

Preliminary Validity and Reliability of the Persian Version of The Situational Motivation Scale for use in Academic Sport Contexts

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Abstract

Motivation is one of the most important psychological factors in recognising human behavior in different settings. The purpose of this study was to analyse the reliability and validity of the Persian version of the Situational Motivation Scale (P-SIMS) developed by Guay et al., (2000) in academic sport settings. A total of 231 undergraduate students, 113 males (51.6%) and 106 females (48.4%), participated in the study. The P-SIMS consists of 16 items and four subscales: intrinsic motivation, identified regulation, external regulation, and amotivation. Cronbach's alpha coefficient, interclass correlation coefficient (ICC), confirmatory and exploratory factor analysis was used to determine the internal consistency of subscales, temporal reliability, construct validity of the scale respectively. The Standardized estimate of 16 questions shows that the CFI, GFI, and NNFI indexes are above 0.90 and the RMSEA index is below 0.08, indicating the acceptability of the fit indexes. Also, the results of the calculations performed to estimate the reliability of the scale factors show that the value of the Cronbach's alpha coefficient and interclass correlation coefficient (ICC) are good enough and considering that the internal consistency coefficients and temporal reliability of the components of the list are reasonable and appropriate, the reliability of the scale is confirmed. The results showed that P-SIMS has relatively acceptable construct validity and acceptable internal consistency and test-retest reliability. The results of this study support the preliminary validity and reliability of the P-SIMS for use in academic sport contexts.

Keywords: Situational motivation, Athletic context, Validity, Reliability

Akademik Spor Ortamlarında Kullanılmak Üzere Durumsal Motivasyon Ölçeğinin Farsça Versiyonunun Geçerlik ve Güvenilirliği

Öz

Motivasyon, farklı ortamlardaki insan davranışlarını tanımak için en önemli psikolojik faktörlerden biridir. Bu araştırmanın amacı Guay ve ark., (2000) tarafından geliştirilen Durumsal Motivasyon Ölçeği'nin (P-SIMS) Farsça versiyonunun Akademik Spor Ortamlarında geçerlik ve güvenilirlik analizlerini yapmaktır. Araştırmaya 113'ü erkek (%51,6) ve 106'sı kadın (%48,4) olmak üzere 231 lisans öğrencisi katılmıştır. P-SIMS, içsel motivasyon, özdeşleşmiş düzenleme, dışsal düzenleme ve motivasyonsuzluk olmak üzere dört alt boyut ve 16 maddeden oluşmaktadır. Alt ölçeklerin iç tutarlılığını, zamansal güvenilirliğini ve ölçeğin yapı geçerliliğini belirlemek için sırasıyla Cronbach alfa katsayısı, sınıflar arası korelasyon katsayısı (ICC), doğrulayıcı ve keşfedici faktör analizi kullanılmıştır. Standartlaştırılmış 16 soruluk tahmin CFI, GFI ve NNFI indekslerinin 0,90'ın üzerinde olduğunu ve RMSEA indeksinin 0,08'in altında olduğunu göstermekte ve uyum indekslerinin kabul edilebilirliğini ortaya koymaktadır. Ayrıca ölçek faktörlerinin güvenilirliğini tahmin etmek için yapılan analiz sonuçları, Cronbach alfa katsayısı ve sınıflar arası korelasyon katsayısı (ICC) değerlerinin yeterince iyi olduğunu göstermekte ve listenin bileşenlerinin iç tutarlılık katsayılarının ve zamansal güvenilirliklerinin makul ve uygun olduğu göz önüne alındığında, ölçeğin güvenilirliği teyit edilmektedir. Sonuçlar, P-SIMS'in nispeten kabul edilebilir yapı geçerliliği ve kabul edilebilir iç tutarlılık ve test-tekrar test güvenilirliği gösterdiğini ortaya koymuştur. Bu çalışmanın sonuçları, P-SIMS'in akademik spor bağlamlarında kullanım için ön geçerliğini ve güvenilirliğini desteklemektedir.

Anahtar Kelimeler: Durumsal motivasyon, Atletik bağlam, Geçerlik, Güvenilirlik

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INTRODUCTION

Before the advent of tests, psychology was placed in the field of philosophy and did not have a specific place in the classification of sciences. But the introduction of tests gave psychology an experimental nature to psychology and made it one of the important and popular sciences of today. Psychological tests are used to measure interpersonal differences or to study the psychological differences of a person at different times and in other cases. It is necessary to develop psychological tools in each country to identify the psychological conditions of that society. However, there are some instruments that have been developed in other countries based on their culture. Accurately determining the validity and reliability of valid questionnaires designed in a particular culture helps researchers a lot in assessing the psychological conditions of people in another culture. There are many psychological constructs, one of which is motivation, and many questionnaires have been constructed and designed based on different theories of motivation (Cripps, 2017).

In a review of the psychological determinants of physical activity, an individual's motivation is identified as being of central importance (Østerlie et al., 2019). Furthermore, motivation underpins the desire to exercise (Standage et al., 2003), the intensity of activity during exercise sessions (Lonsdale et al., 2009), and the decision to engage in leisure-time physical activity (Gordon-Larsen et al., 2000).

Numerous theories of motivation have been proposed in attempts to explain sport and exercise behaviour (e.g., achievement goal theory; Nicholls, 1989). However, one of the most widely researched theories applied to the study of sport activity across cultures is self-determination theory (Buse et al., 2021; Gagné & Deci, 2014; Ryan & Deci, 2002). The basic tenets of SDT suggest that motivation and its determinants, mediators, and consequences operate at three levels: global, contextual, and situational. This valid theory depicts that motivation can be change according to the levels experienced by an individual and researchers seek to develop measures according to a more stable global level (Clancy et al., 2017). At the highest global level, the individual has developed a general motivational orientation to interact with the environment either intrinsically, extrinsically, or a motivationally. Motivation at the global level is the most stable and is considered similar to a personality trait (Blais et al., 1990). Alternatively contextual motivation refers to a relatively stable motivational disposition that one adopts towards a particular context, such as sport, work, or education (Vallerand, 1997). Finally, situational motivation refers to the motivation one experiences while engaging in a particular activity, the "here and now" of motivation (Vallerand, 1997). According to this division of motivation, many tools have been provided to analyse global motivation, which is somewhat stable, and there is a need to develop a valid and reliable tool to measure situational motivation (Østerlie et al., 2019). The information collected on motivation was with a global perspective, and there is no valid data about situational motivators because of lack of a valid measure (Østerlie et al., 2019).

Situational motivation describes the drive one experiences in specific settings such as work, exercise, and/or training situations that occur within the present time frame (Guay et al., 2000; Vallerand, 1997). In the seminal laboratory study of SDT, an individual's interest and intrinsic motivation to complete an activity decreased with the receipt of an external reward

(Deci, 1971). In this respect, the present instrument, by focusing on the basic concept of motivation (reasons for behaviour), offers an interesting methodological advantage over free-response tests and other instruments that lead to a better understanding of motivational processes (Guay et al., 2000). On the other hand, intrinsic motivation, identified regulation, extrinsic regulation, and amotivation have been shown to motivate in the situation and theoretically follow the theory of autonomy based on the individual's perception of competence, independence, and communication in a given situation (Deci & Ryan, 1985). This means that in situational motivation, four subscales are influenced by the situation in which a person is involved (Gonzalez, 2009). With this instrument, participants are not asked about their motivation in general, but rather their opinion about the action taking place (Guay et al., 2000; Martín-Albo et al., 2009). Subsequently, numerous studies have supported the central tenets of SDT through replicating the finding that external events such as competition (Reeve & Deci, 1996), deadlines (Amabile et al., 1976), and constraints (Koestner et al., 1984) can increase one's intrinsic situational motivation for a particular activity. Related research has shown that intrinsic motivation is associated with psychological outcomes such as emotion and vitality (Richard et al., 1997; Sheldon et al., 1996). Accordingly, situational motivation when measured in a particular setting or activity, provides an understanding of one's self-regulation processes. Deci and Ryan proposed that situational motivation consists of four subscales of SDT, including intrinsic motivation (IM), identified regulation (IR), external regulation (ER), and amotivation (AM) (Deci & Ryan, 1985).

In an attempt to provide a measure of situational motivation Guay and colleagues (2002) proposed the Situational Motivation Scale (SIMS). Initial development and validation of the SIMS was undertaken in an educational setting (Guay et al., 2000). The SIMS has demonstrated good validity and reliability among adolescents in a variety of areas including physical education, interpersonal relationships, and leisure sport-related activities (Guay et al., 2000; Standage et al., 2003).

Furthering the initial proposals of Deci and Ryan it is suggested that many behaviours are not initiated by intrinsic motivation and therefore a measure of alternative types of motivation (e.g., extrinsic) is warranted (Deci, 1971). The SIMS aims to compensate for the limitations of previous instruments by providing a measure of intrinsic and extrinsic motivation as well as amotivation. An acknowledged limitation of the SIMS is that it assesses motivation based on a specific psychological definition of motivation. In contrast, previous instruments have used motivational outcomes and determinants (Guay et al., 2000). However, the focus of the SIMS is on the nature of motivation and the underlying reason for the behaviour (McClelland, 1985). Depending on the perspective, it is then possible to equate the operationalisation of motivation with its conceptual definition, which refers to the perceived reasons for task engagement (Hagger et al., 2003). Although the SIMS was not originally designed for use in sport environments, evidence of its internal consistency and construct validity as well as a refined model within sport demonstrates its utility for use with athletes (Standage et al., 2003).

Given that linguistic characteristics may influence the way in which the questionnaire is presented and interpreted in different cultures, there has been increasing interest over the

past two decades in examining the psychometric properties of established English questionnaires in different cultures and languages. The validity and reliability of the SIMS has been tested in several countries; in particular, Østerlie and colleagues (2019) tested the validity and reliability of the SIMS in a physical education setting with Norwegian adolescents (Østerlie et al., 2019). To date, a number of motivation questionnaires related to SDT have been validated for use in Iran such as the Sport Motivation Scale (SMS-6; (Esmaeili et al., 2020). However, these questionnaires address global, contextual motivations and do not measure situational motivation. According to SDT theory, analysing situational motivation in the context of sport can be crucial in order to find out people's behaviour in particular situations (Gonzalez, 2009). Therefore, the purpose of the present study was to determine the psychometric properties of the SIMS within an Iranian sample of athletes.

METHODS

Participants

The study sample included physical education students of Tehran University with different skill levels; the age range of the participants was 18 to 28 (mean=21.4±3/02) years. The sampling method in this research was convenience sampling. The sample size determination, due to the lack of knowledge of the exact size of the community according to the purpose of the study, was guided by previous factor analysis studies and related research (Kline, 2015; Tabachnick et al., 2007). The athletes in the study participated in the following sports: volleyball, basketball, football, handball, athletics, karate, taekwondo, wrestling, swimming, badminton, and table tennis. Overall, the athletes' levels of competition were: international (6.4 %), national (14.6 %), provincial (11.9 %), university or college (19.2 %), and other competitive levels (47.9 %). The sample consisted of 231 students who completed the questionnaires voluntarily following the provision of informed consent. From the initial sample, 12 questionnaires were discarded due to incomplete answers subsequently 219 questionnaires were included in the present study (n =71 male, n =148 females). In this research, there are 46 (64.8%) and 25 (35.2%) male participants in team and individual sports, respectively. In this research, 99 (66.9%) and 49 (33.1%) men participated in team and individual sports, respectively. Also, in this research, information has been taken in line with the level of education. 128 (58.4%) people participated at the undergraduate level, 75 (34.2%) at the master's level, and 16 (7.3%) at the doctoral level.

Instrument

Personal Profile Registration Form

A demographic questionnaire consisting of three open-ended items was included to record participants' age, sport, and educational status; additionally, three forced-choice items measured gender, frequency of exercise per week and level of participation.

Situational Motivation Scale (SIMS): In this study, the Situational Motivation Scale (SIMS) was adapted, the original scales includes 16 items. The scale is comprised of four subscales reflecting: intrinsic motivation (e.g., because this sport is enjoyable for me), identified regulation (e.g., because I find this exercise useful), external regulation (e.g., because of the benefits for me), and amotivation (e.g., doing this exercise was not an achievement for me). Each of the subscales are comprised of four items that are scored on a 7-point Likert scale ranging from, “completely disagree (1)” to “completely agree (7)”. The total score for each subscale is obtained from the sum of the items associated with subscale. The lowest possible score for each factor is 4 and the highest score is 28. The SIMS internal consistency ranges from 0.77 to 0.95. The four-factor structure of the scale has been supported by Confirmatory Factor Analysis (Guay et al, 2000). Further, the NNFI value of the scale was observed at 0.89 and its CFI value is 0.90. A high correlation has been observed between the subscales associated with the EME tool in the concurrent validity discussion (Guay et al, 2000).

Sports Motivation Scale (SMS-6): This scale has six subscales, including intrinsic motivation (for example, for the satisfaction I experience when perfecting my abilities), mixed regulation (for example, because it is part of the path I have chosen for my life.), self-regulation (for example, because it is one of the best ways to maintain good relationships with my friends), internalized regulation (for example, because I need to exercise to feel good about myself), external regulation (for example , because of the material or social benefits of being an athlete) and lack of motivation (for example, as far as I know, I feel that I do not have the ability to succeed in this sport). In general, this scale has 24 items, each subscale has 4 items. The scoring method of this scale is on a seven-point Likert scale (from not at all to completely) (Esmaeili et al., 2020).

The Translation Process

The SIMS was translated into Persian using the translation-back translation method. The translation was based on previous studies and recommendations (Vallerand et al., 1989). For this purpose, the scale was translated into Persian by the first researcher and two experts in English. Then, in a coordination session, the translations were reconciled to formulate the initial version. After the Persian version was prepared, the scale was given to three English language experts to reverse the translation process from Persian back into English. Next, the reversed translation was matched to the original version and the authenticity of the Persian SIMS (P-SIMS) translation was assured. To assess the content validity, this version was given to seven experts in the field of sport psychology, psychology and sport science and the content validity was confirmed following minor suggestions and corrections. A pilot study was conducted to examine the meaning and comprehension of the questions of the questionnaire

for the respondents in a small sample of athletes (i.e., 12 males, 10 females). The results of the Persian translation of the scale were discussed among the individuals, and the final version was prepared following confirmation that no problems were observed and there were no problems related to the conceptual understanding of the items.

Protocol

In this project at 2022-2023, participation was voluntary, and they were assured that their answers would be kept confidential and used only for research purposes. They were also informed that, to avoid bias, the results of the study would not influence their choice or participation in their sport. Participants completed the scale at the same time, place, and condition, to promote the ecological validity of the process of distributing and completing the questionnaires.

Data Analysis

The Macfee sampling index was used in order to determine the required sample size. To establish factor and construct validity, confirmatory factor analysis was used to confirm the structure of the questionnaire and varimax rotation was applied. Baretlett's test was used to ensure that the correlation of the study population was not zero, and the test-retest method was used to measure concurrent validity. In addition, Cronbach's Alpha was used to examine the internal consistency between the subscales of the instrument. The significance level for all the statistical methods was set at < 0.001 . In addition, the temporal reliability of the questions was determined by the interclass correlation coefficient (ICC) using the test-retest method. Statistical operations were performed using SPSS software version 18 and LISREL software version 8.8 software (Joreskog & Sorbom, 2006).

FINDINGS

After collecting the questionnaires and digitising the data from the paper copies, a total of 219 questionnaires were identified as being acceptable and used in the analysis. Based on the results of the present study, the Kaiser, Meyer, and Olkin (KMO) index in the study sample was 0.85. Thus, the data related to this variable could be reduced to a number of substructures and basic factors. Furthermore, the Bartlett's sphericity test ($\chi^2=1364 \times 809$, 120df =, $p < 0.001$) shows that the correlation matrix between the questions is not a uniform matrix. On the one hand, there is a high correlation between the questions within each factor, and on the other hand, there is no correlation between the questions of one factor and the questions of other factors. These findings indicate the necessary assumptions for the use of factor analysis and the adequacy of the sample size adequacy in this study.

Exploratory Factor Analysis

The principal components method was used to determine the factor structure. In order to determine the number of components, a special value chart was created and based on the scree criterion the number of factors to be extracted was determined. The principal components method was used to determine the factor structure. To determine the number of components, a special chart diagram was created, and the Scree criterion was used to determine the number of factors to be extracted. The proportion of variance explained by each factor was also determined. Finally, in order to obtain a meaningful structure of the factor loadings (Tabachnick et al., 2007), the extracted components were transformed on the basis of orthogonal rotation using the varimax method (Henson & Roberts, 2006; Sass & Schmitt, 2010). Given that there is disagreement among experts about the significance level of the coefficients for the factor definition, in this research, in order to examine the nature of the relationships between the variables and also to define the factors, coefficients above 0.4 were accepted in the definition of the factors and coefficients below these limits were considered as zero (random factor see ;Table 1) (Tabachnick et al., 2007).

Factor analysis using the principal components method resulted in the extraction of four factors with specific values greater than 1/0. Scaffolding plot also yielded four factors. The proportion of explanation of the common variance between the variables for these four factors together was 63.32% of the total variance of the variables. The first factor had a specific value of 5.33, which explained 33.22% of the total variance. The eigenvalue of the second factor was 2.56, which accounted for 15.78% of the total variance of the test. The third factor had an eigenvalue of 1.27, which accounted for 7.94% of the variance. Finally, the fourth factor had an eigenvalue of 1.02, which accounted for 6.38% of the total variance.

The study of the content of the questions of the first factor showed that their common axis is related to the factor of external regulation, to which questions 3, 7, 11, and 15 belong. The content of questions 2, 6, 10, and 14 was related to the athletes' identified regulation, so this component was called identified regulation. Thus, the individual examination of questions 4, 8, 12, and 16 showed that the common interpretation axis of the questions was related to the amotivational factor. Finally, the interpretations of questions 1, 5, 9, and 13 showed that the content of these questions was related to the athletes' intrinsic motivation, so the third component was named intrinsic motivation. Taken together, these results showed that the translated scale questions loaded in their agents and retained their four-factor structure similar to the original SIM scale.

Table 1. Results of matrix rotation based on orthogonal rotation by WiMAX method

Exercise Positional Motivation Scale SIMS	The first factor	The second factor	The third factor	The fourth factor
Intrinsic motivation				
Because I think that this activity is interesting.				0.735
Because I think that this activity is pleasant.				0.664
Because this activity is fun.				0.614
Because I feel good when doing this activity.				0.580
Identified regulation				
Because I am doing it for my own good			0.714	
Because I think that this activity is good for me			0.806	
By personal decision			0.786	
Because I believe that this activity is important for me			0.817	
External regulation				
Because I am supposed to do it		0.757		
Because it is something that I have to do		0.843		
Because I don't have any choice		0.600		
Because I feel that I have to do it		0.668		
Amotivation				
There may be good reasons to do this activity but personally I don't see any	0.794			
I do this activity, but I am not sure if it is worth it	0.812			
I don't know; I don't see what this activity brings me	0.718			
I do this activity, but I am not sure it is a good thing	0.764			

Confirmatory Factor Analysis

Before performing the confirmatory factor analysis, the normality of the multivariate data was checked using the LISREL software and the Mardia coefficient (Mardia, 1970). The results showed the natural distribution of the data in the present study ($p > 0.05$). Therefore, the Robust Maximum Likelihood (RML) method was used to perform confirmatory factor analysis (Satorra & Bentler, 2001). Because there is no general agreement among structural equation experts as to which of the goodness of fit indices provides a better estimate of the model, it is suggested that a combination of three to four indices be reported (Hu & Bentler, 1999).

Therefore, in accordance with factor analysis studies, among the fit indices used in the present study were the ratio of chi-square to degrees of freedom (χ^2 / df), the root mean square approximation (RMSEA), the root mean square residual (RMR), Bentler-Bount's Abnormal Fitness Index (NNFI), Comparative Fit Index (CFI), and Goodness Fit Index (GFI) were used in the present study. In the data analysis, a model was formed based on the original version of the pattern (Figure 1). Table 2 shows the results of the confirmatory factor analysis of the situational sport motivation scale in the measurement model. Experts provide different cut-off criteria for fitness indicators. For example, for the NNFI, CFI, and GFI indices, whose range of variation is between zero and one, values above 0.85 indicate a relative fit of the model, values above 0.90 indicate a good fit, and values above 0.95 indicate an excellent fit. This is an excellent model (Sass & Schmitt, 2010). For the RMSEA and RMR indices, values below 0.08 indicate that the model is acceptable and appropriate, and values below 0.06 indicate that it is an appropriate model (Hu & Bentler, 1999). There is no consensus on acceptable values for the χ^2 / df index. Some researchers consider values below three to be appropriate (Hu & Bentler, 1999).

Table 2. Indicators of confirmatory factor analysis

Measurement model fit indices	Acceptable values	Three-factor model
Square χ^2	dependent to sample size	195/54
The ratio of Chi-Square to degree of freedom χ^2/df	< 3	1/99
Significance P	-	0/001
Bentler Bonnet non-normed fit index (NNFI)	>0.90	0/95
Goodness-of-fit index (GFI)	>0.90	0/90
Comparative Fit Index(CFI)	>0.90	0/96
Root means square residual (RMR)	<0.08	0/021
Root Mean Error of Approximation (RMSEA)	<0.08	0/068

Table 3 shows that the CFI, GFI, and NNFI indices are above 0.90 and the RMSEA index is below 0.08, indicating the acceptability of the fit indices and therefore the appropriate fit of the confirmatory factor analysis model with the data. The RMR index also indicates that the model error is very small, and the fit is acceptable.

Table 3. Results of Cronbach's alpha coefficient and two halves of the Persian version of the Situational Motivation Scale

Situational Motivation Scale	Number of questions	Reliability		Descriptive Statistics	
		Interclass correlation coefficient	Cronbach's alpha coefficient	Standard deviation (SD)	\bar{X}
Internal motivation	4	0/72	0/70	4/8	18/58
identified regulation	4	0/78	0/81	5/4	18/39
External regulation	4	0/80	0/82	5/7	14/28
Amotivation	4	0/79	0/81	5/3	11/31

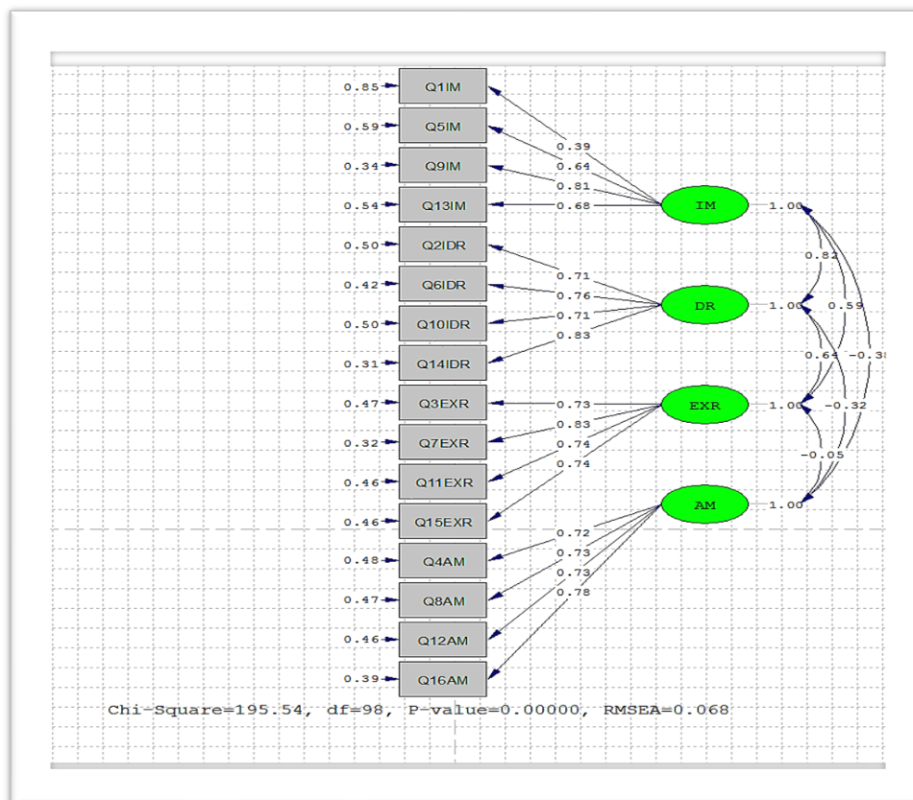


Figure 1. Standadized estimate of 16 questions of the persian version of the sport situational motivation scale

Figure 1. Standardised estimation of 16 questions of the Persian version of the Sport Situational Motivation Scale Table 3 shows that the CFI, GFI, and NNFI indices are above 0.90 and the RMSEA index is below 0.08, which indicates the acceptability of the fit indices and thus the appropriate fit of the confirmatory factor analysis model to the data. The significance of the relationship between the observed variables (questions) and the latent variables (factors) based on the magnitude or insignificance of the coefficients is not statistically correct, but the factor loading and t-value should be used to determine the significance of these coefficients (Kline, 2015; McArdle & Hamagami, 1992). As the factor loading represents the correlation of the question with the corresponding factor, the higher the factor loading of the question on a factor, the more weight should be given to the question in interpreting that factor. Confirmation or rejection of the significance of factor loadings is based on the t-value. Looking at the factor loading and the t-value for the relationship between the questions and the related subscales shows that the values of the t-value and the factor loading are satisfactory. The value of the t-value for all questions is greater than 1.96, which indicates that there is a significant relationship between the questions and the related factors; in this way, the exogenous and endogenous variables of the study show a high degree of agreement and reliability. A closer look at the parameter estimates of the individual factor questions shows that for the factor intrinsic motivation, question 9 (factor loading 0.81 and t-value 10.44), for the factor identified regulation, question 14 (factor loading 0.83 and t-value 14.30), for the factor external regulation, question 7 (factor loading 0.83 and t-value 13.97), and for the factor amotivation, question 16 (factor loading 0.76 and t-value 12.57) are important. The most predictive variables are included in their respective factors and have more weight. Overall, the results of the confirmatory factor analysis of the translated version show that the scale uses appropriate fit indices thus confirming the validity of the scale structure.

Reliability analysis and description of situational motivation scale scores

Table 3 shows the mean and standard deviation for each of the examined. The internal motivation factor has a higher mean than the other factors and the lack of motivation component has the lowest mean. The method of calculating internal consistency (Cronbach's alpha method) was used to estimate the reliability of the scale. The results of the calculations performed to estimate the reliability of the factors of the scale show that the value of the alpha coefficient for the subscales of intrinsic motivation, identified regulation, external regulation, and amotivation are 0.70, 0.81, 0.82, and 0.81, respectively. Considering that the internal consistency coefficients of the components of the list are reasonable and adequate, the reliability of the scale is confirmed. To assess the temporal reliability, 39 athletes (including 21 males and 18 females) completed the retest scale after three weeks. The results of the retest showed that the correlation coefficient between the groups of the subscales ranged from 0.72 to 0.80 (Table 3). The test-retest results of the Situational Sports Motivation Scale showed that the intra-group correlation of its components was at the desired level. This confirms, the temporal reliability and repeatability of the scale are confirmed.

DISCUSSION

The present study investigated the validity and reliability of the Persian context of the Situational Motivation Scale (P-SIMS) and the results of the research support the psychometric properties of this scale in the field of sport. Factor analysis showed that P-SIMS supports a four-factor structure, namely: internal motivation, identified regulation, external regulation, amotivation, which follows the self-determination theory on which it is based. The internal consistency of the scale after aggregating the questions of each subscale shows that it is acceptable. This study is supported by the findings of Guy and colleagues (Guay et al., 2000) in the academic setting and Standage and colleagues in the athletic setting (Standage et al., 2003). It is worth noting that in the study by Standage and colleagues (2003), due to the inadmissibility of confirmatory factor analysis, items 10 and 11 were removed from the identified regulation and extrinsic regulation subscales due to the infeasibility of confirmatory factor analysis, which also increased internal consistency. However, the present study provided evidence of construct validity and reliability of the main structure of the scale and there is no need to remove items 10 and 11. Gamboa et al. (2017) investigated the validation of the Portuguese version of the Situational Motivation Scale (sims) in academic contexts. Similar to the present study, construct validity and reliability lead to keeping all items as in the present study and it is suggested to investigate construct validity and reliability P-SIMS with removed items in other study.

In terms of construct validity, the CFA results support the four-factor structure, which reflects the theoretical constructs of amotivation, external regulation, intrinsic motivation, and identified regulation (Deci & Ryan, 1985). This result is consistent with other validation studies (Guay et al. 2000; Gillet et al., 2012, Martín-Albo et al. 2009; Standage & Treasure, 2002).

As in the studies conducted by Martín-Albo et al. (2009), however, as well as Standage and Treasure (2003), the indicators of adjustment of the initial model deviated from the reference values. It was necessary to remove items 10 and 11 from the model because they were simultaneously saturated in two factors, reducing the clarity of the factor structure of the SIMS. In addition to the improvement in the adjustment index, it should be noted that the exclusion of items 10 and 11 increased the internal consistency of the subscales to .80 for identified regulation and .79 for external regulation (Gamboa et al., 2017).

Similar to other studies in this area (e.g. Guay et al., 2000; Gillet et al., 2012, Martín-Albo et al., 2009; Standage & Treasure, 2002), the internal consistency (Cronbach's alpha method) (Cronbach, 1951) was used to estimate the reliability of the P-SIMS. The results of the calculations performed to estimate the reliability of the scale factors show that the value of the alpha coefficient for the subscales intrinsic motivation, identified regulation, external-regulation, and amotivation are .70, .81, .82, and .81, respectively in the 16 item P-SIMS. The test-retest method was used to establish the temporal reliability, so that the scale was available to the respondents 2 to 3 weeks later and was obtained equal to .72 to .80. The results obtained from the analysis showed that this version has a good time reliability.

LIMITATION

The study has some limitations; other limitations of this study include the convenience and small sample size, which allowed for variation between study participants and reduced the statistical power. The present study included only students in Tehran. Based on the limitations of generalizability, this study also suggests that future studies should be conducted in all provinces of Iran so that it can be fully generalized to all the population of Iran. The elimination of items 10 and 11 may affect the relationships with the various subscales and with the antecedents and consequences. Specifically, two major items that theoretically and empirically appear to be at odds with the construct that Guay and et al., (2000) sought to measure. Standage et al. (2003) have reduced the subscales in this research, it is possible to enrich this construct by adding a subscale based on Iranian culture.

Practical applications of the findings

It is suggested that coaches and sport psychologists use this tool to identify the type of motivation of athletes. It is suggested that sport psychologists use this tool to identify the type of motivation for physical activity so that they can contribute as much as possible to the dynamics of society. Considering that each country has a different culture and structure, the native sports motivation questionnaire can be used more in Iran. It is suggested that the validity and reliability of this scale should be studied in specific groups.

GENERAL CONCLUSION

As a result, this research provides the use of the P-SIMS tool to evaluate different dimensions of situational motivation in a sports environment identified regulation, Iran. The P-SIMS Scale with 16 items and 4 subscales (intrinsic motivation, identified regulation, external regulation, and amotivation) is a useful and valid instrument considering its implementation and ease of scoring, which is the most important practical aspect to be able to assess athletes' motivation. Researchers can be confident that the P-SIMS is a reliable instrument for sport research in the field of sport psychology in academic sport settings.

Conflict of interest: Authors declare that there are no financial or other relationships that might lead to a conflict of interest.

Declaration of Contribution of Researchers: Research Design by F.H, M.E, Statistical analysis by M.E, P.H; Manuscript preparation by F.H, M.E, B.S; Data Collection by F.H, B.N, B.S.

Ethical Approval

Committee Name: The Human Research Ethics Board at the Sport Sciences Research Institute of Iran

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REFERENCES

- Amabile, T. M., DeJong, W., & Lepper, M. R. (1976). Effects of externally imposed deadlines on subsequent intrinsic motivation. *Journal of Personality and Social Psychology*, 34(1), 92. <https://doi.org/10.1037/0022-3514.34.1.92>
- Atkinson, J. W. (1964). *An Introduction to motivation*. Van Nostrand.
- Blais, M. R., Vallerand, R. J., Brière, N. M., Gagnon, A., & Pelletier, L. G. (1990). Significance, structure, and gender differences in life domains of college students. *Sex Roles*, 22(3), 199-212. <https://doi.org/10.1007/BF00288192>
- Buse, S., Çakaloğlu, E., & Koruç, P. B. (2021). Exercise Motivation and Social Physique Anxiety In Adults. *International Journal of Sport Culture and Science*, 9(3), 316-326. <https://doi.org/10.14486/IntJSCS.2021.647>
- Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, 18(1), 105. <https://doi.org/10.1037/h0030644>
- Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The Self-determination theory perspective. *Journal of Personality*, 62(1), 119-142. <https://doi.org/10.1111/j.1467-6494.1994.tb00797.x>
- Deci, E. L., & Ryan, R. M. (1985). Motivation and self-determination in human behavior. *Plenum Publishing Co.* <http://dx.doi.org/10.1007/978-1-4899-2271-7>
- Esmaeili, M., Hemayat Talab, R., & Kamkari, K. (2020). Validity and reliability Persian version of Sport Motivation Scale (SMS-6). *Journal of Motor Learning and Movement*, 12(3), 255-270.
- Gagné, M., & Deci, E. L. (2014). The history of self-determination theory in psychology and management. In M. Gagné (Ed.), *The Oxford handbook of work engagement, motivation, and self-determination theory* (pp. 1–9). Oxford University Press.
- Gordon-Larsen, P., McMurray, R. G., & Popkin, B. M. (2000). Determinants of adolescent physical activity and inactivity patterns. *Pediatrics*, 105(6), e83-e83. <https://doi.org/10.1542/peds.105.6.e83>
- Guay, F., Vallerand, R. J., & Blanchard, C. (2000). On the assessment of situational intrinsic and extrinsic motivation: The Situational Motivation Scale (SIMS). *Motivation and Emotion*, 24(3), 175-213. <https://doi.org/10.1023/A:1005614228250>
- Hagger, M. S., Chatzisarantis, N. L., Culverhouse, T., & Biddle, S. J. (2003). The Processes by which perceived autonomy support in physical education promotes leisure-time physical activity intentions and behavior: A Trans-contextual model. *Journal of Educational Psychology*, 95(4), 784. <https://doi.org/10.1037/0022-0663.95.4.784>
- Harter, S. (1981). A New self-report scale of intrinsic versus extrinsic orientation in the classroom: Motivational and informational components. *Developmental psychology*, 17(3), 300. <https://doi.org/10.1037/0012-1649.17.3.300>
- Haugen, T., Ommundsen, Y., & Seiler, S. (2013). The Relationship between physical activity and physical self-esteem in adolescents: the role of physical fitness indices. *Pediatric Exercise Science*, 25(1), 138-153. <https://doi.org/10.1123/pes.25.1.138>
- Henson, R. K., & Roberts, J. K. (2006). Use of exploratory factor analysis in published research: Common errors and some comment on improved practice. *Educational and Psychological Measurement*, 66(3), 393-416. <https://doi.org/10.1177/0013164405282485>
- Hu, L. t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1-55. <https://doi.org/10.1080/10705519909540118>
- Joreskog, K. G., & Sorbom, D. (2006). *LISREL for windows*. Scientific Software International Inc.
- Kline, R. B. (2015). *Principles and practice of structural equation modeling*. Guilford Publications.
- Koestner, R., Ryan, R. M., Bernieri, F., & Holt, K. (1984). Setting limits on children's behavior: The Differential effects of controlling vs. informational styles on intrinsic motivation and creativity. *Journal of Personality*, 52(3), 233-248. <https://doi.org/10.1111/j.1467-6494.1984.tb00879.x>
- Lonsdale, C., Sabiston, C. M., Raedeke, T. D., Ha, A. S., & Sum, R. K. (2009). Self-determined motivation and students' physical activity during structured physical education lessons and free choice periods. *Preventive Medicine*, 48(1), 69-73. <https://doi.org/10.1016/j.ypmed.2008.09.013>

- Mardia, K. V. (1970). Measures of multivariate skewness and kurtosis with applications. *Biometrika*, 57(3), 519-530. <https://doi.org/10.1093/biomet/57.3.519>
- Martín-Albo, J., Núñez, J. L., & Navarro, J. G. (2009). Validation of the Spanish version of the Situational Motivation Scale (EMSI) in the educational context. *The Spanish Journal of Psychology*, 12(2), 799-807. <https://doi.org/10.1017/s113874160000216x>
- McArdle, J. J., & Hamagami, F. (1992). Modeling incomplete longitudinal and cross-sectional data using latent growth structural models. *Experimental Aging Research*, 18(3), 145-166. <https://doi.org/10.1080/03610739208253917>
- Østerlie, O., Løhre, A., & Haugan, G. (2019). The Situational Motivational Scale (SIMS) in physical education: A Validation study among Norwegian adolescents. *Cogent Education*, 6(1), 1603613. <https://doi.org/10.1080/2331186X.2019.1603613>
- Reeve, J., & Deci, E. L. (1996). Elements of the competitive situation that affect intrinsic motivation. *Personality and Social Psychology Bulletin*, 22(1), 24-33. <https://doi.org/10.1177/0146167296221003>
- Richard, M., Christina, M. F., Deborah, L. S., Rubio, N., & Kennon, M. S. (1997). Intrinsic motivation and exercise adherence. *International Journal of Sport Psychol*, 28(4), 335-354.
- Ryan, R. M., & Deci, E. L. (2002). Overview of self-determination theory: An Organismic dialectical perspective. *Handbook of self-determination research*, 2, 3-33.
- Ryan, R. M., Koestner, R., & Deci, E. L. (1991). Ego-involved persistence: When free-choice behavior is not intrinsically motivated. *Motivation and Emotion*, 15(3), 185-205.
- Sass, D. A., & Schmitt, T. A. (2010). A Comparative investigation of rotation criteria within exploratory factor analysis. *Multivariate Behavioral Research*, 45(1), 73-103. <https://doi.org/10.1080/00273170903504810>
- Satorra, A., & Bentler, P. M. (2001). A Scaled difference chi-square test statistic for moment structure analysis. *Psychometrika*, 66(4), 507-514. <https://doi.org/10.1007/BF02296192>
- Sheldon, K. M., Ryan, R., & Reis, H. T. (1996). What makes for a good day? Competence and autonomy in the day and in the person. *Personality and Social Psychology Bulletin*, 22(12), 1270-1279. <https://doi.org/10.1177/01461672962212007>
- Standage, M., Duda, J. L., Treasure, D. C., & Prusak, K. A. (2003). Validity, reliability, and invariance of the Situational Motivation Scale (SIMS) across diverse physical activity contexts. *Journal of Sport and Exercise Psychology*, 25(1), 19-43. <https://doi.org/10.1123/jsep.25.1.19>
- Standage, M., & Treasure, D. C. (2002). Relationship among achievement goal orientations and multidimensional situational motivation in physical education. *British Journal of Educational Psychology*, 72(1), 87-103. <https://doi.org/10.1348/000709902158784>
- Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2007). *Using multivariate statistics (Vol. 5)*. Pearson.
- Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. *Advances in Experimental Social Psychology*, 29, 271-360. [https://doi.org/10.1016/S0065-2601\(08\)60019-2](https://doi.org/10.1016/S0065-2601(08)60019-2)
- Vallerand, R. J., Blais, M. R., Brière, N. M., & Pelletier, L. G. (1989). Construction et validation de l'échelle de motivation en éducation (EME). *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement*, 21(3), 323. <https://doi.org/10.1037/h0079855>



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