→ Boredom	-0.20
→ Intention to participate	0.17
<i>BPN Satisfaction</i>	
→ Enjoyment	0.68
→ Boredom	-0.25
→ Intention to participate	0.28
<i>Motivation (Intention to participate)</i>	
→ Autonomous motivation	0.27
→ Controlled motivation	-0.00
→ Amotivation	-0.06

The standardised indirect effects (Table 2), which indicate how BPN support positively predicts the 3 BPN satisfaction variables, were also calculated (autonomy: $\beta=0.59$; competence: $\beta=0.67$; relatedness: $\beta=0.57$). Furthermore, BPN support positively predicted autonomous motivation ($\beta=0.65$), controlled motivation ($\beta=0.23$), enjoyment ($\beta=0.54$) and intention to participate ($\beta=0.17$). However, BPN support negatively predicted boredom ($\beta= -0.20$), whereas BPN satisfaction had a positive indirect effect on enjoyment ($\beta=0.68$) and intention to participate ($\beta=0.28$) and a negative effect on boredom ($\beta= -0.25$). Autonomous motivation had a positive indirect effect on the intention to participate ($\beta=0.27$).

DISCUSSION

The main aim of the study was to examine the influence of the motivational processes developed by young sportspersons on enjoyment, boredom and intention to participate. Based on the Self-Determination Theory (Deci & Ryan, 2000), the study demonstrated the importance of coaches in sport adherence by the sportspersons when BPN satisfaction is promoted through the perception of the sportspersons that their needs for autonomy, competence and relatedness are supported.

The first hypothesis proposed that the perception of support would predict greater BPN satisfaction and higher levels of self-determination, enjoyment and intention to persist. The results revealed that sportspersons who perceived that their coaches supported their BPN showed high BPN satisfaction. Importantly, the support of the coaches promotes autonomy, competence and relatedness in their sportspersons. Similarly, several studies, such as Balaguer *et al.* (2008) and Adie *et al.* (2012), have focused on assessing the importance of significant other individuals besides the direct agent (coach). These studies showed that perceived autonomy support was associated with satisfaction, with autonomy and relatedness needs in sportspersons. Related studies include those conducted by Álvarez *et al.* (2009) and Ntoumanis and Standage (2009), which demonstrated the influence of coaches on the BPN satisfaction of their sportspersons. However, these studies only evaluated perception of autonomy support. Although the results of these studies were significant, in the present study, the three perceptions of support variables emerged as predictors of the general perception of coaches' support variable. However, according to the indirect effects results, apart from the influence of sportspersons' perception of support on BPN satisfaction, these perceptions predicted higher self-determination to practise. This finding suggests that sportspersons, who are supported by their coaches, will have more intrinsic motivation to practise, will derive more enjoyment from the sport and will have stronger intention to persist in the sport.

The second hypothesis suggested that high BPN satisfaction among the sportspersons would be a strong positive predictor of autonomous motivation, enjoyment and intention to persist. The results showed BPN satisfaction emerged as a strong predictor of autonomous and controlled motivation, whereas amotivation was not predicted. In other words, a sportsperson with the freedom to choose, competence and good socialisation in his/her sport code, will have more self-determined reasons to practise. However, if the BPN are not satisfied they will not detract from participation in the activity. Similar results were found by Balaguer *et al.* (2008) and Moreno-Murcia *et al.* (2009). These studies examined whether BPN satisfaction predicted intrinsic motivation. Notably, however, BPN satisfaction does not negatively predict amotivation, which may explain why sportspersons differ between these two variables; being free to choose to participate in training and feeling competent in one's sport do not have to be amotivated. The indirect effects show that amotivation promoted maladaptive consequences, such as boredom, which was also positively predicted by BPN satisfaction. These results confirm that the three variables are related. Finally, BPN satisfaction emerged as a strong indirect predictor of the intention to persist. These findings are consistent with those of Almagro *et al.* (2011), Jõessar *et al.* (2011) and García-Calvo *et al.* (2012).

Regarding the third hypothesis, sportspersons with autonomous motivation experienced greater perceived enjoyment during practice and also had a strong intention to persist, many studies have used the Motivational Hierarchical Model of Vallerand (2001) to explain the influence of social factors and their possibly positive consequences. For example, Balaguer *et al.* (2008) showed that intrinsic motivation was a predictor of both greater self-esteem and life satisfaction. These results suggest that the 5th mini-theory of the Self-Determination Theory is contradictory (Vansteenkiste *et al.*, 2010), because the most extrinsic regulations (prestige, fame, social recognition, etc.) lead to high levels of self-esteem. However, this study shows that pursuing aims with greater intrinsic regulation is an antecedent of welfare (enjoyment and intention to persist) and self-esteem, which is not the case for extrinsic motivation. Nevertheless, Balaguer *et al.* (2008) did not assess the influence of the regulation of controlled conduct on possible consequences, either positive or negative. They also did not consider perceptions that sportspersons have of the competence and relatedness support of their coaches. However, the current research shows that the three perceptions of support predicted BPN satisfaction.

Ntoumanis and Standage (2009) and Jõessar *et al.* (2011) concluded that a high level of self-determination was positively associated with a greater commitment to the sport, which might be conceptualised as a greater intention to persist. Specifically, Álvarez *et al.* (2009) concluded that perceived autonomy support positively predicted BPN satisfaction, self-determined motivation and enjoyment and negatively predicted amotivation. Other studies based on the Motivational Hierarchical Model of Vallerand (2001), have found similar results in respect of enjoyment and intention to persist (Almagro *et al.*, 2011; García-Calvo *et al.*, 2012).

PRACTICAL APPLICATION

Thus, whether the three types of BPN support are antecedents of BPN satisfaction and this satisfaction is an antecedent of self-determined motivation and its consequences (enjoyment, persistence), the support strategies of coaches appear to influence these BPN. Therefore, to improve satisfaction with the need for autonomy, coaches should promote tasks in which participants are given important roles and allowed the power to choose and be leaders in the exercises. To satisfy the need for competence, coaches should adapt their tasks to the level of the sportspersons to make them attainable. These tasks must be purposeful and strike a balance between difficulty and attainability. Coaches should also provide information about individual progress (provide appropriate plans to all sportspersons and give everyone opportunities to achieve the aims). Feedback is especially valuable in this regard (using positive feedback, providing private and significant evaluations and ensuring adequate communication). Finally, to promote relatedness satisfaction, coaches should establish strategies to improve confidence and knowledge (promoting group dynamics, playing role games, optimising the control group, developing adequate communication and promoting abilities in the youth, such as empathy or active listening skills).

LIMITATIONS

This study had several limitations. It provided useful information through an analysis of the perceptions that sportspersons have of their coaches' behaviour in a large sample, allowing

the study to generalise about the behaviour of individuals. However, further studies are needed that examine coaches' behaviour first-hand through a qualitative methodology and relate these observations with the motivational perceptions of the sportspersons using a correlation methodology instead of assessing sportspersons' perceptions of support. Furthermore, it might be interesting to investigate whether there are differences in motivational processes between individual and team sport sportspersons. Moreover, teaching programmes should be developed for coaches in a variety of training categories to promote motivational strategies that increase BPN support.

CONCLUSION

In conclusion, taking into account that other studies have focused solely on autonomy support (Balaguer *et al.*, 2008; Álvarez *et al.*, 2009), this study demonstrated the significance of BPN support as a motivational antecedent of self-determined behaviour. Coaches emerged as a crucial social factor for exerting a positive influence on young sportspersons.

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