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# The revised six-factor Sport Motivation Scale (Mallett, Kawabata, Newcombe, Otero-Forero, & Jackson, 2007): Something old, something new, and something borrowed

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## Abstract

*Objectives:* Mallett, Kawabata, Newcombe, Otero-Forero, and Jackson (2007) questioned the validity of some of the items from the SMS, the construct validity of the three types of intrinsic motivation measured by the SMS, and they proposed an integrated regulation subscale to measure the most self-determined form of extrinsic motivation proposed by SDT. In this article, we focus on the following two questions: “Does the SMS need to be revised?”, and “Is the Revised 6-factor SMS a better scale?”.

*Conclusion:* Our review leads us to the following main conclusions: (a) the SMS has generally demonstrated acceptable validity and reliability in many previous studies, supporting its use; (b) the proposed revised version may also be problematic due to item selection, factor structure, and validity issues as well as problems with the integration scale.

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*Keywords:* Sport Motivation Scale; Integrated regulation; Revision of the SMS

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## Introduction

For more than a decade, research on sport motivation has been carried out with the help of the Sport Motivation Scale (SMS; Pelletier et al., 1995). The SMS is probably the scale most widely used to measure the different types of motivation proposed by SDT in the context of sport.

The SMS recently came under criticism by Mallett, Kawabata, Newcombe, Otero-Forero, & Jackson (2007), who basically questioned the validity of some of the items from the SMS as well as the construct validity of the three types of intrinsic motivation measured by the SMS. They also pointed out that the SMS did not measure the most self-determined form of extrinsic motivation proposed by SDT, namely integrated regulation. They undertook the task of replacing some of the items to replace those that they perceived as being problematic, selected 4 items from the 12 already existing items that measure intrinsic motivation to create a general intrinsic motivation subscale, and designed a new integrated regulation subscale.

In this article, we would like to offer some thoughts on their justification for revising the SMS. Specifically, we focus on the following two questions: “Does the SMS need to be revised?” and “Is the revised 6-factor SMS a better scale?”.

### Does the SMS need to be revised?

The SMS and its French version (l’Echelle de Motivation dans les Sports, EMS; Brière, Vallerand, Blais, & Pelletier, 1995) were developed to assess the different types of regulatory processes proposed by SDT in sport. In line with SDT, the goal of the SMS is to measure the perceived forces that move an individual to act in the context of sport: that is the absence of motivation or non-regulation (i.e., amotivation); external pressure and compliance (i.e., external regulation); self-control, ego-involvement, internal rewards and punishments (i.e., introjected regulation); personal importance, choice and valuing (i.e., identified regulation); congruence, harmony with the self and other activities in ones life (i.e., integrated regulation); and finally, interest, curiosity, enjoyment, and inherent satisfaction (i.e., intrinsic motivation). Both the French and the English versions of the SMS were validated in a series of studies with Canadian athletes from different individual and team sports. Results from these investigations revealed that both versions of the SMS had satisfactory internal consistency, a seven-factor structure that corresponds to the forms of motivation targeted by the scale, adequate construct validity, and moderate to high indices of temporal stability. Pelletier et al. (1995) and Brière et al. (1995) also reported that the correlations among the seven subscales formed a simplex-like pattern. Support for the simplex-like pattern indicates that subscales situated closer on the self-determination continuum are more strongly and positively associated, while subscales further apart are negatively related. Support for this pattern is important because it shows that the gradation of reasons proposed by SDT is a reflection of an internalization process where the regulation of behaviour, which was initially reinforced by external sources, is taken in to be regulated by the self. These results were further substantiated by Chatzisarantis, Hagger, Biddle, Smith, and Wang (2003) in a meta-analysis of the correlation coefficients between the different forms of motivation obtained in several studies.

Mallett et al. (2007) criticized the SMS, especially on the grounds of their examination of two studies published by Martens and Webber (2002) and Reimer, Fink, and Fitzgerald (2002). In these studies, the authors have tested the psychometric properties of the scales with different populations of athletes. Overall, their results supported the reliability and the validity of the SMS with their respective populations. However, the results of their CFA indicated relatively lower fit indices than the ones obtained by Pelletier et al. (1995), and they indicated that some items did not load adequately on their hypothesized factor. Also, Mallett et al. (2007) indicated that low levels of internal consistency for some subscales have been reported by other researchers, although their own results showed that the levels of internal consistency of all SMS subscales were acceptable.

In a review of most published studies that have used the SMS, Pelletier and Sarrazin (in press) reported that globally these studies supported the psychometric properties of the scale. Furthermore, research with athletes of different age categories involved in a great variety of sports showed consistently that a higher level of self-determined motivation was positively associated with greater behavioural persistence, more effective performance, and better psychological functioning in sport. Pelletier and Sarrazin (in press) also reported that the SMS has been used with success to predict a great variety of specific outcomes and consequences (such as burnout, exercise dependence among endurance athletes, perception of attraction and entrapment-based commitment with gymnasts, fear of failing, the perception of constraints, flow, vitality and well-being, interest-enhancing strategies, coping strategies, cognitive-behavioral psychological skills training, sportspersonship orientations as well as sportspersonship and aggression, and task versus ego-involvement orientations in achievement goals) in a manner that is consistent with SDT.

Several studies conducted in a great variety of countries have examined the construct validity of the SMS, the capacity of the scale to measure the proposed types of motivational forces to act, and the extent to which the different forms of motivation that are assessed reflect the self-determination continuum. For instance, Chatzisarantis et al. (2003) as well as Li and Harmer (1996) have tested the validity of the SMS with a large number of men and women college athletes with different techniques. Their results, not only offered support for the structure of the scale but also supported the simplex-like pattern of the scale with both men and women. Support for the simplex-like pattern indicated that subscales situated closer on the self-determination continuum were more strongly and positively associated, while subscales further apart were negatively related.

Other studies with English-speaking Masters Athletes mainly from Australia, New Zealand (Jackson, Kimiecik, Ford, & Marsh, 1998), and from the United Kingdom (Hamer, Karageorghis, & Vlachopoulos, 2002; Ntoumanis, 2001), as well as with French-speaking athletes from France (Sarrazin, Vallerand, Guillet, Pelletier, & Curry, 2001) offered additional support for the construct validity and the reliability of the SMS and the EMS. Finally, support for the construct validity, the reliability and the structure of the SMS also exists for translated versions of the scale in Bulgarian (Chantal, Guay, & Dobрева Martinova, 1996), and Greek (Alexandris, Tsorbatzoudis, Grouios, 2002; Doganis, 2000; Goergiadis, Biddle, & Chatzisarantis, 2001).

Overall, these studies offer a good support for the structure, the reliability and the construct validity of the SMS with populations of different ages, cultural origins, and participants drawn from different individual and team sports. These studies also support the existence of a

differentiated view of motivation as proposed by SDT. As suggested by Pelletier and Sarrazin (in press), cultures may vary greatly in the goals and values they transmit in general and more specifically the goals and values pursued in sport. However, research using the SMS with participants from several different cultures supports the idea that “why” athletes pursue those goals can be represented by functional and experiential forces that are operative across cultures and that the underlying self-determination continuum that represents those forces is supported.

Although it is possible that some of the SMS items may not be fully applicable in different contexts or with different age groups, it is important to emphasize that the items that were identified as problematic by Mallett et al. (2007), Martens and Webber (2002), and Reimer et al. (2002) were not always the same items. In our opinion, this suggests that the psychometric properties of some of the SMS items may be sample or culture specific. Mallett et al.’s justification for revising the SMS should be weighted against the fact that a considerable amount of studies that have targeted different sports and different cultures offer support for the construct validity and the cross-cultural validity of the scale. As a self-report instrument, the SMS can be expected to sometimes display lower levels of reliability and/or weaker support for the simplex pattern of correlations. This variability in the results reported by some studies may be due to differences in sample sizes, variations in the ways the instrument was administered to participants or some other characteristics specific to the context of each study. However, when one corrects for the variability in reliability and sample sizes, as in Chatzisarantis et al. (2003), the simplex order structure of the SMS is confirmed and the SMS shows good psychometric properties. In other words, we feel that the results obtained by the overall body of work support the validity of the SMS “latent” motivational constructs as measured by their respective indicators and that the revision to the scale was not clearly justified.

### **Is the revised 6-factor SMS a better scale?**

When we examine in detail the procedures followed by Mallett et al. (2007) as well as their results, it would appear that the revised scale may have a few problems of its own. First, the authors proposed seven new items to replace SMS items that were identified as problematic in the first stage of their analysis. They ended up replacing four of these items in the second stage of their analysis. Not only the problematic items were not a priori identified following a systematic assessment of the results obtained by the body of research, they were not problematic in both stages of the authors’ analysis. As a consequence, it is highly possible that their revised items may be specific to their sample or possibly to a subsample of Australian athletes.

Second, when we examine more closely the four new items, three of them appear problematic. For instance, item 22 which is purported to measure amotivation (“I don’t seem to be enjoying my sport as much as I previously did”) reflects a decrease in intrinsic motivation and not necessarily the absence of motivation. Item 19, proposed to measure external regulation (“For the material and/or social benefits of being an athlete”—the item is not worded the same way in the text and in the appendix), emphasizes a type of external regulation that may be specific to athletes at the professional level or to a culture that looks at athletes in such a fashion. It might not be appropriate for amateur or younger athletes. Finally, item 20, which is supposed to measure identified regulation (“Because training hard will improve my performance”), reflects a means to

an end associated with extrinsic motivation but not necessarily something that is chosen by the athlete as the concept of identified regulation implies. Furthermore, the means and standard deviations of the items are not reported. It is possible for some items to load on the appropriate factors but nevertheless to show very low means. This would suggest low external validity for the items. Without such information, it is difficult to fully determine the validity of the new items.

Third, Mallett et al. (2007) conclude that the three types of intrinsic motivation lack discriminant validity without presenting any statistical results to that effect. We feel that it is at the very least premature to eliminate the three types of IM for several reasons. First, contrary to what Mallett et al. suggest, there is good support for the discriminant validity of the three types of intrinsic motivation. Typically, the mean correlation among the three subscales is around .60 (e.g., Pelletier et al., 1995, mean  $r = .64$ ; Brière et al., 1995, mean  $r = .55$ ). This finding underscores the fact that the three types of intrinsic motivation display more independence than common variance (around 35%). Second, results from CFAs have supported the tripartite framework. In fact, it is interesting to note that in the Mallett et al. research the 8-factor structure (involving the three intrinsic motivation and the integrated regulation subscales) yielded satisfactory fit indices. While the 6-factor model proved superior to the 8-factor model, such a difference might be due to the additional stress that a 8-factor model imposes on the structure compared to a 6-factor model. Third, the tripartite framework may yield some important theoretical and applied insights. For instance, inspection of the means in past research reveals that some types of intrinsic motivation are more important than others depending on the life contexts. For instance, the means of the intrinsic motivation toward knowledge subscale is higher in education (see Vallerand, Vlais, Brière, & Pelletier, 1989; Vallerand et al., 1992) than the other two types of intrinsic motivation subscales, while the reverse is true in sports with athletes (Brière et al., 1995; Pelletier et al., 1995). This is in line with predictions where the search for knowledge is expected to be more important in education but that seeking challenges and accomplishment and experiencing stimulation should be more important in sports. These findings may also lead to important applications. Thus, if one wants to nurture intrinsic motivation in sports, challenges, and stimulation should be fostered. On the other hand, curiosity and the search for knowledge should be fostered in education. We feel that future research on these issues could lead to important theoretical and applied advances.

Fourth, we feel that the procedures used by Mallett et al. to identify the four intrinsic motivation items of their general subscale appear problematic. The authors claim to have chosen the four items following theoretical and statistical considerations, but these considerations are not explained, and we could not find out if the IM items were identified at Stage 1 and cross-validated at Stage 2. So, once again, it is highly possible that the selected IM items may be specific to the samples or to a subsample of Australian athletes that participated in the study.

Fifth, the authors created four items for the purpose of measuring the integrated regulation concept. Following few personal communications between Cliff Mallett and the first author of the present article, Mallett and collaborators proposed a set of items that were based on the items developed in other scales that have included an integrated regulation subscale like the Client Motivation for Therapy Scale (Pelletier, Tuson, & Haddad, 1997), and the Motivation for the Environment Scale (Pelletier, Tuson, Green-Demers, Noels, & Beaton, 1998). While we agree that the inclusion of an integrated regulation subscale is an important step to take, especially with older sport participants, the present results show only partial support for the validity of this proposed subscale. While the results of the CFA and of the level of internal consistency of the

scale are very good, support for the simplex-pattern (and the continuum of self-determination) is weak. More specifically, the inter-correlations between the intrinsic motivation, the integrated regulation, and the identified regulation subscales (see Table 2), are clearly too high (from .75 to .93) and lack discriminant validity.

Although it may be difficult to know if these results should be attributed to the other modifications to the SMS, the characteristics of their samples, or to a weakness in the construct validity of the integrated regulation subscale, we feel that Mallett et al.'s modifications to the SMS or the characteristics of their samples may be responsible for their lack of support for the self-determination continuum. Interestingly, another version of the integrated regulation subscale (Pelletier, Kabush, Vallerand, & Sharp, 2007) shows a different set of relations with the original version of the SMS subscales (see Kabush & Pelletier, 2006; Pelletier & Sarrazin, *in press*, for more details on the scale). A comparison of the items of the two integrated regulation subscales shows that two of the items of the revised SMS by Mallett et al. are almost identical to two of the items proposed by Pelletier et al. (2007) (see also Pelletier & Sarrazin, *in press*) and two of the items, although formulated differently, refer to the same reason. So, the two integrated regulation subscales are relatively similar. Pelletier et al.'s (2007) results show that a CFA supported the 8-factor structure of the scale (the seven SMS subscales plus the new integrated regulation subscale). Their results also show an acceptable level of internal consistency for the integrated regulation subscale ( $\alpha = .83$ ) an acceptable level of test-retest reliability ( $r = .79$ ) over a period of five weeks. More importantly, the integrated regulation subscale's location on the self-determination continuum was supported by positive and stronger correlations with the intrinsic motivation ( $r = .58$ ) and identified regulations ( $r = .53$ ) subscales than with the introjected regulation ( $r = .41$ ), the external regulation ( $r = .28$ ), and the amotivation ( $r = -.21$ ) subscales. In other words, the correlations between the Pelletier et al. integrated regulation subscale and the other subscale of the SMS supported the self-determination continuum without showing redundancy with the intrinsic motivation and the identified regulation subscales. Thus, overall, it would appear that there is empirical support for the Pelletier et al. (2007) integrated regulation subscale but not for that of Mallett et al.

## Conclusion

Mallett et al. propose a revised SMS that includes most of the SMS original items, some new items (4), and a new integrated regulation subscale which borrowed some items from other motivational scales based on SDT. Our analysis leads us to three conclusions. First, a review of the body of work on the SMS suggests that a revision of the scale was not clearly justified. In fact, much empirical support exists for the current version of the SMS. Second, the new items created to replace those that were supposedly problematic in the SMS may be problematic themselves. Third and final, although an integrated regulation subscale may represent a welcome addition to the SMS, results from the Mallett et al. study reveal that the proposed subscale would appear to lack discriminant validity. However, a new integrated regulation subscale developed by Pelletier et al. (2007) appears to fare much better, displaying factor, construct, and discriminant validity.

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