Original Article

Preliminary validation of the Italian version of the original sport motivation scale

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ABSTRACT

Candela, F., Zucchetti, G., & Villosio, C. (2014). Preliminary validation of the Italian version of the original Sport Motivation Scale. *J. Hum. Sport Exerc., 9*(1), pp.136-147. This study aims at develop and validate a preliminary Italian version of the original Sport Motivation Scale. The original scale was translated into Italian following transcultural procedures. The scale was administered to 228 athletes (55% females, n = 125, M age= 25, SD= 13) recruited in an Italian Sports Medicine Center. Confirmatory factor, internal consistency and correlation analysis among subscales were performed. Gender differences and associations between SMS subscales and psychological variables (coach leadership style, sport enjoyment, self-confidence in sport, attitude toward doping behaviors) were investigated. The analysis showed encouraging results about the validity and reliability of the Italian version of the SMS scale. **Key words**: MOTIVATION, SPORT MOTIVATION SCALE, ITALIAN VALIDATION.

INTRODUCTION

Motivation is a construct that defines the internal and the external factors that produce the initiation and the persistence of behaviors and actions. In sports, it is probably the most important force that facilitates positive and successful sport experience (Duda, 2005, 2007; Vallerand, 1997, 2007). According to self-determination theory (SDT, Deci & Ryan, 1985; Ryan & Deci, 2000; Vallerand & Losier, 1999) different types of motivation exist based on the reasons that give rise to an action. Intrinsic, extrinsic and amotivated behaviors are the three broad types of motivation that have been studied extensively. Intrinsic motivation refers to engaging in an activity because it is inherently enjoyable, extrinsic motivation refers to doing an activity in order to obtain some separable outcomes (i.e. trophies) and finally amotivation indicates the lack of intrinsic and extrinsic motivation.

Some theorists (Vallerand et al., 1992) have argued that intrinsic and extrinsic motivation could be differentiate into more specific motives. Specifically, intrinsic motivation can be divided in *intrinsic motivation to know* (which can be defined as performing an activity for the pleasure and the satisfaction of learning, exploring, or trying to understand something), *intrinsic motivation toward accomplishment* (which is defined as the pleasure of trying to surpass oneself) and *intrinsic motivation to experience stimulation* (engaging in the activity in order to experience stimulating sensations). Extrinsic motivation can be divided into *external regulation* (which refers to a type of motivation controlled by external sources such as material rewards), *introjected regulation* (which refers to the fact that the individual has started to internalize the reasons for the action) and *identified* (it refers to an individual that comes to value the behavior as important and performs it out of choice). The types of motivation can be ordered along a self-determination continuum from intrinsic motivation, in the order intrinsic motivation to experience stimulation, intrinsic motivation toward accomplishment and intrinsic motivation to know, followed by identified regulation, introjected regulation, external regulation and amotivation (Deci & Ryan, 1985, 1991; Ryan & Deci, 2000).

In order to assess the different types of motivation Briere et al. (1995) developed the "Echelle de motivation dans les Sports" translated into English language by Pellettier et al. (1995) and named "Sport motivation Scale-SMS". The SMS is probably the most common scale to measure motivation proposed by SDT in the sport context. It is composed by twenty eight items structured in seven subscales of four items which evaluate the three forms of intrinsic motivation, the three types of extrinsic motivation and the amotivation. The French and the English versions of SMS were validated in a series of studies with Canadian athletes from different individual and team sports revealing satisfactory internal consistency, validity and temporal stability. The seven factor structure that corresponds to the forms of motivation targeted by the scale was confirmed. The correlation among the seven subscales formed a simplex-like pattern that was supported by the meta-analysis of Chatzisarantis et al. (2003). Moreover the studies offer a good support for the structure, the reliability and the construct validity of the SMS with populations of different ages and cultural origins supporting also the SDT motivation' view (Alexandris et al., 2002; Doganis, 2000; Goergiadis et al., 2001; Hamer et al., 2002; Jackson et al., 1998; Ntoumanis, 2001).

Despite the agreement about the validity of the scale, some studies have instead criticized the SMS arguing that some items do not load adequately on their hypothesized factors and questioning about the validity of the instrument (Mallet et al., 2007; Martens & Webber, 2002; Reimer et al., 2002). For this reason, Mallet et al. (2007) proposed a revised SMS that includes most of the SMS original items, some new items and a new integrated regulation subscale. Despite these criticisms and the revisions of the SMS, Pellettier et al. (2007) concluded that the revision of the scale was not clearly justified on the basis of the SDT and that the overall body of research (Alexandris et al., 2002; Doganis, 2000; Goergiadis et al., 2001;

Hamer et al., 2002; Jackson et al., 1998; Ntoumanis, 2001; Pellettier et al., 2007) gives support to the validity of the SMS original motivational constructs as measured by their respective indicators.

Regards Italian sport context there is a lack of adequate questionnaires translated and validated into Italian language to use with Italian athletes. In this sense the SMS has shown to be an adequate instrument to evaluate motivation in sports settings of different countries; however it has not been validated in Italian athletes. So the purpose of the present study was to translate the SMS into Italian through adequate transcultural procedures, to examine the factor structure to assess the correlations among subscales, their internal consistency and to examine the effect of gender on the seven subscales. Moreover the seven subscales were correlated with motivational antecedents (i.e. coaching leadership styles), motivational consequences (i.e. sport enjoyment) and some individual attitudes (i.e. the level of self-confidence in sport performance and the individual attitude toward doping behavior).

TRANSLATION OF SMS TO ITALIAN

The SMS scale translation into Italian was realized using transcultural procedures already used in previous studies (Nunez et al., 2006; Vallerand et al., 1989). First, the scale was translated from English to Italian according to the parallel back-translation procedure by bilingual individual (Brislin, 1986) in which the scale is translated from its original language into the language that will be used in the future studies. In a second step, the translation was again performed by another bilingual individual without knowing the scale. The sequence was repeated again in order to have four bilingual individuals involved in parallel back-translation procedure to obtain the SMS Italian pilot versions. The different versions were evaluated by the individuals involved in the translation process and by experts in sport psychology to make final adjustments of the scale and instructions. Finally, the final pilot version of the Italian version of the SMS scale was obtained.

METHOD

Participants
The experimental Italian version of the SMS was completed by 228 athletes (55% females, n = 125, 45% males, n = 103, M age= 25, SD = 13). The athletes were recruited in a Sports Medical Center while they were waiting for the medical-sport fitness visit. The athletes originated from different athletic teams (basketball, volleyball, swimming, soccer, track and field, skiing) and had at least 1 year of competitive experience. In some cases athletes did not complete the entire questionnaire and they were excluded by the analysis.

Measures
Other scales were administered in the questionnaire and were used in this study.

Sport Enjoyment in Physical Activity
The Physical Activity Enjoyment Scale (PACES) by Kendzierski and DeCarlo (1991) translated into Italian by Carraro et al. (2008) was used to measure the participants enjoyment in physical activity. The scale represents a valid measure of enjoyment of physical activity. This scale was formed by 16 items, preceded by the phrase "When I am active...", which directly assessed enjoyment (e.g. "When I am active I enjoy it", "...it is very exciting") and conversely (e.g. "...I feel bored", "...I dislike it"). The responses were assessed on a Likert-type scale with score ranges fluctuating between 1 (Totally disagree) to 5 (Totally agree).

Coaches leadership styles
The Leadership Scale for Sports (LSS), which was developed by Chelledurai and Saleh (1978, 1980), was used to measure different types of leadership behaviors. The LSS is composed of five subscales: Democratic style, Autocratic style, Social support, Positive feedback, and Training and instruction. The Democratic style describes a coach whose leadership style encourages participation from athletes in decisions, practice methods, and tactics (e.g. "Ask for the opinion of the athletes on strategies for specific competitions"). The Autocratic style describes a coach whose leadership style stresses an athlete's own personal authority (e.g. "Works relatively independent of the athletes"). Social support describes a coach who establishes interpersonal relationships with the athletes (e.g. "Helps the athletes with their personal problems"). Positive feedback describes a coach who frequently reinforces athletes' performance (e.g. "Gives credit when credit is due"). Training and instruction describes a coach whose leadership style is characterized by an emphasis on training and instructing athletes (e.g. "Sees to it that every athlete is working to his/her capacity"). There are 40 total items scored on a 5-point scale from Always to Never. For each item the athlete is asked to indicate the degree to which his/her own coach exhibits that particular type of behavior.

Attitude toward doping behaviors
The Performance Enhancement Attitude Scale (PEAS), developed by Petroczi (2006) was administered to evaluate the athletes attitudes toward doping behaviors. The PEAS Scale is composed of 17 items, preceded by the phrase "My opinion regarding sport in general is that…". Each item reflects a personal opinion about doping (e.g. "Doping is necessary to be competitive"). The responses were assessed on a Likert-type scale with score ranges fluctuating between 1 (Strongly disagree) to 5 (Strongly agree).

Self-confidence in sport
The Trait Sport Inventory Confidence (Vealey, 1986) was administered to evaluate how the athletes perceive themselves able to execute specific actions in sport performance (e.g. "Concentrate well enough to be successful"). It is a measure of self-confidence in sport. The scale is composed of 13 items, preceded by the phrase "How confident are you in your ability to…". The responses were assessed on a Likert-type scale with score ranges fluctuating between 1 (Not at all confident) to 9 (Highly confident). Athletes were told not to put their names on the questionnaire, that data from the study would only serve scientific purposes and would therefore remain strictly confidential.

Statistical Analysis
The validation process of the Italian version of the SMS scale has been realized performing the same procedures conducted in previous validations of the scale (Doganis, 2000; Filho et al., 2010; Nunez et al., 2006; Pelletier et al., 1995) to compare the results among the scales. Specifically, a confirmatory analysis, a correlation among subscales, an internal consistency analysis were conducted: Moreover, gender difference and correlation among motivation subscales and motivational antecedents, consequences and individual attitudes were analyzed.

RESULTS

Confirmatory Factor Analysis
First, the distributions of every subscale were examined: Each subscale showed adequate normality with low degrees of skewness and kurtosis. Then, a confirmatory factor analysis was performed to verify the construction validity of the subscales: Maximum likelihood method of estimation was used. Specifically, a confirmatory factor model that allowed free loadings on the items within each of the seven factors

postulated by the theory and observed in the analyses of previous scales (Doganis, 2000; Nunez et al., 2006; Pelletier et al., 1995), was tested. Factor variances were fixed at unity and all factors were allowed to correlate freely. Fit of the confirmatory factor analysis was verified analyzing Chi-Square Test, Comparative Fit Indices (CFI), Tucker-Lewis Index (TLI) and Root Mean Square Error of Approximation (RMSEA) values.

The fit index CFI and TLI range between 0 and 1: A 0.90 value is considered as minimally acceptable. RMSEA value of 0.05 represents an indication of good fit (Schermelleh-Engel et al., 2003). The values of the indices highlighted a good fit of the model $x2 = .415$, $df = 281$ ($p <.0001$); CFI = .93, TLI = .91; RMSEA = .04. All the factors had loadings over .70 for each subscale. Amotivation scale was the only subscales with lower load values, especially for item 19 "It is not clear to me anymore; I don't really think my place is in sport" (loading value=.35). In general confirmatory factor analysis confirmed the construct validity of the Italian version of the SMS.

Correlations among subscales
According to the previous international validations of the sport motivation scales, we expected to find strong positive correlations among the three types of Intrinsic Motivation. Table 1 shows the Pearson correlation values: Data confirmed that the three intrinsic motivation subscales have high correlations among themselves (rs above .50). These results are similar to those highlighted by previous validations of the SMS (Doganis, 2000; Filho et al., 2010; Nunez et al., 2006; Pelletier et al.,1995). These results confirmed that the three intrinsic motivation subscales assess similar but not identical constructs.

Moreover, the correlations among the SMS subscales should depict the presence of the self-determination continuum (Deci & Ryan, 1985). We expected that correlation analysis showed a simplex pattern where adjacent subscales (e.g. External Regulation and Introjection) had positive correlations, and the subscales at the opposite end of the continuum (e.g., IM and Amotivation) had the most negative correlations. Data confirmed this simplex pattern: In fact, subscales at the opposite ends of the continuum displayed more negative correlations than immediate subscales. These data supported the construction validity of the Italian version of the SMS.

Internal Consistency of the Seven Subscales
Cronbach's alpha was used to assess the internal consistency of the subscales. Cronbach values are shown along the diagonal of Table 1. The values of the subscales varied from .61 to .75: The mean alpha score for the italian SMS was .68. These values are slightly lower than the value shown in English version of the scale (Pelletier et al., 1995) where values were above .75. Considering that each subscale is made up of four items, they appeared to show acceptable levels of internal consistency.

Table 1. Internal Consistency Values: Cronbach Alpha (On the Diagonal), Pearson Correlations (Over the Diagonal)

Subscales	Subscales						
	1	2	3	4	5	6	7
1. Amotivation	(.61)	.30**	.13	-.08	.11	-.15*	-.25**
2. External regulation		(.73)	.43**	.44**	.42**	.34**	.25**
3. Introjected regulation			(.69)	.33**	.31**	.32**	.29**
4. Identified regulation				(.60)	.58**	.45**	.41**
5. IM-to know					(.75)	.60**	.51**
6. IM-accomplishment						(.67)	.53**
7. Stimulation							(.70)

N=220 *p<.05 **p<.001

Gender Differences Between the Subscale Means

A Gender x Scale analysis of variance with repeated measures on the scale factor was performed. Analysis revealed a main effect for scale, $F(6, 196) = 137,25$, $p < .0001$. Pairwise comparisons underlined that most of the subscales means differed significantly from each other except for Identified Regulation with IM-to know, Introjected Regulation with Identified Regulation and IM-to know with IM-accomplishment. As shown in Table 2, the most representative forms of motivation for the athletes of our sample were, in decreasing order: IM to Experience Stimulation, IM to accomplish something, IM to know, Identification, Introjection, External Regulation and Amotivation.

The main effect for gender was not significant $F(1, 201) = .54$, $p = 46$, although a Gender x Scale interaction was significant $F(6, 196) = 10,14$, $p < 0001$. A multivariate analysis of variance (MANOVA) was performed to detect gender mean differences: Results showed that female athletes scored significantly higher than men in Identification, IM-to know and IM-to accomplish subscales but scored lower on the Introjection subscales.

Globally, the results showed that the Italian version of the SMS was able to capture types of motivations between gender, confirming the self-determination continuum for female and male athletes as already depicted in the correlation analysis.

Table 2. Means and Standard Deviations of the Motivation Subscales for Females and Males

Motivation subscales	Females		Males	
	M	SD	M	SD
Amotivation	7.34	3.16	8.06	3.03
External Regulation	10.66	3.32	10.58	3.89
Introjected Regulation***	12.97	3.26	14.82	2.90
Identified Regulation***	15.27	2.69	13.86	2.87
IM - to know*	15.23	2.96	14.13	3.25
IM – accomplishment**	15.76	2.44	14.70	3.02
IM – stimulation	16.46	2.28	16.15	2.75

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

Correlations with Motivational antecedents, Consequences and Individual attitudes
Subscales of the Italian version of the SMS were correlated to a series of motivational antecedents and individual characteristics as shown in Table 3.

With respect to the motivational antecedents, subscales of the SMS were correlated to the five subscales of the Leadership Scale for Sport that investigate the perception of the athletes of the coach leadership style (Training and instruction, Democratic behavior, Autocratic behavior, Social support, Positive feedback). The three forms of Intrinsic motivation and the Identification subscale were expected to correlate positively with four coach leadership style (Training and instruction, Democratic behavior, Social support and Positive feedback). Amotivation score was expected to correlate negatively with the leadership coach style subscales. As depicted by Table 3, the majority of our expectations was confirmed.

Considering the motivation consequences, the SMS subscales were correlated to the Italian version of the PACES. We expected that Intrinsic Motivation subscales and Identified Regulation correlated positively with the PACES score and data confirmed this assumption.

With respect to individual attitudes, subscales score of the SMS were correlated to the Trait Sport Inventory Confidence that assess the self-confidence of the athletes in their sport performance and the Performance Enhancement Attitude Scale that assess the individual attitude of athletes toward doping behavior. Based on different studies (Cox & Liu, 1991; Vealey et al., 1998) and on Harter's competence motivation theory (Harter, 1978), we expected a negative correlation between Amotivation subscale and Self-confidence scale and this hypothesis was confirmed. Moreover, it was hypothesized that Extrinsic Motivation subscale and Amotivation were related to the Performance Enhancement Attitude Scale (Petroczi & Aidman, 2008) and also this hypothesis was confirmed. As depicted in Table 3, athletes with high level of Extrinsic Motivation or Amotivation had also high level of tolerance toward doping behaviors.

Our hypothesis was basically supported with all the outcome variables. Positive leadership coach styles (Training and instruction, Democratic behavior, Social support and Positive feedback) were significantly correlated with Intrinsic Motivation as well as Sport Enjoyment. The negative consequences of Amotivation in individual attitudes of self-confidence and doping were detected effectively. The Italian version of the SMS was able to capture several patterns of association already confirmed by the research (Petroczi & Aidman, 2008; Vealey et al., 1998): Moreover these results are in line with findings reported by the different validation studies of the SMS.

In sum, the Italian version of the SMS was able to detect significant associations between types of motivation and several sport dimensions. Specifically, based on our analysis, Intrinsic Motivation corresponds to the perception of a coach with an effective leadership style and to high level of sport enjoyment. Conversely, Amotivation is related to a low level of self-confidence and to a major attitude and tolerance toward doping behaviors. Moreover, on a general basis, according to Pelletier et al. (1995), the most positive correlations were obtained with the Intrinsic Motivation and Identification subscales, while the most negative correlations were found with the Amotivation subscales, confirming the self-determination continuum.

Table 3. *Correlations among Sport Motivation Scale Subscales, Motivational Antecedents, Consequences and Individual Characteristics*

Subscales	Coach behaviors[a]					Consequences[a]	Individual characteristics[b]	
	Training and instruction	Democratic behavior	Autocratic behavior	Social support	Positive feedback	Sport Enjoyment	Self-confidence	Attitude toward doping
Amotivation	-.60	.05	.00	-.03	.01	-.05	-.36***	.21*
External Regulation	.11	.23*	-.09	.11	.14	.13	.17	.31**
Introjected Regulation	.08	.37***	-.02	.18	.09	.12	.27**	.21*
Identified Regulation	.15	.37***	-.16	.31**	.21*	.33***	.24*	.00
IM-to know	.37***	.35***	-.23	.19*	.15	.39***	.31**	.11
IM-accomplishment	.37***	.31***	-.14	.36***	.27**	.30***	.26**	.06
IM-stimulation	.29***	.22*	.04	.31***	.17	.34***	.33***	-.05

a Based on 120 subjects b Based on 100 subjects *p<.05 **p<.01 ***p<.0001

DISCUSSION

The main aim of the present study was to translate and to validate the Italian version of the Sport Motivation Scale (SMS). A confirmatory factor analysis, a correlation analysis among subscales, and an internal consistency analysis were performed to analyze construct validity and reliability of the scale. Furthermore, gender differences in the subscales and correlation analyses between subscales and consequences, antecedents and individual characteristics were investigated. The general results of the analysis demonstrated that the Italian version of the SMS has an adequate validity and reliability. Regarding the validity of the scale, the confirmatory factor analysis supported the seven factor structure of the Italian version of the scale. The fit indices obtained are similar to those highlighted by previous versions of the scale (Brière et al., 1995; Nunez et al., 2006; Pelletier et al., 1995). Amotivation was the only subscale that revealed a weaker structure, despite a significant item loading. Considering the reliability of the scale, the results showed acceptable levels of internal consistency. Moreover, each subscale showed a similar reliability to those of the original (Brière et al., 1995), English (Pelletier et al., 1995), and Greek (Doganis, 2000) version of the scale: In fact the lowest internal consistency was highlighted by the Identified Regulation subscale. In sum, comparing the results of the Italian version of the SMS with the previous validation of the scale, it is reasonable to assume that the Italian version of the SMS has adequate validity and reliability. These assumptions are corroborated by the further analysis we performed.

The correlations among the SMS subscales revealed similar results to the previous version of the scale. Above all, the subscales support clearly the continuum of the self-determination theory (Deci & Ryan, 1985; Ryan & Deci, 2000) showing higher correlations among subscales theoretically closer to each other than those theoretically distant. This result confirmed the existence of a simplex pattern.

The gender differences analysis underlined that females had higher score in three subscales than male (Identified regulation, IM-to know and IM-accomplishment) while males have higher score than females in one subscale (Introjected Regulation). The results are partially similar to the English version of the scale: In fact Pelletier et al. (1995) found higher score of females than males in IM-to know and IM-accomplishment subscales.

Furthermore the analysis of motivation antecedents, consequences and individual characteristics revealed that the Italian version of the scale was adapt to capture effectively associations and dynamics already demonstrated by previous studies (Petroczi & Aidman, 2008; Vealey et al., 1998). Considering the motivational antecedents, specifically the leadership coach style, intrinsic motivation were significantly associated to the perception of a democratic coach who provides effective trainings and instructions, social support and positive feedback. Amotivation was not related to these leadership styles. These findings confirmed the studies about the relation between coach leadership styles and athletes motivations (Gillet et al., 2010; Hollembeak & Amorose, 2005; Keegan et al., 2010; Watson et al., 2011). With respect to the sport enjoyment, the continuum of the self-determination theory is clearly shown: In fact high levels of intrinsic motivation and of identified regulation correspond to high level of sport enjoyment. The same continuum is revealed by the association between types of motivation and attitude toward doping behavior: In fact amotivation, external regulation and introjected regulation are significantly associated to a positive attitude toward doping behavior while no associations are evidenced in the other subscales. This is in line with the hypothesis of Petroczi and Aidman (2008). Finally, the subscale of Amotivation demonstrated its adequacy detecting the negative significant association with self-confidence: In fact, athletes with high amotivation have lower sport confidence as confirmed by the study of Velay et al. (1998). The correlation

analysis among subscales and with psychological variables confirmed the adequacy of the Italian version of the SMS scale.

Considering the analysis performed, there results are encouraging. Additional research will be necessary to improve the validity and reliability of the scale, establishing its psychometric properties and to cover some limits of this preliminary validation. For instance, test-retest analysis could be used to assess the temporal reliability of the scale. Also, it could be useful to perform inter-rater reliability test, comparing the SMS scale with other scales that measure motivation in sport. Furthermore, the characteristics of this scale could be deepened increasing the sample and comparing athletes of different sports and different performance level (agonistic athletes vs. amateur).

In sum, the Italian version of the SMS scale is an adequate adaptation of the original French-Canadian version. Our study justifies the use and application of this scale for the motivation evaluation of athletes in many fields including scientific research. In fact this scale could be useful for the study about adolescent drop-out, doping behavior, burn-out and other significant dynamics in sport. Although the results of this research confirmed the validity and reliability of the Italian version of the SMS, further psychometric evaluations of this scale are recommended.

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