

1 French Validation and Adaptation of the Perceived Autonomy Support Scale for Exercise

2 Settings to the Sport Context

3
4 Nicolas GILLET

5 Laboratoire de Psychologie Appliquée

6 Université de Reims Champagne-Ardenne

7
8 Robert J. VALLERAND

9 Laboratoire de Recherche sur le Comportement Social

10 Université du Québec à Montréal

11
12 Emmanuel PATY

13 Laboratoire de Psychologie Appliquée

14
15 Lucie GOBANCÉ

16 Laboratoire de Psychologie Appliquée

17
18 Sophie BERJOT

19 Laboratoire de Psychologie Appliquée

20
21 Nicolas GILLET

22 Laboratoire de Psychologie Appliquée

23 Université de Reims Champagne-Ardenne

24 57, rue Pierre Taittinger - 51096 Reims Cedex - France

25 Email adress: nicolas.gillet@univ-reims.fr

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Abstract

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

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1 French Validation and Adaptation of the Perceived Autonomy Support Scale for Exercise 2 Settings to the Sport Context

3
4 Research over the years has revealed that coaches represent one of the most important
5 influences in athletes' lives (Horn, 2002). While a number of coaching dimensions have been
6 found of importance, recent research has underscored the role of autonomy support (Mageau &
7 Vallerand, 2003). Autonomy support is said to be present when a coach takes the athletes'
8 perspective and provides opportunities for choice and participation in decision making, while
9 minimizing the use of pressure (Grolnick & Ryan, 1989). Autonomy support from coaches has
10 been found to influence a number of outcomes in athletes, including motivation, persistence, and
11 well-being (e.g., Amorose & Anderson-Butcher, 2007; Reinboth, Duda, & Ntoumanis, 2004).

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

21 *Autonomy Support from the Coach*

22 At all competitive levels, coaching behaviors play a central role in athletes' cognition and
23 affective responses (Amorose, 2007). For instance, encouragement and reinforcement are

1 typically associated with high levels of enjoyment and self-esteem, while negative coaching
2 behaviors, such as punishment, are conducive to low levels of perceived competence, effort and
3 persistence (Coté, 2002; Smoll & Smith, 2002). Mageau and Vallerand (2003) further posit that
4 autonomy support from the coach's perspective may represent the single most important factor
5 with respect to athletes' motivation (see also Amorose, 2007; Mageau & Vallerand, 2003;
6 Vallerand & Losier, 1999, for reviews).

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

15 An increasing number of studies (Amorose & Anderson-Butcher, 2007; Conroy &
16 Coastworth, 2007; Gagné, Ryan, & Bargmann, 2003; Pelletier, Fortier, Vallerand, & Brière,
17 2001; Pelletier, Fortier, Vallerand, Tuson, Brière, & Blais, 1995; Reinboth et al., 2004) have
18 investigated the influence of athletes' perceptions of coach autonomy support on their basic need
19 satisfaction and motivation. Moreover, in these investigations, with the exception of the one
20 conducted by Conroy and Coastworth (2007), researchers have assessed perceived autonomy-
21 supportive coaching behaviors either by using scales developed specifically for the immediate
22 purpose of their research or with scales developed and validated in other domains such as the
23 Health-Care Climate Questionnaire (Williams, Grow, Freedman, Ryan, & Deci, 1996), the

1 Learning Climate Questionnaire (Williams & Deci, 1996), and the Work Climate Questionnaire
2 (Baard, Deci, & Ryan, 2004).

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

21 *The Present Research*

22 The purpose of the present research was to test the reliability and the validity of a French
23 translation and adaptation of the PASSES (Hagger et al., 2007) in the sport context. This

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

15 Study 1

16 The purpose of the present study was threefold: (a) translating the PASSES (Hagger et al.,
17 2007) into French; (b) adapting it to the sport context; and (c) examining the structure of the
18 EPSAS via exploratory factor analysis and its internal consistency. We hypothesized that the
19 EPSAS would demonstrate evidence of adequate internal consistency and a unidimensional
20 factorial structure.

21 Method

22 The PASSES (Hagger et al., 2007) was translated into French using the protocol outlined
23 by Vallerand (1989). First, two bilingual researchers whose first language was French, performed

1 the forward translation of the PASSES from English to French. Then, the two versions were
2 separately translated back into English by two different bilingual individuals whose first language
3 was English. The back-translated items were similar in meaning to the original English items.
4 The two French versions were then reviewed and compared by a committee composed of three
5 bilingual experts in Self-Determination Theory (SDT; Deci & Ryan, 1985) in the sport domain.
6 These researchers created a common synthesized version of the questionnaire. They also
7 reworded the items to target to the sport context. For example, the expression “*physical education*
8 *teacher*” was replaced with “*coach*” and “*active sports and/or vigorous exercise in my free time*”
9 with “*this sport activity*”.

10 *Participants*

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

16 *Measure*

17 The questionnaire used was the 12-item translated version of the PASSES (Hagger et al.,
18 2007) in French, the EPSAS. Items were answered on a 7-point Likert scale anchored by 1
19 (“*strongly disagree*”) and 7 (“*strongly agree*”).

20 *Procedure*

21 After obtaining their informed consent, the scale was administered to the participants by
22 the investigators during regular training sessions. They were told that their answers would remain
23 anonymous and confidential. They were also informed that they had the right to withdraw from

1 the study at any time. On average, the questionnaire required approximately 5 minutes to
2 complete.

3 Results and Discussion

4 We conducted an exploratory factor analysis using principal components analysis with
5 oblique rotation. Results revealed initial support for the structure of the scale developed and
6 validated by Hagger and his colleagues (2007). Specifically, an examination of the scree plot
7 showed clear discontinuity in the slope after one factor, suggesting that extracting one factor is
8 appropriate (Tabachnick & Fidell, 2007). This factor had an eigenvalue of 6.18 and explained
9 52.0% of the variance of the items. Factor loadings of the matrix structure ranged from .63 to .85
10 (see Table 1). Then, we calculated the reliability estimate (ρ_c) of the composite score. A
11 composite reliability estimate of .91 was obtained, demonstrating high levels of internal
12 consistency (Nunnally, 1978). In addition, responses to each item ranged from 1 to 7 with the
13 exception of item 12 which ranged from 3 to 7. Thus, the results of Study 1 provided initial
14 support for its reliability and factorial validity.

15 Study 2

16 We conducted a second study to examine more closely the psychometric properties of the
17 EPSAS. Specifically, the purpose of Study 2 was fourfold: (1) to confirm the factorial structure
18 of the EPSAS with a confirmatory factor analysis; (2) to further study the internal consistency of
19 the scale through the composite reliability estimate; (3) to examine the test–retest reliability of
20 the EPSAS over a two-month period; and finally (4) to test its discriminant and convergent
21 validity with the French version of the SMS (Brière et al., 1995). With respect to the first three
22 goals, it was hypothesized that results would support the unidimensional structure of the EPSAS,
23 as well its internal consistency and test-retest reliability.

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

17 Research by Hagger and his colleagues (2007) with the PASSES revealed that perceived
18 autonomy support was significantly and positively correlated to intrinsic ($r = .30$) and identified
19 regulation ($r = .34$) and unrelated to introjected ($r = -.01$) and external regulation ($r = -.03$). Thus,
20 in line with the results of Hagger et al., it was expected that correlations involving the self-
21 determined forms of motivation with autonomy support would be stronger than those involving
22 the non self-determined forms of motivation. However, contrary to the Hagger et al. research, we
23 expected the correlation involving intrinsic motivation to be higher than that involving identified

1 regulation. This is because Hagger et al. research focused on physical exercise which in itself
2 may not represent an interesting activity (Wilson, Mack, & Grattan, in press). Theory and
3 research (Vallerand, 1997; Vallerand, Pelletier, & Koestner, in press) suggest that when the
4 activity is interesting, as in sports, intrinsic motivation should be much more correlated with
5 autonomy support than identified regulation (Amorose & Anderson-Butcher, 2007; Pelletier et
6 al., 2001).

7 Method

8 *Participants*

9 A total of 203 athletes (101 men and 102 women) with a mean age of 16.8 years (SD =
10 3.01) participated in this study. Competitive athletes were recruited from rowing, tennis, judo,
11 karate, volleyball, football, gymnastics, table tennis, badminton, canoe-kayak, cycling,
12 swimming, athletics, horseback riding, basketball, handball, and rugby. They were training an
13 average of 7.7 hours per week.

14 *Measures*

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

18 *Sport motivation.* We evaluated athletes' motivation using the French version of the SMS
19 (Brière et al., 1995). This tool measures seven types of motivation, namely intrinsic motivation to
20 know, intrinsic motivation to accomplish things, intrinsic motivation to experience stimulation,
21 identified regulation, introjected regulation, external regulation, and amotivation. Because the
22 majority of researchers (e.g., Deci & Ryan, 1985) consider intrinsic motivation as a unitary
23 construct, the three intrinsic motivation subscales were combined in an index of intrinsic

1 motivation. The response scale has a Likert format ranging from 1 (“*does not correspond at all*”)
2 to 7 (“*corresponds exactly*”). Past studies confirmed the factor structure of the scale and revealed
3 adequate level of internal consistency as well as satisfactory test-retest reliability (see Pelletier &
4 Sarrazin, 2007, for a review). In the present study, composite reliability estimates were .89, .75,
5 .77, .80, and .70 for intrinsic motivation, identified regulation, introjected regulation, external
6 regulation, and amotivation respectively.

7 *Procedure*

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

12 Results and Discussion

13 *Confirmatory Factor Analysis*

14 We examined the unidimensionality of the EPSAS with a confirmatory factor analysis
15 using the maximum likelihood estimation method with LISREL 8.3 (Jöreskog & Sörbom, 1993).
16 We specified a model in which indicators of perceived coach autonomy support loaded on a
17 single latent factor. Results showed acceptable fit indices: $\chi^2 = 106.91$, $df = 48$, $\chi^2/df = 2.23$; CFI
18 = .97; GFI = .94; NNFI = .95; RMSEA = .07; SRMR = .04. In addition, standardized loadings
19 were all significant and greater than .60. They appear in Table 2.

20 *Scale Internal Consistency and Test-Retest Reliability*

21 The internal consistency of the EPSAS was satisfactory ($\rho_c = .91$). Furthermore, in order
22 to examine the test–retest reliability of the EPSAS, 77 participants were sent a mail including the
23 scale two months after the first assessment. Overall, 57% of these questionnaires were completed

1 and returned (27 men and 17 women aged between 14 and 28 years). The internal consistency of
2 the EPSAS was satisfactory (alphas of .87 and .84 at Times 1 and 2, respectively). Finally, the
3 test–retest reliability was completely satisfactory ($r = .71$, $p < .001$). Thus, the EPSAS can be
4 considered as showing adequate level of stability for a measure of perceived coach autonomy
5 support.

6 *Convergent Validity*

7 In addition to the analysis of internal consistency and latent structure, we also assessed the
8 convergent validity of the EPSAS by studying the pattern of correlations between autonomy
9 support and five forms of motivation: intrinsic motivation, identified regulation, introjected
10 regulation, external regulation, and amotivation. These correlations are presented in Table 3. In
11 line with our hypotheses it was found that the correlation involving perceived autonomy support
12 and intrinsic motivation ($r = .47$) was positive and higher than the other correlations. The lowest
13 correlation was obtained with amotivation ($r = -.06$). Finally, while all other correlations were
14 similar [identified regulation ($r = .20$), introjected regulation ($r = .17$), and external regulation ($r =$
15 $.18$)], that involving identified regulation was positive and second in order of importance as
16 hypothesized. In a study with a sample of 369 competitive swimmers aged from 13 to 22 years,
17 Pelletier and his colleagues (2001) have also shown that athletes' perceptions of coaches'
18 autonomy support were positively linked to intrinsic motivation, identified regulation, introjected
19 regulation, and external regulation. Consistent with the predictions of self-determination theory,
20 these results confirmed that perceived autonomy support correlated most strongly with intrinsic
21 motivation but also suggested that perceived autonomy support may lead to less autonomous
22 forms of motivation. Overall, the results of Study 2 provide complementary support for the
23 reliability and validity of the EPSAS.

General Discussion

1
2 Past research has revealed the absence of a scale assessing a rather complete repertoire of
3 autonomy-supportive coaching behaviors as perceived by the athletes in the French language.
4 Therefore, the purpose of the present research was to validate a French translation and adaptation
5 of the PASSES (Hagger et al., 2007) to the sport domain. Two studies were conducted in order to
6 assess the reliability and validity of this new scale (the EPSAS). Results from these two studies
7 revealed adequate psychometric properties of the scale. Specifically, support for the
8 unidimensional structure was obtained through both exploratory (Study 1) and confirmatory
9 (Study 2) factor analyses. Furthermore, support was obtained for the internal consistency (Studies
10 1 and 2) and the test-retest reliability of the EPSAS over two months (Study 2). Finally, the
11 construct validity of the scale was supported by the correlations observed between the EPSAS
12 and those of the different forms of motivation as proposed by SDT (Deci & Ryan, 1985). Thus,
13 overall, the present findings provide preliminary support for the EPSAS and lead to a number of
14 conclusions.

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

22 A second conclusion is that the present results provide support for SDT (Deci & Ryan,
23 2000, 2008). Indeed, in SDT, autonomy support represents a key psychological variable that

1 should display a unidimensional structure, be internally consistent, and that should be more
2 strongly related to intrinsic motivation than to other constructs, especially when the activity is
3 interesting (Vallerand, 1997; Vallerand et al., in press). Results from both studies supported these
4 hypotheses. These findings are also in line with past findings on the facilitative role of coach
5 autonomy support in intrinsic motivation (see Mageau & Vallerand, 2003). It should be
6 underscored that the relationships between autonomy support and the various forms of motivation
7 were not very strong. This is in line with SDT that posits that the impact of autonomy support
8 takes place through its influence on the satisfaction of the needs for competence, autonomy, and
9 relatedness. Future research is needed to assess this hypothesis using the EPSAS.

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

20 Certain limitations of the present research need to be considered. First, all participants
21 came from France. As such, we don't know whether the EPSAS applies to other French cultures
22 (e.g., Africa, Belgium, Quebec, etc.). Future research should address this issue. Second, while the
23 number of participants in each study was sufficient to allow us to conduct the analyses that were

1 performed, the numbers in each study were not sufficient to allow us to test for the invariance of
2 the scale as pertains to gender and to types of sports (e.g., individual vs team sports). Future
3 research on these issues would appear important. Finally, it should be noted that all variables
4 were assessed through self-reports. Future research is needed in order to provide additional
5 support for the validity of the EPSAS through correlations with other assessments of the coach's
6 level of autonomy support such as objective observers and assistant coaches.

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

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1 Table 1

2 Means, standard deviations, and standardized factor loadings from the exploratory factor analysis

3 (Study 1)

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

11. J'ai le sentiment de pouvoir partager mes expériences dans cette activité sportive avec mon entraîneur			
12. I trust my coach's advice in this sport activity	6.46	0.81	.64
12. J'ai confiance dans les conseils donnés par mon entraîneur dans cette activité sportive			

1 Table 2

2 Means, standard deviations, standardized factor loadings and standard errors from the

3 confirmatory factor analysis (Study 2)

Item	M	SD	Factor loading	SE
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

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Table 3

Means, standard deviations, and correlations among the variables (Study 2)

Variables	M	SD	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

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