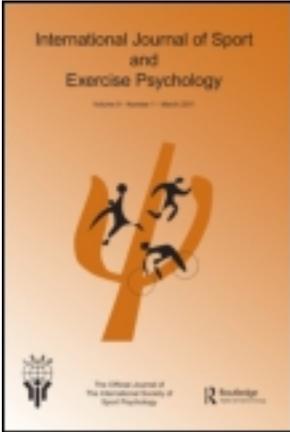


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### French validation and adaptation of the perceived autonomy support scale for exercise settings to the sport context

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# FRENCH VALIDATION AND ADAPTATION OF THE PERCEIVED AUTONOMY SUPPORT SCALE FOR EXERCISE SETTINGS TO THE SPORT CONTEXT

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## ABSTRACT

Recently, Hagger, Chatzisarantis, Hein, Pihu, Soós, and Karsai (2007) presented a new questionnaire, the Perceived Autonomy Support Scale for Exercise Settings (PASSES), designed to evaluate perceived autonomy support toward exercise. The present research investigated the psychometric properties of a French adaptation of this scale to the sport setting in two studies. In Study 1, the French version of the PASSES (i.e., l'Échelle des Perceptions du Soutien à l'Autonomie en Sport; EPSAS) was adapted for sport and completed by 134 athletes. Results of an exploratory factor analysis revealed a unidimensional structure with factor loadings ranging from .63 to .85. Results also showed satisfactory internal consistency ( $\alpha = .91$ ). In Study 2 ( $N = 203$ ), a confirmatory factor analysis provided further support for the unidimensional structure of the questionnaire. Convergent validity of the instrument was also obtained through correlations with meaningful constructs, namely intrinsic motivation and identified regulation from the Sport Motivation Scale (Brière, Valleraud, Blais, & Pelletier, 1995). Finally, the temporal stability of the scale was also found to be adequate. Overall, these findings suggest that the EPSAS is a valid and reliable instrument for assessing perceived coach autonomy support in sport.

Key words: autonomy support, coach, motivation, sport, self-determination theory

Research over the years has revealed that coaches represent one of the most important influences in athletes' lives (Horn, 2002). While a number of coaching dimensions of importance have been found, recent research has underscored the role of autonomy support (Mageau & Vallerand, 2003). Autonomy support is said to be present when a coach takes the athletes' perspective and provides opportunities for choice and participation in decision making, while minimizing the use of pressure (Grolnick & Ryan, 1989). Autono-

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my support from coaches has been found to influence a number of outcomes in athletes, including motivation, persistence, and well-being (e.g., Amorose & Anderson-Butcher, 2007; Reinboth, Duda, & Ntoumanis, 2004).

One important methodological conclusion that can be drawn from such research is that no measure of autonomy support assessing the whole spectrum of autonomy-supportive behavior has been validated as it pertains to coaching. However, Hagger, Chatzisarantis, Hein, Pihu, Soós, and Karsai (2007) have validated an autonomy support scale in the field of exercise psychology (i.e., the Perceived Autonomy Support Scale for Exercise Settings; PASSES). This scale has been found to display excellent psychometric properties. In light of the importance of developing a valid instrument to assess autonomy support from one's sport coach, the purpose of the present research was to adapt the scale developed by Hagger et al. (2007) to the field of sport in the French language.

#### AUTONOMY SUPPORT FROM THE COACH

At all competitive levels, coaching behaviors play a central role in athletes' cognition and affective responses (Amorose, 2007). For instance, encouragement and reinforcement are typically associated with high levels of enjoyment and self-esteem, while negative coaching behaviors, such as punishment, are conducive to low levels of perceived competence, effort, and persistence (Coté, 2002; Smoll & Smith, 2002). Mageau and Vallerand (2003) further posit that autonomy support from the coach's perspective may represent the single most important factor with respect to athletes' motivation (see also Amorose, 2007; Mageau & Vallerand, 2003; Vallerand & Losier, 1999, for reviews).

Mageau and Vallerand (2003) suggest that autonomy-supportive coaches provide choice within specific rules and limits, give a rationale for tasks and limits, acknowledge athletes' feelings and perspectives, allow opportunities to take initiatives and do independent work, provide noncontrolling informational feedback, avoid controlling behaviors, and prevent ego-involvement in athletes. Thus, coaches who adopt an autonomy-supportive interpersonal style should facilitate and improve athletes' perceptions of autonomy which, in turn, should result in the enhancement of their self-determined motivation (Amorose & Anderson-Butcher, 2007; Mageau & Vallerand, 2003).

An increasing number of studies (Amorose & Anderson-Butcher, 2007; Conroy & Coastworth, 2007; Gagné, Ryan, & Bargmann, 2003; Pelletier, Fortier, Vallerand, & Brière, 2001; Pelletier et al, 1995; Reinboth et al., 2004) have investigated the influence of athletes' perceptions of coach autonomy support on their basic need for satisfaction and motivation. Moreover, in these investigations, with the exception of the one conducted by Conroy and Coastworth (2007), researchers have assessed perceived autonomy-supportive coaching behaviors either by using scales developed specifically for the immediate purpose of their research or with scales developed and validated in other domains, such as the Health-Care Climate Questionnaire (Williams, Grow, Freedman, Ryan, & Deci, 1996), the Learning Climate Questionnaire (Williams & Deci, 1996), and the Work Climate Questionnaire (Bard, Deci, & Ryan, 2004).

Recently, two scales have appeared in the realm of exercise and sport psychology. The first, the Autonomy-Supportive Coaching Questionnaire (ASCQ) developed by Conroy and Coastworth (2007), measures athletes' perceptions of their coach's autonomy-supportive behavior toward them. The second one, the PASSES (Hagger et al., 2007), assesses the autonomy support that students received from their physical education teachers, parents, and peers. We have decided to use the second scale to derive a version of the PASSES in French because the PASSES displays a number of advantages over the other scale. First, the PASSES assesses the whole spectrum of autonomy-supportive behaviors (i.e., taking time to listen, providing choice or opportunity, providing informational feedback, offering encouragement and hints, responding to questions, and acknowledging of understanding or empathy), while the ASCQ assesses only two behaviors (i.e., interest in athletes' input and praise for autonomous behavior). Past investigations have shown that all of these autonomy-supportive behaviors were positively associated with perceptions of autonomy and intrinsic motivation (Reeve & Jang, 2006) and thus should be assessed. Second, Hagger and his colleagues (2007) created their initial pool of items for the PASSES from a precise examination of previous investigations in several domains. Finally, the PASSES has gone through a thorough validation phase that includes comparing the validity of the scale across independent samples from different cultural orientations (i.e., Estonia, Great Britain, and Hungary). Thus, the PASSES was chosen for the present research.

#### THE PRESENT RESEARCH

The purpose of the present research was to test the reliability and the validity of a French translation and adaptation of the PASSES (Hagger et al., 2007) in the sport context. This questionnaire is a 12-item self-report measure assessing the extent to which athletes perceive their coach to be autonomy-supportive. Answers are given on a Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Results of the two validation studies conducted by Hagger and his colleagues (2007) revealed that this scale was a valid and reliable measure of perceived autonomy support from three sources (i.e., physical education teachers, parents, and peers). For the purpose of the present research, we adapted the PASSES to the sport context by using only the perspective of the physical education teacher and replacing it by that of the coach. We used the protocol advocated by Vallerand (1989) for transcultural validation of psychometric instruments. Thus, the factorial structure of the "Échelle des Perceptions du Soutien à l'Autonomie en Sport" (EPSAS) was evaluated using exploratory (Study 1) and confirmatory (Study 2) factor analyses. In addition, Study 2 also assessed the construct validity of the EPSAS by correlating it with motivational constructs found in the French version of the Sport Motivation Scale (SMS; Brière, Vallerand, Blais, & Pelletier, 1995). Finally, we also examined the test-retest reliability of the EPSAS in Study 2.

## STUDY 1

The purpose of the present study was threefold: (a) translating the PASSES (Hagger et al., 2007) into French, (b) adapting it to the sport context, and (c) examining the structure of the EPSAS via exploratory factor analysis and its internal consistency. We hypothesized that the EPSAS would demonstrate evidence of adequate internal consistency and a unidimensional factorial structure.

## METHOD

The PASSES (Hagger et al., 2007) was translated into French using the protocol outlined by Vallerand (1989). First, two bilingual researchers, whose first language was French, performed the forward translation of the PASSES from English to French. Then, the two versions were separately translated back into English by two different bilingual individuals whose first language was English. The back-translated items were similar in meaning to the original English items. The two French versions were then reviewed and compared by a committee composed of three bilingual experts in self-determination theory (SDT; Deci & Ryan, 1985) in the sport domain. These researchers created a common synthesized version of the questionnaire. They also reworded the items to target to the sport context. For example, the expression *physical education teacher* was replaced with *coach* and *active sports and/or vigorous exercise in my free time* was replaced with *this sport activity*.

## PARTICIPANTS

The sample consisted of 134 competitive athletes (79 men and 55 women) from a variety of individual and team sport activities, including rowing, tennis, judo, karate, volleyball, football, gymnastics, cycling, swimming, athletics, horseback riding, handball, aerobics, fencing, archery, water polo, and table tennis. All participants had a coach. Participants' mean age was 26.1 years ( $SD = 14.4$  years). They were training an average of 6.7 hr per week.

## MEASURE

The questionnaire used was the 12-item translated version of the PASSES (Hagger et al., 2007) in French, the EPSAS. Items were answered on a 7-point Likert scale anchored by 1 (*strongly disagree*) and 7 (*strongly agree*).

## PROCEDURE

After obtaining their informed consent, the scale was administered to the participants by the investigators during regular training sessions. They were told that their answers would remain anonymous and confidential. They were also informed that they had the right to withdraw from the study at any time. On average, the questionnaire required approximately 5 min to complete.

## RESULTS AND DISCUSSION

We conducted an exploratory factor analysis using principal components analysis with oblique rotation. Results revealed initial support for the structure of the scale developed and validated by Hagger and his colleagues (2007). Specifically, an examination of the scree plot showed clear discontinuity in the slope after one factor, suggesting that extracting one factor is appropriate (Tabachnick & Fidell, 2007). This factor had an eigenvalue of 6.18 and explained 52.0% of the variance of the items. Factor loadings of the matrix structure ranged from .63 to .85 (see Table 1). Then, we calculated the reliability estimate ( $\rho_c$ ) of the composite score. A composite reliability estimate of .91 was obtained, demonstrating high levels of internal consistency (Nunnally, 1978). In addition, responses to each item ranged from 1 to 7 with the exception of item 12 which ranged from 3 to 7. Thus, the results of Study 1 provided initial support for its reliability and factorial validity.

**Table 1.** Means, Standard Deviations, and Standardized Factor Loadings From the Exploratory Factor Analysis in Study 1

| Item   | <i>M</i> | <i>SD</i> | Factor loading |
|--|----------|-----------|----------------|
| 1. I feel that my coach provides me with choices, options, and opportunities about whether to do this sport activity<br>1. J'estime que mon entraîneur me laisse la possibilité de faire des choix au sujet de cette activité sportive | 5.11     | 1.66      | .63            |
| 2. I think that my coach understands why I choose to do this sport activity<br>2. Je pense que mon entraîneur comprend pourquoi je choisis de pratiquer cette activité sportive  | 5.49     | 1.63      | .73            |
| 3. My coach displays confidence in my ability to do this sport activity<br>3. Mon entraîneur a confiance en mes capacités à pratiquer cette activité sportive  | 5.83     | 1.18      | .68            |
| 4. My coach encourages me to do this sport activity<br>4. Mon entraîneur m'encourage à m'investir dans cette activité sportive   | 5.95     | 1.28      | .69            |
| 5. My coach listens to me about this sport activity<br>5. Mon entraîneur est à mon écoute à propos de cette activité sportive  | 5.74     | 1.49      | .85            |
| 6. My coach provides me with positive feedback when I do this sport activity<br>6. Mon entraîneur me donne des retours positifs quand je pratique cette activité sportive  | 5.53     | 1.39      | .77            |
| 7. I am able to talk to my coach about this sport activity<br>7. Je peux discuter sans problème de cette activité sportive avec mon entraîneur   | 6.20     | 1.12      | .72            |
| 8. My coach makes sure I understand why I need to do this sport activity<br>8. Mon entraîneur s'assure que je comprenne pourquoi j'ai besoin de pratiquer cette activité sportive  | 4.85     | 1.70      | .70            |
| 9. My coach answers my questions about doing this sport activity<br>9. Mon entraîneur répond à mes interrogations relatives à cette activité sportive  | 5.98     | 1.08      | .69            |
| 10. My coach cares about me when I do this sport activity<br>10. Mon entraîneur s'intéresse à moi lorsque je pratique cette activité sportive  | 5.73     | 1.34      | .74            |
| 11. I feel I am able to share my experiences of this sport activity with my coach<br>11. J'ai le sentiment de pouvoir partager mes expériences dans cette activité sportive avec mon entraîneur  | 5.55     | 1.59      | .74            |
| 12. I trust my coach's advice in this sport activity<br>12. J'ai confiance dans les conseils donnés par mon entraîneur dans cette activité sportive  | 6.46     | 0.81      | .64            |

## STUDY 2

We conducted a second study to examine more closely the psychometric properties of the EPSAS. Specifically, the purpose of Study 2 was fourfold: (a) to confirm the factorial structure of the EPSAS with a confirmatory factor analysis, (b) to further study the internal consistency of the scale through the composite reliability estimate, (c) to examine the test–retest reliability of the EPSAS over a 2-month period, and finally (d) to test its discriminant and convergent validity with the French version of the SMS (Brière et al., 1995). With respect to the first three goals, it was hypothesized that results would support the unidimensional structure of the EPSAS, as well its internal consistency and test–retest reliability.

In order to test the discriminant and convergent validity of the EPSAS, it was decided to study the relationship between autonomy support as assessed by the EPSAS and intrinsic and extrinsic motivation as assessed by the French version of the SMS (Brière et al., 1995). SDT (Deci & Ryan, 1985) posits the existence of three forms of motivational self-regulations, namely intrinsic motivation, extrinsic motivation, and amotivation. Intrinsic motivation represents the most self-determined regulation and refers to performing an activity for the pleasure and satisfaction derived from the activity itself. By contrast, amotivation is the least self-determined type of motivation and refers to a relative absence of motivation. Amotivated behaviors are related to perceptions of incompetence and lack of control (Deci & Ryan, 2000). Extrinsic motivation is situated between intrinsic motivation and amotivation on the self-determination continuum. Extrinsically motivated behaviors reflect participation in an activity for external reasons and vary with respect to the inherent levels of self-determination. Specifically, from the highest to the lowest levels of self-determined motivation, one finds identified regulation (acting out of personal choice although the activity is not interesting), introjected regulation (when the behavior is emitted in order to avoid feelings of guilt and shame), and external regulation (emitting behavior in order to reach rewards or avoid punishment).

Research by Hagger and his colleagues (2007) with the PASSES revealed that perceived autonomy support was significantly and positively correlated to intrinsic ( $r = .30$ ) and identified regulation ( $r = .34$ ) and unrelated to introjected ( $r = -.01$ ) and external regulation ( $r = -.03$ ). Thus, in line with the results of Hagger et al., it was expected that correlations involving the self-determined forms of motivation with autonomy support would be stronger than those involving the non-self-determined forms of motivation. However, contrary to the Hagger et al. research, we expected the correlation involving intrinsic motivation to be higher than that involving identified regulation. This is because Hagger et al.'s research focused on physical exercise which in itself may not represent an interesting activity (Wilson, Mack, & Grattan, 2008). Theory and research (Vallerand, 1997; Vallerand, Pelletier, & Koestner, 2008) suggest that when the activity is interesting, as in sports, intrinsic motivation should be much more correlated with autonomy support than identified regulation (Amorose & Anderson-Butcher, 2007; Pelletier et al., 2001).

## METHOD

### PARTICIPANTS

A total of 203 athletes (101 men and 102 women) with a mean age of 16.8 years ( $SD = 3.01$ ) participated in this study. Competitive athletes were recruited from rowing, tennis, judo, karate, volleyball, football, gymnastics, table tennis, badminton, canoe-kayak, cycling, swimming, athletics, horseback riding, basketball, handball, and rugby. They were training an average of 7.7 hours per week.

### MEASURES

*Perceived autonomy support.* Each participant's perceptions of autonomy support from their coach were evaluated using the EPSAS developed in Study 1. As in Study 1, athletes rated on a 7-point Likert varying between 1 (*strongly disagree*) and 7 (*strongly agree*).

*Sport motivation.* We evaluated athletes' motivation using the French version of the SMS (Brière et al., 1995). This tool measures seven types of motivation, namely intrinsic motivation to know, intrinsic motivation to accomplish things, intrinsic motivation to experience stimulation, identified regulation, introjected regulation, external regulation, and amotivation. Because the majority of researchers (e.g., Deci & Ryan, 1985) consider intrinsic motivation as a unitary construct, the three intrinsic motivation subscales were combined in an index of intrinsic motivation. The response scale has a Likert format ranging from 1 (*does not correspond at all*) to 7 (*corresponds exactly*). Past studies confirmed the factor structure of the scale and revealed an adequate level of internal consistency as well as satisfactory test-retest reliability (see Pelletier & Sarrazin, 2007, for a review). In the present study, composite reliability estimates were .89, .75, .77, .80, and .70 for intrinsic motivation, identified regulation, introjected regulation, external regulation, and amotivation, respectively.

### PROCEDURE

As in Study 1, informed consent was obtained from the athletes. They then completed the EPSAS during a regular training session. It was clearly stated to participants that confidentiality of their answers would prevail at all times. They were also offered the option to withdraw from the investigation at any time.

## RESULTS AND DISCUSSION

### CONFIRMATORY FACTOR ANALYSIS

We examined the unidimensionality of the EPSAS with a confirmatory factor analysis using the maximum likelihood estimation method with LISREL 8.3 (Jöreskog & Sörbom, 1993). We specified a model in which indicators of perceived coach autonomy support loaded on a single latent factor. Results showed acceptable fit indices:  $\chi^2 = 106.91$ ,  $df = 48$ ,  $\chi^2/df = 2.23$ ; CFI = .97; GFI = .94; NNFI = .95; RMSEA = .07; SRMR = .04. In addition, standardized loadings were all significant and greater than .60. They appear in Table 2.

**Table 2.** Means, Standard Deviations, Standardized Factor Loadings, and Standard Errors From the Confirmatory Factor Analysis in Study 2

| Item   | <i>M</i> | <i>SD</i> | Factor loading | <i>SE</i> |
|--|----------|-----------|----------------|-----------|
| 1. I feel that my coach provides me with choices, options, and opportunities about whether to do this sport activity | 4.65     | 1.56      | .58            | .100      |
| 2. I think that my coach understands why I choose to do this sport activity  | 5.33     | 1.40      | .58            | .095      |
| 3. My coach displays confidence in my ability to do this sport activity  | 5.84     | 1.20      | .66            | .076      |
| 4. My coach encourages me to do this sport activity  | 5.88     | 1.32      | .70            | .087      |
| 5. My coach listens to me about this sport activity  | 5.79     | 1.32      | .82            | .081      |
| 6. My coach provides me with positive feedback when I do this sport activity   | 5.55     | 1.27      | .79            | .080      |
| 7. I am able to talk to my coach about this sport activity   | 6.04     | 1.29      | .78            | .081      |
| 8. My coach makes sure I understand why I need to do this sport activity   | 4.70     | 1.65      | .61            | .110      |
| 9. My coach answers my questions about doing this sport activity   | 5.80     | 1.24      | .75            | .080      |
| 10. My coach cares about me when I do this sport activity  | 5.76     | 1.32      | .78            | .083      |
| 11. I feel I am able to share my experiences of this sport activity with my coach                                    | 5.47     | 1.43      | .76            | .090      |
| 12. I trust my coach's advice in this sport activity   | 6.40     | 0.99      | .69            | .066      |

#### SCALE INTERNAL CONSISTENCY AND TEST–RETEST RELIABILITY

The internal consistency of the EPSAS was satisfactory ( $\alpha_c = .91$ ). Furthermore, in order to examine the test–retest reliability of the EPSAS, 77 participants were sent a letter in the mail including the scale 2 months after the first assessment. Overall, 57% of these questionnaires were completed and returned (27 men and 17 women aged between 14 and 28 years). The internal consistency of the EPSAS was satisfactory (alphas of .87 and .84 at Times 1 and 2, respectively). Finally, the test–retest reliability was completely satisfactory ( $r = .71, p < .001$ ). Thus, the EPSAS can be considered as showing adequate level of stability for a measure of perceived coach autonomy support.

#### CONVERGENT VALIDITY

In addition to the analysis of internal consistency and latent structure, we also assessed the convergent validity of the EPSAS by studying the pattern of correlations between autonomy support and five forms of motivation: intrinsic motivation, identified regulation, introjected regulation, external regulation, and amotivation. These correlations are presented in Table 3. In line with our hypotheses, it was found that the correlation involving perceived autonomy support and intrinsic motivation ( $r = .47$ ) was positive and higher than the other correlations. Although the correlations between perceived autonomy support and the different forms of extrinsic motivation were similar (identified regulation,  $r = .20$ ; introjected regulation,  $r = .17$ ; external regulation,  $r = .18$ ), involving identified

**Table 3.** Means, Standard Deviations, and Correlations Among the Variables in Study 2

| Variables                     | <i>M</i> | <i>SD</i> | 1     | 2     | 3     | 4     | 5    | 6   |
|-------------------------------|----------|-----------|-------|-------|-------|-------|------|-----|
| 1. Perceived autonomy support | 5.58     | 0.98      | .91   |       |       |       |      |     |
| 2. Intrinsic motivation       | 5.32     | 0.97      | .47** | .89   |       |       |      |     |
| 3. Identified regulation      | 4.43     | 1.28      | .20*  | .51** | .75   |       |      |     |
| 4. Introjected regulation     | 5.37     | 1.25      | .17*  | .43** | .49** | .77   |      |     |
| 5. External regulation        | 3.06     | 1.41      | .18*  | .26** | .46** | .35** | .80  |     |
| 6. Amotivation                | 1.35     | 0.58      | -.06  | -.19* | .01   | .00   | .15* | .70 |

Note: Composite reliability estimates are presented along the diagonal. \*  $p < .05$ , \*\*  $p < .001$

regulation was positive and second in order of importance as hypothesized. Finally, the lowest correlation was obtained with amotivation ( $r = -.06$ ). In a study with a sample of 369 competitive swimmers aged 13 to 22 years, Pelletier and his colleagues (2001) have also shown that athletes' perceptions of coaches' autonomy support were positively linked to intrinsic motivation, identified regulation, introjected regulation, and external regulation. Consistent with the predictions of self-determination theory, these results confirmed that perceived autonomy support correlated most strongly with intrinsic motivation but also suggested that perceived autonomy support may lead to less autonomous forms of motivation. Overall, the results of Study 2 provide complementary support for the reliability and validity of the EPSAS.

## GENERAL DISCUSSION

Past research has revealed the absence of a scale assessing a rather complete repertoire of autonomy-supportive coaching behaviors as perceived by the athletes in the French language. Therefore, the purpose of the present research was to validate a French translation and adaptation of the PASSES (Hagger et al., 2007) to the sport domain. Two studies were conducted in order to assess the reliability and validity of this new scale (the EPSAS). Results from these two studies revealed adequate psychometric properties of the scale. Specifically, support for the unidimensional structure was obtained through both

exploratory (Study 1) and confirmatory (Study 2) factor analyses. Furthermore, support was obtained for the internal consistency (Studies 1 and 2) and the test–retest reliability of the EPSAS over 2 months (Study 2). Finally, the construct validity of the scale was supported by the correlations observed between the EPSAS and those of the different forms of motivation as proposed by SDT (Deci & Ryan, 1985). Thus, overall, the present findings provide preliminary support for the EPSAS and lead to a number of conclusions.

The first conclusion is that the PASSES represents a flexible tool that might be used in exercise or sport settings to assess perceived autonomy support from a number of social sources. In their original scale, Hagger et al. (2007) assessed autonomy support from the perspective of the physical education teachers, parents, and peers in exercise. In the present research, we showed that the PASSES could also be adapted to the realm of sport as it pertains to coaches. Future research is needed to determine whether the EPSAS needs to include other sources, such as parents and teammates, in line with the original PASSES as well.

A second conclusion is that the present results provide support for SDT (Deci & Ryan, 2000, 2008). Indeed, in SDT, autonomy support represents a key psychological variable that should display a unidimensional structure, be internally consistent, and be more strongly related to intrinsic motivation than to other constructs, especially when the activity is interesting (Vallerand, 1997; Vallerand et al., 2008). Results from both studies supported these hypotheses. These findings are also in line with past findings on the facilitative role of coach autonomy support in intrinsic motivation (see Mageau & Vallerand, 2003). It should be underscored that the relationships between autonomy support and the various forms of motivation were not very strong. This is in line with SDT that posits that the impact of autonomy support takes place through its influence on the satisfaction of the needs for competence, autonomy, and relatedness. Future research is needed to assess this hypothesis using the EPSAS.

A final conclusion that can be drawn from the present research is that sufficient support now exists for the reliability and validity of the EPSAS, such that it can be used in both theoretical and applied research. For instance, from a theoretical perspective, one could assess the extent to which athletes' perceptions relate to the coach's actual autonomy-supportive behaviors. Additionally, one could also assess the potential bidirectional relationship between athletes' motivation and the coach's autonomy-supportive behavior. Indeed, evidence exists for the impact of each variable on the other (see Mageau & Vallerand, 2003 for a review). Finally, from an applied perspective, the EPSAS could be useful in identifying coaching strategies that translate into autonomy support and that lead to positive outcomes in athletes. Such research could even lead to the development of effective coach training programs.

Certain limitations of the present research need to be considered. First, all participants came from France. As such, we do not know whether the EPSAS applies to other French cultures (e.g., Africa, Belgium, or Quebec). Future research should address this issue. Second, while the number of participants in each study was sufficient enough to allow us to conduct the analyses that were performed, the numbers in each study were not sufficient to allow us to test for the invariance of the scale as it pertains to gender and

to types of sports (e.g., individual versus team sports). Future research on these issues would be important. Finally, it should be noted that all variables were assessed through self-reports. Future research is needed in order to provide additional support for the validity of the EPSAS through correlations with other assessments of the coach's level of autonomy support, such as objective observers and assistant coaches.

In sum, although the EPSAS represents a recent scale whose evaluation should be pursued in future research, results from the present two studies provide support for the adequacy of its psychometric properties. Not only does the EPSAS represent an adequate cross-cultural adaptation of the original English version of the PASSES, but it represents a reliable and valid scale in its own right. The psychometric properties of the EPSAS, as well as the fact that it is relatively short, should make it a useful tool in motivation research in sport settings.

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