Physical Education Theory and Methodology
Теорія та методика фізичного виховання

ISSN 1993-7989 (print)
ISSN 1993-7997 (online)
ISSN-L 1993-7989

Original Scientific Articles. Assessment, Testing, and Measurement

Translation and Psychometric Validation of the Arabic Version of the Situational Motivation Scale (SIMS) in the Physical Education Context

Majdi Bouazizi[1,2ABCD], Mohamed Baaziz[2,3ABCD], Zainab Helmi Abumuaili[4ACD] and Foued Cheour[1AD]

[1]Virtual University of Tunis
[2]University of Gafsa
[3]University of Manouba
[4]University of Jordan

Authors' Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection

Corresponding Author: Majdi Bouazizi, e-mail: majdibouazizi4@gmail.com
Accepted for Publication: June 29, 2026
Published: July 25, 2026

DOI: 10.17309/tmfv.2026.4.08

Abstract

Objectives. To translate and validate the Arabic version of the Situational Motivation Scale (SIMS) and evaluate its psychometric properties among Tunisian secondary school students in the physical education context.

Materials and Methods. A total of 580 secondary school students (mean age = 17.48 ± 1.46 years) from different regions of Tunisia participated in the study. The original SIMS comprises 16 items assessing intrinsic motivation, identified regulation, external regulation, and amotivation. Students completed the Arabic version of the scale during physical education classes. Exploratory factor analysis (EFA) was performed on a randomly selected subsample of 290 participants, whereas confirmatory factor analysis (CFA) was conducted on an independent subsample of 290 participants. Internal consistency, test–retest reliability, construct validity, convergent validity, and composite reliability were evaluated.

Results. One amotivation item demonstrated a factor loading below the 0.40 criterion and was removed, resulting in the SIMS-15. The revised scale demonstrated good internal consistency (Cronbach's $\alpha = 0.846$, McDonald's $\omega = 0.788$, Guttman's $\lambda^2 = 0.883$) and excellent temporal stability over a two-week interval (ICC = 0.950, 95% CI = 0.901–0.975; $r = 0.905$, 95% CI = 0.818–0.951, $p < 0.001$). CFA confirmed the four-factor structure of the SIMS-15 ($\chi^2/df = 1.542$, CFI = 0.99, GFI = 0.94, RMSEA = 0.04). Average variance extracted ranged from 0.708 to 0.864, whereas composite reliability ranged from 0.877 to 0.962, indicating satisfactory convergent validity and reliability.

Conclusions. The Arabic SIMS-15 demonstrated satisfactory reliability and validity and can be recommended as a psychometrically sound instrument for assessing situational motivation among secondary school students in physical education. The adapted scale preserves the original four-factor structure while providing evidence of its suitability for use in Arabic-speaking educational settings.

Keywords: psychometric properties, situational motivation, Arabic language, transcultural validation, physical education.

Introduction

Motivation is a central psychological construct that influences students' engagement, persistence, and learning outcomes, particularly in physical education and sports contexts (Curran & Standage, 2017; Zhou et al., 2025; Alixanov et al., 2026). It can be intrinsic, arising from inherent interest or personal value, or extrinsic, driven by external rewards or pressures. AM reflects a lack of intentionality or perceived competence (Deci & Ryan, 2000; Guay et al., 2000). Educators and coaches play a critical role in shaping motivational states by providing autonomy-supportive environments, constructive feedback, and fostering relatedness, which enhances engagement and IM.

PETM
LLC OVS

In contrast, controlling approaches may hinder motivation (Haerens et al., 2015; Taylor et al., 2008).

Self-determination theory offers a robust framework for understanding motivation, emphasizing the satisfaction of three basic psychological needs: autonomy, competence, and relatedness, which are essential for fostering IM and psychological well-being (Ryan & Deci, 2023; Vansteenkiste & Ryan, 2013). Self-determination theory conceptualizes motivation along a continuum from AM, through various forms of extrinsic motivation, to IM, with greater internalization marking more autonomous engagement (Vallerand, 1997; Ryan & Deci, 2000a; Rusmitaningsih et al., 2026). Within this framework, motivation operates at three levels: global, contextual, and situational, the latter referring to the "here and now" motivation experienced during a specific activity (Törmänen et al., 2025; Vallerand, 2001). Situational motivation is influenced by environmental factors such as pedagogical practices and social interactions, making it a dynamic determinant of students' behavioral, cognitive, and affective engagement (Ghazvini et al., 2025; Järvenoja et al., 2023).

Reliable measurement of situational motivation is essential for research and practice. The SIMS, developed by Guay et al. (2000), assesses IM, IR, ER, and AM. The SIMS has demonstrated strong reliability and validity across educational and sports contexts, linking motivational profiles to engagement, persistence, and physical activity participation (Hassani et al., 2024; Rodrigues et al., 2023; Grao-Crucesa et al., 2018). Despite its widespread use, no culturally adapted or psychometrically validated Arabic version exists, limiting the assessment of situational motivation in Arabic-speaking physical education contexts (Curran & Standage, 2017; Ryan & Deci, 2023).

This study aimed to address this gap by translating the SIMS into Arabic and evaluating its psychometric properties among secondary school students in physical education. Specifically, it seeks to confirm the factorial structure, assess reliability, and verify the suitability of the scale for future research and practical applications. Establishing a valid and reliable Arabic SIMS will enable educators and researchers to better understand the motivational processes and design interventions that foster autonomy, engagement, and sustained participation in physical activity.

Materials and Methods

Participants

A total of 580 students (296 men = 51.03%; 284 women = 48.97%; mean age = 17.48 ± 1.46 years; range 15-21 years) from secondary education classes participated voluntarily in this study. Regarding geographical distribution, participants were recruited from different regions of Tunisia: the north (199 = 34.31%), center (193 = 33.27%), and south (188 = 32.41%).

Two different populations were recruited for exploratory and confirmatory studies. The exploratory data were gathered from 290 students who were randomly chosen based on the data. The subjects were students of both sexes, with men (n = 147; 50.69%) and women (n = 143; 49.31%). Confirmatory data were collected from 290 students (149 men = 51.38%; 141 women = 48.62%). Parental consent was obtained for all participants aged < 18 years. In total, 600 questionnaires were distributed, and 580 valid responses were retained for analysis after excluding 20 due to missing data.

Measures

Situational motivation was assessed using the SIMS (Guay et al., 2000), which originally consists of 16 items measuring state motivation toward a specific activity. The SIMS has demonstrated internal consistency coefficients ranging from 0.77 to 0.95. Each item addresses the question, "Why did you engage in this activity?" and is organized into four subscales: IM (4 items; e.g., "Because I think that this activity is interesting"), IR (4 items; e.g., "Because I think that this activity is good for me"), ER (4 items; e.g., "Because I don't have any choice"), and AM (4 items; e.g., "There may be good reasons to do this activity, but personally I don't see any"). Responses were rated on a 7-point Likert scale ranging from 1 (does not correspond at all) to 7 (corresponds exactly), with 4 indicating moderate correspondence. In the original SIMS-16, subscale scores are obtained by summing the relevant items, yielding scores from 4 to 28 for each four-item dimension. In the retained Arabic SIMS-15, after the exclusion of item 4 from the AM subscale, the IM, IR, and ER subscales each retain four items and therefore range from 4 to 28, whereas the AM subscale includes three items and ranges from 3 to 21.

Procedure

The SIMS was translated into Arabic following a standardized back-translation procedure commonly applied in cross-cultural research (Núñez Alonso et al., 2005; Núñez et al., 2006; Vallerand et al., 1989). First, a bilingual expert translated the original English version into Arabic. A second independent bilingual translator, blinded to the original, back-translated the scale into English. This process was repeated twice to ensure accuracy and to minimize bias. A panel of four bilingual translators and two psychologists with expertise in motivation research then reviewed and refined the translated version, resulting in the final Arabic version of the SIMS.

Data were collected immediately after the physical education classes. Students were informed that their participation was voluntary and anonymous, and they were instructed to read each item carefully, respond honestly, and complete all the questions. No time limit was imposed, and students were permitted to ask clarification questions if necessary. Written parental consent was obtained for all underage participants, and the protocol was approved by the local ethics committee. All procedures were conducted in accordance with the ethical standards of the institutional and national research committees and the 1964 Helsinki Declaration and its later amendments.

Statistical Analysis

Data analyses were performed using JASP (version 0.19.3.0) and the Statistical Package for Social Sciences (SPSS and AMOS; version 28, IBM, Armonk, NY, USA). Descriptive statistics (means, standard deviations, skewness, and kurtosis) were computed to examine the distribution of the items. Data distribution was examined using kurtosis (Kr) and skewness (Sk). Kr values varied from -1.964 to 2.348, and Sk values ranged from -1.326 to 0.337 (Table 2).

Following established conventions, Sk and Kr values close to ±2 were interpreted as broadly compatible with approximately normal item distributions (López-Pina & Veas, 2024; Elliott & Woodward, 2007; Tabachnick et al., 2007).

The level of correlation between the students' answers was used to determine stability (Shrout & Fleiss, 1979). Test-retest reliability (bivariate correlations, intraclass correlation) was used to determine the SIMS-15's reliability. Cronbach's α, McDonald's ω, and Guttman's λ2 were used to assess the SIMS-15's internal reliability (Cronbach, 1951; McDonald, 1970; Raykov & Marcoulides, 2019). The level of inter-correlation between the scale items is indicated by internal consistency (Morrison et al., 2015). For these indices, a reliability criterion of 0.70 for acceptability and 0.80 for good reliability was recommended.

To ascertain the instrument's factor structure, an orthogonal Varimax-type EFA in accordance with the Varimax criterion of Kaiser (1958) with a principal component analysis was applied to the16 survey items of the scale (Everitt & Dunn, 2001). Items with a factor loading of 0.40 or less (Archer et al., 1997; Pett et al., 2003) were eliminated, and the Kaiser-Meyer-Olkin (KMO) statistic (Stafford & Bodson, 2006; Bartlett, 1950) was used to gauge the adequacy of the sample. The factor structure in the four SIMS dimensions was examined using a first-order CFA with maximum likelihood estimation. The following indices were highlighted to assess how well the models fit: the Not Normed Fit Index (NNFI) is based on the Tucker-Lewis Index, which was developed through factor analysis; an index value of 0.9 or above indicated a good or excellent fit for both indices (Bentler & Bonett, 1980). The Comparative Fit Index (CFI) is a normed fit index between 0 and 1, and the most widely accepted measure of good fit is a CFI ≥ 0.95 (Hu & Bentler, 1999). The Goodness of Fit Index (GFI) (Hooper et al., 2008) and Adjusted Goodness of Fit (AGFI) must be equal to or higher than 0.85 and 0.90, respectively (Schermelleh-Engel et al., 2003). According to Hu and Bentler (1998), a good fit for the Root Mean Square Error of Approximation (RMSEA) is defined as the Standardized Root Mean Square Residual (SRMR) being less than 0.08, the Parsimony Normed Fit Index (PNFI), and the Parsimony Comparative Fit Index (PCFI) greater than 0.5 (Hau, 2000). MacCallum et al. (1996) employed the frequently used χ 2 statistic (χ 2/df ratio of three or less) and chose 0.01, 0.05, and 0.08 to represent excellent, good, and mediocre fit, respectively. A non-significant value of χ 2 is required for the model fit of the retained data (Satorra & Bentler, 1994).

As a complementary validity check, the sensitivity analysis (ANOVA) was framed as an assessment of known-groups validity—that is, the ability of the SIMS-15 to detect theoretically expected score differences across contextually distinct subgroups (Terwee et al., 2007; Streiner et al., 2024). Geographic zone (northern, central, and southern Tunisia), gender, and their interaction were examined as grouping variables. Statistical significance was set at $p < 0.05$.

Results

Instrument Quality

The basic characteristics of the study sample are presented in Table 1.

Table 1. Basic characteristics of the sample population

Variable		Effective		Percentage (%)
Age	[15-17]	Total (N = 580)	299	51.55
		EFA (n = 290)	154	53.10
		CFA (n = 290)	145	50.00
		Test-retest (n = 35)	34	97.14
	[18-21]	Total (N = 580)	281	48.45
		EFA (n = 290)	136	46.90
		CFA (n = 290)	145	50.00
		Test-retest (n = 35)	1	2.86
Gender	Male	Total (N = 580)	296	51.03
		EFA (n = 290)	147	50.69
		CFA (n = 290)	149	51.38
		Test-retest (n = 35)	18	51.43
	Female	Total (N = 580)	284	48.97
		EFA (n = 290)	143	49.31
		CFA (n = 290)	141	48.62
		Test-retest (n = 35)	17	48.57
Region	North	Total (N = 580)	199	34.31
		EFA (n = 290)	101	34.83
		CFA (n = 290)	98	33.80
		Test-retest (n = 35)	13	37.14
	Center	Total (N = 580)	193	33.27
		EFA (n = 290)	94	32.41
		CFA (n = 290)	99	34.13
		Test-retest (n = 35)	11	31.43
	South	Total (N = 580)	188	32.41
		EFA (n = 290)	95	32.76
		CFA (n = 290)	93	32.07
		Test-retest (n = 35)	11	31.43

Note. EFA: exploratory factor analysis; CFA: confirmatory factor analysis.

The descriptive statistics (mean, standard deviation, skewness, and kurtosis) of the items included in this study are presented in Table 2. The data were normally distributed, based on the skewness and kurtosis values. The analysis of item 1 indicated a kurtosis value of 2.34, slightly exceeding the conventional normality threshold of ± 2. However, visual inspection of the corresponding Q-Q plot demonstrated adequate alignment with the expected normal distribution. Therefore, the assumption of normality for this item was acceptable for subsequent analyses.

For further analysis, Table 3 presents the means and standard deviations of the SIMS-15 subscales, categorized by geographical zone.

The SIMS was administered twice to the same sample, with a two-week interval, to evaluate its temporal stability through a test–retest reliability design. The sample was homogeneous in terms of gender and geographical region. A total of 35 students participated (mean age = 16.09 ± 0.78 years; 18 men, 51.43%; 17 women, 48.57%).

Table 2. Descriptive statistics and normality of the SIMS-15 (N = 290).

Item	M	SD	Sk	Kr (Zero Centered)
Item1	5.60	1.122	-1.326	2.348
Item5	5.58	1.135	-1.013	1.278
Item9	5.56	1.185	-0.776	0.449
Item13	5.51	1.352	-1.239	1.831
Item2	5.07	1.562	-0.833	-0.093
Item6	5.07	1.597	-0.848	0.032
Item10	5.03	1.684	-0.856	0.017
Item14	4.98	1.625	-0.752	-0.110
Item3	5.40	1.379	-0.994	0.553
Item7	5.52	1.308	-1.190	1.323
Item11	5.37	1.443	-1.090	0.791
Item15	5.52	1.334	-1.026	0.773
Item8	1.44	0.498	0.223	-1.964
Item12	1.80	0.732	0.337	-1.079
Item16	1.49	0.501	0.028	-2.013

Note. M: mean; SD: standard deviation; Sk: Skewness; Kr: Kurtosis.

Table 3. Distribution of SIMS-15 subscales across geographic zones.

Zone		IM	IR	ER	AM
Northern Tunisia	M	22.01	21.02	21.60	4.75
	SD	4.234	5.499	5.258	1.352
Central Tunisia	M	21.37	20.61	20.71	4.82
	SD	4.506	5.905	5.527	1.531
Southern Tunisia	M	23.38	18.80	23.12	4.63
	SD	3.594	6.555	3.992	1.422

Note. IM: intrinsic motivation; IR: identified regulation; ER: external regulation; AM: amotivation.

The results revealed a correlation coefficient of 0.905 ($p < 0.001$), indicating the satisfactory temporal stability of the SIMS. Because the bivariate correlation coefficient does not account for systematic differences, several authors have recommended using the intraclass correlation coefficient (ICC) as a more robust indicator of absolute agreement (Terwee et al., 2007). The sample size adequacy for the test-retest analysis was determined following the recommendations of Bujang and Baharum (2017); detecting an ICC of 0.50 at 80% power and an $\alpha = 0.05$ requires at least 22 participants. Considering an anticipated 20% attrition rate, the target sample was set at 27 participants, which was exceeded by our retest sample of 35 students.

Therefore, the inclusion of 35 participants in the retest phase was sufficient to confirm the instrument's temporal stability. The ICC obtained in this study was 0.950, which demonstrated excellent reliability. Table 4 presents the test–retest reliability results derived from the correlations between the two SIMS administrations.

Table 4. Test-retest reliability of the SIMS (n = 35).

Variable	Test-retest reliability	
	Bivariate correlations	Intra-class correlation
SIMS-15	0.905***	0.950
CI 95%	0.818-0.951	0.901-0.975

Note. CI: confidence interval; *** statistically significant at $p < 0.001$

An important overview of the internal structure of the SIMS, including its four hypothesized dimensions—IM (items 1, 5, 9, and 13), IR (items 2, 6, 10, and 14), ER (items 3, 7, 11, and 15), and AM (items 8, 12, and 16)—can be obtained by examining the inter-item correlation matrix presented in Table 5.

The analysis revealed a clear tendency toward strong positive correlations among items intended to measure the same underlying construct. Notably, the correlations between the IM items were high (e.g., r = 0.721 between items 1 and 9; r = 0.799 between items 5 and 9). Similarly, strong correlations, sometimes exceeding 0.850, were observed among the IR items (e.g., r = 0.870 between items 6 and 10; r = 0.894 between items 6 and 14). The ER dimension also showed substantial inter-item correlations (e.g., r = 0.828 between items 7 and 15; r = 0.774 between items 7 and 11), and comparable patterns emerged among the AM items (e.g., r = 0.824 between items 8 and 16).

Conversely, correlations between items belonging to different dimensions were markedly lower—for example, between IM and IR items (r = 0.129 between items 9 and 10; r = 0.142 between items 5 and 6), IM and AM items (r = 0.048 between items 5 and 8; r = −0.035 between items 13 and 12), and other cross-dimensional pairs.

In summary, the strong within-dimension correlations support the internal consistency of each subscale, indicating that the items measure the same underlying construct. Meanwhile, the weak correlations between dimensions provide evidence of discriminant validity, confirming that the SIMS-15 subscales—IM, IR, ER, and AM—represent distinct, yet theoretically related, motivational constructs. These findings suggest that the scale possesses a clear and stable four-factor structure (Field, 2024; Tavakol & Dennick, 2011), which is consistent with previous research (Elliott & Woodward, 2007; Tabachnick et al., 2007; Terwee et al., 2007).

Exploratory factor analysis

The internal reliability of the Arabic version of the SIMS-15 was assessed using McDonald's omega, Cronbach's alpha, and Guttman's λ^2. The scale demonstrated good internal consistency ($\omega = 0.788$, 95% CI = 0.753–0.824; $\alpha = 0.846$, 95% CI = 0.815–0.877; $\lambda^2 = 0.883$, 95% CI = 0.862–0.905). As indicated in Table 6, McDonald's omega is considered a superior indicator of reliability (Béland et al., 2017). Reliability coefficients above 0.60 are generally regarded as acceptable (Béland et al., 2017; Taber, 2018). Overall, the results confirm that the SIMS-15 exhibits high internal reliability and accurately reflects its theoretical construct.

Item 4 of the original SIMS-16, which belongs to the AM subscale ("There may be good reasons for doing this activity,

Table 5. Inter-item correlation matrix coefficients for the SIMS-15 Items (N = 290)

Item	Item1	Item5	Item9	Item13	Item2	Item6	Item10	Item14	Item3	Item7	Item11	Item15	Item8	Item12	Item16
Item1	1.000														
Item5	0.708	1.000													
Item9	0.721	0.799	1.000												
Item13	0.703	0.603	0.623	1.000											
Item2	0.100	0.159	0.167	0.184	1.000										
Item6	0.129	0.142	0.175	0.182	0.816	1.000									
Item10	0.148	0.103	0.129	0.240	0.754	0.870	1.000								
Item14	0.167	0.159	0.199	0.217	0.816	0.894	0.845	1.000							
item3	0.410	0.346	0.325	0.441	0.179	0.154	0.156	0.137	1.000						
Item7	0.371	0.317	0.305	0.399	0.164	0.120	0.124	0.118	0.863	1.000					
Item11	0.367	0.280	0.274	0.361	0.080	0.055	0.056	0.071	0.766	0.774	1.000				
Item15	0.426	0.308	0.319	0.397	0.090	0.076	0.083	0.076	0.859	0.828	0.765	1.000			
Item8	0.059	0.048	0.052	0.032	0.039	0.044	0.048	0.069	0.032	0.004	-0.027	0.020	1.000		
Item12	-0.074	-0.090	-0.092	-0.035	-0.081	-0.089	-0.039	-0.079	-0.046	-0.037	-0.040	-0.072	0.439	1.000	
Item16	0.051	0.047	0.018	0.041	0.056	0.053	0.066	0.083	-0.011	-0.039	-0.047	-0.033	0.824	0.388	1.000

Table 6. Internal consistency of the Arabic version of the SIMS-15 (N = 290)

Scale	McDonald's omega	Cronbach alpha	Guttman's lambda-2
SIMS-15	0.788	0.846	0.883
CI 95%	0.753-0.824	0.815-0.877	0.862-0.905

Note. CI: confidence interval

but personally, I don't see any"), was excluded because its factor loading was below the 0.40 retention threshold (Archer et al., 1997). In cross-cultural psychometric adaptation, removing items with low discriminatory capacity is an accepted procedure when it improves factorial clarity and preserves the coherence of the construct (Beaton et al., 2000). The resulting 15-item scale (SIMS-15) retains three AM items (items 8, 12, and 16), which is sufficient for structural identification in confirmatory models (Kline, 2023). This three-item AM structure also showed strong convergent validity, with AVE (0.708) and CR (0.877) values above recommended thresholds (Fornell & Larcker, 1981), supporting a coherent latent construct.

The analysis identified four distinct factors, each with eigenvalues surpassing the thresholds recommended by Cattell (1966) and Kaiser (1960). Sampling adequacy was confirmed using the KMO statistic (KMO = 0.838) and Bartlett's test of sphericity ($p < 0.001$). Together, these factors explained 81.32% of total variance. The factor loadings for the four-factor model ranged from 0.679 to 0.954, as detailed in Table 7.

Confirmatory factor analysis

The CFA indicated a good model fit, as suggested by Wheaton et al. (1977), Hermann (1980), and Tabachnick et al. (2007). In addition to the chi-square (χ^2) and normalized chi-square (χ^2/df), several fit indices were evaluated, including AGFI, GFI, CFI, TLI (NNFI), NFI, PNFI, PCFI, RMSEA, and SRMR. The critical cutoff values for AGFI, GFI, NFI, CFI, and TLI are recommended to exceed 0.95 (Tabachnick et al., 2007; Fan et al., 1999)2007; Fan et al., 1999, whereas RMSEA and SRMR values should be below 0.05 and 0.08, respectively, for an acceptable fit (MacCallum et al., 1996; Jöreskog & Sörbom, 1996; Byrne, 2013).

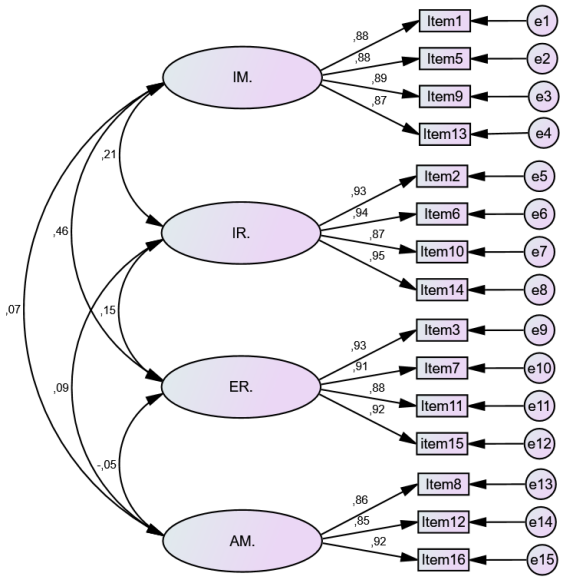

Fig 1. Standardized results of the confirmatory factor analysis for the Arabic version of the SIMS-15 (N = 290). Note. IM: Intrinsic Motivation; IR: Identified Regulation; ER: External Regulation; AM: Amotivation

The CFA results for the four-factor SIMS-15 model were as follows: χ^2/df = 1.542, df = 84, $p < 0.001$; NFI = 0.97; TLI = 0.98; IFI = CFI = 0.99; PNFI = 0.77; PCFI = 0.80; GFI = 0.94; AGFI = 0.92; SRMR = 0.02; RMSEA = 0.04 (90%

Table 7. Standardized factor loadings for the SIMS-15

	SIMS items	Components			
	1	2	3	4	
Item1	لأنني أعتقد أن هذا النشاط مثير للاهتمام. Because I think that this activity is interesting.			0.855	
Item5	لأنني أعتقد أن هذا النشاط ممتع. Because I think that this activity is pleasant.			0.884	
Item9	لأن هذا النشاط ممتع. Because this activity is fun.			0.893	
Item13	لأنني أشعر بالرضا عندما أقوم بهذا النشاط. Because I feel good when doing this activity.			0.761	
Item2	لأنني أقوم بذلك لصالحي الشخصي. Because I am doing it for my own good.	0.898			
Item6	لأنني أعتقد أن هذا النشاط مفيد لي. Because I think that this activity is good for me.	0.954			
Item10	بقرار شخصي. By personal decision.	0.923			
Item14	لأنني أؤمن بأن هذا النشاط مهم بالنسبة لي. Because I believe that this activity is important for me.	0.943			
Item3	لأن من المفترض أن أقوم بذلك. Because I am supposed to do it.		0.911		
Item7	لأن هي شيء يجب عليّ القيام به. Because it is something that I have to do.		0.914		
Item11	لأنني لا أملك أي خيار. Because I don't have any choice.		0.875		
Item15	لأنني أشعر أن من يجب عليّ القيام به. Because I feel that I have to do it.		0.907		
Item8	أقوم بهذا النشاط ولكنني لست متأكد إذا ما كان يستحق ذلك. do this activity but I am not sure if it is worth it.				0.921
Item12	لا أعرف، لا أرى ما يجلبه هذا النشاط لي. I don't know; I don't see what this activity brings me.				0.679
Item16	أقوم بهذا النشاط، ولكنني لست متأكد من أن هي شيء جيد أن أستمر فيه. I do this activity, but I am not sure it is a good thing to pursue it.				0.902

Table 8. Summary of fit indices for the SIMS-15 confirmatory factor analysis models (N = 290)

Model	χ^2/df	AGFI	GFI	NFI	TLI	IFI = CFI	PNFI	PCFI	RMSEA (CI 95%)	SRMR
SIMS-15	1.542	0.92	0.94	0.97	0.98	0.99	0.77	0.80	0.04 (0.02-0.05)	0.02

Note. χ^2/df: relative chi-square; AGFI: Adjusted Goodness of Fit Index; GFI: Goodness of Fit Index; NFI: Normed Fit Index; IFI: Incremental Fit Index; TLI: Tucker-Lewis Index; CFI: Comparative Fit Index; PNFI: Parsimony Normed Fit Index; PCFI: Parsimony Comparative Fit Index; SRMR: Standardized Root Mean Square Residual; RMSEA: Root Mean Square Error of Approximation; CI: Confidence Interval.

CI = 0.02–0.05). The AGFI and GFI exceeded 0.92, while the CFI, NFI, and TLI were above 0.98, indicating an overall satisfactory fit. The PCFI and PNFI values were higher than 0.77. Both the SRMR and RMSEA indicated an excellent fit, remaining below 0.02 and 0.04, respectively.

These results demonstrate that the Arabic version of the SIMS-15 four-factor model exhibited excellent fit indices, confirming the scale's construct validity (Table 8).

The four-factor structure of the SIMS-15 was confirmed for a sample of Tunisian secondary school students, demonstrating an excellent fit to the proposed theoretical model across all examined indices (Figure 1).

Average variance extracted (AVE) and composite reliability (CR) coefficients

To assess convergent validity, factor loadings for each item, along with the corresponding AVE and CR values, were calculated (Hair et al., 2013). The AVE provides a summary measure of convergence among items that represent a latent construct (Fornell & Larcker, 1981). Both the AVE and CR ranged between 0 and 1, with higher values indicating greater reliability. AVE is mathematically expressed as the sum of squared factor loadings divided by the number of items: $AVE = \Sigma\lambda^2/n$.

CR quantifies the internal consistency among scale items (Netemeyer et al., 2003) and represents the shared variance between the observed indicators of a latent construct (Fornell & Larcker, 1981). It is computed as:

$CR = \Sigma \lambda^2 / [(\Sigma\lambda^2 + \Sigma(1-\lambda^2)]$

CR values between 0.6 and 0.7 are generally acceptable, whereas values above 0.7 are preferred in advanced research settings. According to Fornell and Larcker (1981), convergent validity remains acceptable if the AVE falls below 0.5 and the CR exceeds 0.6. A measurement model is considered reliable when the CR exceeds 0.7 (Hair et al., 2019).

In the present study, the AVE values were 0.722 for IM, 0.864 for IR, 0.813 for ER, and 0.708 for AM (Table 9). These values exceeded the recommended thresholds, indicating that the majority of the variance in the items was attributable to the underlying constructs rather than measurement error.

Table 9. The average variance extracted and composite reliability for each subscale of the SIMS-15

Dimension	AVE	CR
Intrinsic motivation	0.722	0.912
Identified regulation	0.864	0.962
External regulation	0.813	0.945
Amotivation	0.708	0.877

Note. AVE: Average Variance Extracted; CR: Composite Reliability.

Sensitivity analysis

The sensitivity analysis assessed the ability of the SIMS-15 to discriminate between theoretically distinct subgroups, thereby providing evidence of known-groups validity within the broader construct-validation framework (Terwee et al., 2007). The MANOVA showed a significant multivariate effect of region on the SIMS dimensions, Pillai's Trace = 0.098, $F_{(8, 564)} = 3.620$, $p < 0.001$. In contrast, neither gender, Pillai's Trace = 0.004, $F_{(4, 281)} = 0.295$, $p = 0.881$, nor the Region × Gender interaction, Pillai's Trace = 0.001, $F_{(8, 564)} = 0.051$, $p = 1.000$, reached statistical significance.

Follow-up univariate analyses indicated significant regional effects for IM, $F_{(2, 284)} = 5.821$, $p = 0.003$, $\eta p^2 = 0.039$, 95% CI [0.005, 0.088]; IR, $F_{(2, 284)} = 3.698$, $p = 0.026$, $\eta p^2 = 0.025$, 95% CI [0.000, 0.067]; and ER, $F_{(2, 284)} = 5.613$, $p = 0.004$, $\eta p^2 = 0.038$, 95% CI [0.004, 0.086]. No significant regional effect was observed for AM, $F_{(2, 284)} = 0.405$, $p = 0.667$, $\eta p^2 = 0.003$, 95% CI [0.000, 0.021] (Table 10).

Descriptively, students from Southern Tunisia reported the highest scores for IM (M = 23.38) and ER (M = 23.12), whereas students from Northern Tunisia showed the highest mean score for IR (M = 21.02). AM scores were low and relatively similar across the three regions (Table 3). Overall, regional differences were statistically significant for IM, IR, and ER, but the effect sizes were small, indicating that region explained only a modest proportion of variance in these motivational dimensions. No meaningful effect of gender or Region × Gender interaction was found across the four SIMS subscales.

Discussion

The purpose of motivational pedagogy is to enhance students' IM to learn by employing effective instructional strategies and supportive practices. This pedagogical approach is grounded in the belief that motivation constitutes a central component of learning and that teachers can substantially influence students' engagement and academic success by creating a classroom environment that nurtures motivation (Ryan & Deci, 2000b; Stipek, 2002). Accordingly, the present study aimed to translate the SIMS into Arabic and validate its psychometric properties by examining its internal consistency and factorial structure. The findings revealed that the Arabic version of the SIMS-15 demonstrated strong psychometric soundness and is suitable for use in physical education contexts. These outcomes are consistent with those of prior validation studies in both the academic and physical activity domains (Guay et al., 2000; Hassani et al., 2024; Gamboa et al., 2017; Martin-Albo et al., 2009; Wasicek & McHugh, 2024; Muniandy et al., 2023; Standage et al., 2003).

Both exploratory and confirmatory analyses provided strong evidence supporting the factorial validity of SIMS-15. The CFA confirmed the four-factor structure—IM, IR, ER, and AM—in line with the self-determination theory (Deci & Ryan, 1985). This structure replicates the findings of prior validation studies across educational and physical activity settings (Guay et al., 2000; Hassani et al., 2024; Martin-Albo et al., 2009; Østerlie et al., 2019). The sample's adequacy for factor analysis was verified using a robust KMO value of

Table 10. Effects of region, gender, and their interaction on the SIMS-15 dimensions.

Effect	IM	IR	ER	AM
Region	$F(2, 284) = 5.821^{**}$ $\eta p^2 = 0.039$ 95% CI [0.005, 0.088]	$F(2, 284) = 3.698^{*}$ $\eta p^2 = 0.025$ 95% CI [0.000, 0.067]	$F(2, 284) = 5.613^{**}$ $\eta p^2 = 0.038$ 95% CI [0.004, 0.086]	$F(2, 284) = 0.405$ $\eta p^2 = 0.003$ 95% CI [0.000, 0.021]
Gender	$F(1, 284) = 0.466$ $\eta p^2 = 0.002$ 95% CI [0.000, 0.024]	$F(1, 284) = 0.038$ $\eta p^2 < 0.001$ 95% CI [0.000, 0.013]	$F(1, 284) = 0.280$ $\eta p^2 = 0.001$ 95% CI [0.000, 0.021]	$F(1, 284) = 0.641$ $\eta p^2 = 0.002$ 95% CI [0.000, 0.026]
Region × Gender	$F(2, 284) = 0.046$ $\eta p^2 < 0.001$ 95% CI [0.000, 0.004]	$F(2, 284) = 0.002$ $\eta p^2 < 0.001$ 95% CI [0.000, 0.000]	$F(2, 284) = 0.079$ $\eta p^2 = 0.001$ 95% CI [0.000, 0.008]	$F(2, 284) = 0.057$ $\eta p^2 < 0.001$ 95% CI [0.000, 0.006]

Note. IM: intrinsic motivation; IR: identified regulation; ER: external regulation; AM: amotivation. ηp^2: partial eta squared. **: $p < 0.01$; *: $p < 0.05$. The 95% confidence intervals for ηp^2 were estimated from the F statistics using the noncentral F-distribution approach (Lakens, 2013).

0.838 and a highly significant Bartlett's test of sphericity ($p < 0.001$). The factor loadings ranged from 0.679 to 0.954, indicating clear item–factor relationships (Tabachnick et al., 2007; Hayton et al., 2004). The CFA yielded excellent model-fit indices ($\chi^2/df = 1.542$, CFI = 0.99, TLI = 0.98, SRMR = 0.02, RMSEA = 0.04), satisfying the stringent criteria for a well-fitting model (Hu & Bentler, 1999; Schermelleh-Engel et al., 2003). The SIMS-15 demonstrated excellent convergent validity. Within each subscale, inter-item correlations were strong, while correlations across subscales were notably weaker, indicating that the four dimensions assess distinct yet conceptually related constructs (Floyd & Widaman, 1995; Tabachnick & Fidell, 2013). AVE values ranged from 0.708 to 0.864, well above the recommended threshold of 0.50, and the CR values ranged from 0.877 to 0.962, exceeding the 0.70 benchmark (Fornell & Larcker, 1981; Hair et al., 2019).

The transition from the original 16-item scale to the Arabic SIMS-15 preserves conceptual equivalence and remains aligned with self-determination theory (Deci & Ryan, 2000). Item 4 captures a meta-cognitive facet of AM, in which students acknowledge that reasons for engagement may exist while personally failing to see their relevance. This formulation likely created psycholinguistic and cultural interpretation difficulties among Tunisian students (Beaton et al., 2000). Thus, the weak loading appears to reflect cultural specificity rather than a weakness in the AM construct itself, a pattern also reported in non-Western adaptations of self-determination theory instruments (Hassani et al., 2024). Importantly, the three retained AM items (8, 12, and 16) still capture the definitional core of AM, including lack of intentionality and low perceived outcome contingency. With three indicators, the AM factor remains structurally identifiable and psychometrically stable (Kline, 2023). Consequently, the four-factor motivational continuum of the original SIMS (Guay et al., 2000) is retained while the Arabic version shows clearer factorial performance in this educational context.

The Arabic version of the SIMS-15 exhibited high internal consistency and temporal stability. Reliability indices were robust, with Cronbach's alpha (0.846), McDonald's omega (0.788), and Guttman's λ^2 (0.883) all exceeding recommended thresholds (Cronbach, 1951; Tavakol & Dennick, 2011). Test–retest reliability over a two-week interval among 35 participants yielded a Pearson correlation of 0.905 and an ICC of 0.950, confirming strong stability over time (Shrout & Fleiss, 1979; Bujang & Baharum, 2017). These findings indicate that the SIMS-15 provides consistent measurements suitable for both longitudinal and cross-sectional applications. From a psychometric standpoint, the sensitivity analysis provides evidence of known-groups validity: significant zone effects on IM, IR, and ER show that the SIMS-15 is sensitive to contextual variation in motivational profiles. The absence of significant gender-related effects offers preliminary evidence of cross-group consistency, although formal invariance testing is still required, as noted in the Limitations section. The absence of a zone effect for AM probably reflects floor-level scores in this sample, which limited between-group variability (Terwee et al., 2007).

The replication of the SIMS four-factor structure in an Arabic-speaking North African context provides cross-cultural support for the self-determination theory motivational continuum (Ryan & Deci, 2023; Chirkov et al., 2003). Several cultural features of the Tunisian educational context may help explain the factor solution. The strong coherence of the IR and ER subscales (AVE = 0.864 and 0.813, respectively) may reflect the salience of both internalized value and social obligation as distinct motivational forces in a broadly collectivist setting. This interpretation is consistent with cross-cultural self-determination theory research showing that autonomous and controlled motivations remain structurally distinguishable in collectivist societies (Chirkov et al., 2003; Vansteenkiste et al., 2006). In addition, the uniformly low AM scores may partly reflect social desirability tendencies in a compulsory school activity, as students may be less inclined to endorse a complete absence of motivation (Markus & Kitayama, 1991). Finally, the psycholinguistic distance between Modern Standard Arabic and the Tunisian vernacular (Darija) may have contributed to differential item comprehension, particularly for item 4. Future adaptations should therefore consider register-sensitive formulations for Maghrebi Arabic populations.

Limitations

This study had several limitations that warrant consideration. First, the sample consisted solely of secondary education students; thus, future research should include participants from different educational levels and institutions. Second, the sample was limited to Tunisian students, which restricts the generalizability of the findings to broader Arabic-speaking populations. Third, the SIMS does not include all types of motivational regulation described in self-determination theory; specifically, integrated and introjected regulations are absent. Future studies should examine whether including these dimensions enhances the understanding of situational motivation. Fourth, although the exclusion of item 4 from the AM subscale was psychometrically justified and preserved the theoretical continuum, the resulting three-item subscale provides slightly narrower coverage of the AM facet originally conceptualized by Guay et al. (2000). Future research should develop and validate a culturally and linguistically appropriate replacement item to capture this specific meta-cognitive dimension of AM in Arabic-speaking educational contexts. Fifth, the present study did not conduct formal measurement invariance testing across gender and age groups. Without establishing at least configural and metric invariance through multi-group CFA (Vandenberg & Lance, 2000; Putnick & Bornstein, 2016), ANOVA-based group comparisons should be interpreted cautiously, because observed score differences may partly reflect measurement non-equivalence rather than true latent mean differences. Future studies should systematically test the measurement equivalence of the Arabic SIMS-15 across gender, age, and regional subgroups. Finally, future investigations should also consider additional cognitive and affective correlates of motivation, as well as contextual antecedents such as perceived competence and motivational climate.

Conclusion

This study assessed the psychometric properties of the Arabic version of the SIMS-15 among secondary school

students in physical education. Results indicated strong construct validity, excellent internal consistency, and temporal stability. After the removal of one item, the 15-item model demonstrated superior fit and reliability. Hence, the Arabic SIMS-15 can be considered a reliable and valid tool for assessing situational motivation among Arabic-speaking students. Its brevity, clarity, and practicality make it particularly suitable for educational settings. Future work should explore how this instrument can support the design of motivational learning environments that foster students' self-determination and engagement in physical education.

Ethical Approval

This study was approved by the local ethics committee (approval obtained prior to data collection) and conducted in full accordance with the 1964 Declaration of Helsinki and its later amendments. Informed consent was obtained from all participants or their legal guardians.

Data Availability Statement

The data that supports the findings of this study are available from the corresponding author upon reasonable request.

AI Transparency Statement

The authors used AI-assisted tools for language editing only and take full responsibility for the content.

Funding

None.

Acknowledgments

We wish to convey our gratitude to everyone who contributed their time and effort to help us complete this study, as well as to all the students who took part in the research.

Conflicts of Interest

The authors declare no conflicts of interest.

References

Curran, T., & Standage, M. (2017). Psychological needs and the quality of student engagement in physical education: Teachers as key facilitators. *Journal of Teaching in Physical Education, 36*(3), 262-276. https://doi.org/10.1123/jtpe.2017-0065

Zhou, T., Zhang, S., Colomer, J., & Ortíz, D. (2025). Applying self-determination theory in physical education: A systematic review La aplicación de la teoría de la autodeterminación en Educación Física: una revisión sistemáticaA aplicação da teoria da autodeterminação na Educação Física: uma revisão sistemática. *Retos,* 69, 1016-1038. https://doi.org/10.47197/retos.v69.115809

Alixanov, V., Salmanov, V., Talibova, L., Hasanov, N., Zeynalli, C., & Aliyev, S. (2026). The role of physical education in developing students' motivation and lifelong physical activity: A pedagogical perspective. *Physical Education Theory and Methodology, 26*(3), 442-447. https://doi.org/10.17309/tmfv.2026.3.04

Deci, E.L., & Ryan, R.M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227-268. https://doi.org/10.1207/S15327965PLI1104_01

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

Haerens, L., Aelterman, N., Vansteenkiste, M., Soenens, B., & Van Petegem, S. (2015). Do perceived autonomy-supportive and controlling teaching relate to physical education students' motivational experiences through unique pathways? Distinguishing between the bright and dark side of motivation. *Psychology of Sport and Exercise,* 16, 26-36. https://doi.org/10.1016/j.psychsport.2014.08.013

Taylor, I.M., Ntoumanis, N., & Standage, M. (2008). A self-determination theory approach to understanding the antecedents of teachers' motivational strategies in physical education. *Journal of Sport and Exercise Psychology, 30*(1), 75-94. https://doi.org/10.1123/jsep.30.1.75

Ryan, R.M., & Deci, E.L. (2023). *Acting as one: Self-determination theory's scientific and existential import. In The oxford handbook of self-determination theory* (pp. 1173 - 1176). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780197600047.013.59

Vansteenkiste, M., & Ryan, R.M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration,* 23, 263-280. https://doi.org/10.1037/a0032359

Vallerand, R.J. (1997). *Toward a hierarchical model of intrinsic and extrinsic motivation.* In M.P. Zanna (Ed.), Advances in Experimental Social Psychology (Vol. 29, pp. 271-360). Academic Press. https://doi.org/10.1016/S0065-2601(08)60019-2

Ryan, R.M., & Deci, E.L. (2000a). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78. https://doi.org/10.1037//0003-066x.55.1.68

Rusmitaningsih, F.N., Ma'mun, A., Juliantine, T., Sucipto, S., & Gustian, U. (2026). From motivation to sustained engagement: A dual-process framework of self-regulation in physical literacy. A systematic review. *Physical Education Theory and Methodology, 26*(3), 419-428. https://doi.org/10.17309/tmfv.2026.3.02

Törmänen, T., Ketonen, E., Lehtoaho, E., Turunen, M., Zabolotna, K., Shubina, T., & Järvenoja, H. (2025). Situational motivation in academic learning: A systematic review. *Educational Psychology Review, 37*(2), 56. https://doi.org/10.1007/s10648-025-10036-0

Vallerand, R. (2001). *A hierarchical model of intrinsic and extrinsic motivation in sport and exercise.* G.C. Roberts (Ed.). Human Kinetics.

Ghazvini, N., Hamar, P., & Soós, I. (2025). Intrinsic motivational climate and physical activity levels of female students in Budapest, Hungary. *Studia Universitatis Babeş-Bolyai Educatio Artis Gymnasticae,* 47-62. https://doi.org/10.24193/subbeag.69(4).29

Järvenoja, H., Törmänen, T., Järvelä, S., & Shubina, T. (2023). *Motivation and Emotion Regulation in Collaborative Learning Contexts.* In G. Hagenauer, R. Lazarides, & H. Järvenoja, Motivation and Emotion in Learning and Teaching across Educational Contexts (1st edn, pp. 100–113). Routledge. https://doi.org/10.4324/9781003303473-8

Hassani, F., Esmaeili, M., Sulu, B., Givi, B., & Honarmand, P. (2024). Preliminary validity and reliability of the Persian version of The Situational Motivation Scale for use in academic sport contexts. *CBÜ Beden Eğitimi ve Spor Bilimleri Dergisi,* 19, 239-252. https://doi.org/10.33459/cbubesbd.1360274

Rodrigues, F., Cid, L., Faustino, T., & Monteiro, D. (2023). The Situational Motivation Scale in the exercise context: Construct validity, factor structure, and correlational analysis. *Current Psychology, 42*(6), 4811-4820. https://doi.org/10.1007/s12144-021-01824-2

Grao-Crucesa, A., Blanco-Luengob, D., Nuvialab, A., & Sánchez-Olivaa, D. (2018). Psychometric properties of the Spanish version of the Situational Motivation Scale (SIMS) in physical education lessons. *ERPA 2018,* 380.

Núñez Alonso, J.L., Martín-Albo Lucas, J., & Navarro Izquierdo, J.G. (2005). Validación de la versión española de la Échelle de Motivation en Éducation. *Psicothema, 17*(2), 344 - 349. https://www.psicothema.com/pii?pii=3110

Núñez, J.L., Martín-Albo, J., Navarro, J.G., & González, V.M. (2006). Preliminary validation of a Spanish version of the Sport Motivation Scale. *Perceptual and Motor Skills, 102*(3), 919-930. https://doi.org/10.2466/pms.102.3.919-930

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 - 349. https://doi.org/10.1037/h0079855

López-Pina, J.A., & Veas, A. (2024). Validation of psychometric instruments with classical test theory in social and health sciences: A practical guide. *Anales de Psicología,* 40, 163-170. https://doi.org/10.6018/analesps.583991

Elliott, A., & Woodward, W. (2007). *Statistical analysis quick reference guidebook.* SAGE Publications, Inc. https://doi.org/10.4135/9781412985949

Tabachnick, B.G., Fidell, L.S., & Ullman, J.B. (2007). *Using multivariate statistics* (5th ed.). Boston, Amerika. Pearson Education.

Shrout, P., & Fleiss, J. (1979). Intraclass correlations: Uses in assessing rater reliability. *Psychological bulletin,* 86, 420-428. https://doi.org/10.1037/0033-2909.86.2.420

Cronbach, L.J. (1951). Coefficient Alpha and the internal structure of tests. *Psychometrika, 16*(3), 297-334. https://doi.org/10.1007/BF02310555

McDonald, R.P. (1970). The theoretical foundations of principal factor analysis, canonical factor analysis, and alpha factor analysis. *British Journal of Mathematical and Statistical Psychology, 23*(1), 1-21. https://doi.org/10.1111/j.2044-8317.1970.tb00432.x

Raykov, T., & Marcoulides, G.A. (2019). Thanks coefficient Alpha, we still need you! *Educational and Psychological Measurement, 79*(1), 200-210. https://doi.org/10.1177/0013164417725127

Morrison, J., Batura, N., Thapa, R., Basnyat, R., & Skordis-Worrall, J. (2015). Validating a tool to measure auxiliary nurse midwife and nurse motivation in rural Nepal. *Human Resources for Health, 13*(1), 30. https://doi.org/10.1186/s12960-015-0021-7

Kaiser, H.F. (1958). The Varimax criterion for analytic rotation in factor analysis. *Psychometrika, 23*(3), 187-200. https://doi.org/10.1007/BF02289233

Everitt, B., & Dunn, G. (2001). *Applied multivariate data analysis* (Vol. 2). Wiley Online Library. https://doi.org/10.1002/9781118887486

Archer, G.E. B., Saltelli, A., & Sobol, I.M. (1997). Sensitivity measures,anova-like techniques and the use of bootstrap. *Journal of Statistical Computation and Simulation, 58*(2), 99-120. https://doi.org/10.1080/00949659708811825

Pett, M., Lackey, N., & Sullivan, J. (2003). *Making sense of factor analysis.* Sage Publications. https://doi.org/10.4135/9781412984898

Stafford, J., & Bodson, P. (2006). *L'analyse multivariée avec SPSS.* Presses de l'Université du Québec. https://doi.org/10.2307/j.ctv5j017v

Bartlett, M.S. (1950). Tests of significance in factor analysis. *British Journal of Statistical Psychology, 3*(2), 77-85. https://doi.org/10.1111/j.2044-8317.1950.tb00285.x

Bentler, P., & Bonett, D. (1980). Significance tests and goodness-of-fit in analysis of covariance structures. *Psychological bulletin,* 88, 588-606. https://doi.org/10.1037/0033-2909.88.3.588

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

Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural equation modelling: Guidelines for determining model fit. *The Electronic Journal of Business Research Methods,* 6, 53-60. https://academic-publishing.org/index.php/ejbrm/article/view/1224

Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online,* 8, 23-74. https://www.stats.ox.ac.uk/~snijders/mpr_Schermelleh.pdf

Hu, L.-t., & Bentler, P. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods,* 3, 424-453. https://doi.org/10.1037/1082-989X.3.4.424

Hau, K.-T. (2000). Book review of structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming. *Structural Equation Modeling: A Multidisciplinary Journal, 7*(4), 640-643. https://doi.org/10.1207/S15328007SEM0704_8

MacCallum, R., Browne, M., & Sugawara, H. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods 1,* 130-149. https://doi.org/10.1037//1082-989X.1.2.130

Satorra, A., & Bentler, P.M. (1994). *Corrections to test statistics and standard errors in covariance structure analysis.* Sage Publications.

Terwee, C.B., Bot, S.D. M., de Boer, M.R., van der Windt, D.A. W.M., Knol, D.L., Dekker, J., Bouter, L.M., & de Vet, H.C. W. (2007). Quality criteria were proposed for measurement properties of health status questionnaires.

Journal of Clinical Epidemiology, 60(1), 34-42. https://doi.org/10.1016/j.jclinepi.2006.03.012

Streiner, D.L., Norman, G.R., & Cairney, J. (2024). *Health measurement scales: a practical guide to their development and use.* Oxford University Press. https://doi.org/10.1093/med/9780192869487.001.0001

Bujang, M.A., & Baharum, N. (2017). A simplified guide to determination of sample size requirements for estimating the value of intraclass correlation coefficient: A review. *Archives of orofacial science, 12*(1). https://api.semanticscholar.org/CorpusID:127106131

Field, A. (2024). *Discovering statistics using IBM SPSS statistics.* Sage Publications https://collegepublishing.sagepub.com/products/discovering-statistics-using-ibm-spss-statistics-6-285130

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International journal of medical education,* 2, 53. https://doi.org/10.5116/ijme.4dfb.8dfd

Béland, S., Cousineau, D., & Loye, N. (2017). Utiliser le coefficient omega de McDonald à la place de l'alpha de Cronbach. *McGill Journal of Education / Revue des sciences de l'éducation de McGill, 52*(3), 791-804. https://doi.org/10.7202/1050915ar

Taber, K.S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education, 48*(6), 1273-1296. https://doi.org/10.1007/s11165-016-9602-2

Beaton, D.E., Bombardier, C., Guillemin, F., & Ferraz, M.B. (2000). Guidelines for the Process of Cross-Cultural Adaptation of Self-Report Measures. *Spine, 25*(24), 3186-3191. https://doi.org/10.1097/00007632-200012150-00014

Kline, R.B. (2023). *Principles and practice of structural equation modeling.* Guilford Publications. https://www.scirp.org/reference/referencespapers?referenceid=3710690

Fornell, C., & Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39-50. https://doi.org/10.2307/3151312

Cattell, R.B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research, 1*(2), 245-276. https://doi.org/10.1207/s15327906mbr0102_10

Kaiser, H.F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement, 20*(1), 141-151. https://doi.org/10.1177/001316446002000116

Wheaton, B., Muthen, B., Alwin, D.F., & Summers, G.F. (1977). Assessing Reliability and Stability in Panel Models. *Sociological Methodology,* 8, 84-136. https://doi.org/10.2307/270754

Hermann, J. (1980). *Advances in Factor Analysis and Structural Equation Models.* In: JSTOR.

Fan, X., Thompson, B., & Wang, L. (1999). Effects of sample size, estimation methods, and model specification on structural equation modeling fit indexes. *Structural Equation Modeling: A Multidisciplinary Journal,* 6, 56-83. https://doi.org/10.1080/10705519909540119

Jöreskog, K.G., & Sörbom, D. (1996). LISREL 8: User's reference guide. *Scientific Software International.* https://www.scirp.org/reference/referencespapers?referenceid=3505026

Byrne, B. M. (2013). *Structural Equation Modeling With Lisrel, Prelis, and Simplis* (0 edn). Psychology Press. https://doi.org/10.4324/9780203774762

Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2013). *Multivariate data analysis: Pearson new international edition PDF eBook.* Pearson Education. https://books.google.tn/books?id=oLCpBwAAQBAJ

Netemeyer, R., Bearden, W., & Sharma, S. (2003). *Scaling procedures. Issues and applications.* Sage Publications. https://doi.org/10.4135/9781412985772

Hair, J.F., Risher, J.J., Sarstedt, M., & Ringle, C.M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review, 31*(1), 2-24. https://doi.org/10.1108/ebr-11-2018-0203

Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: a practical primer for t-tests and ANOVAs [Review]. *Frontiers in Psychology,* Volume 4 - 2013. https://doi.org/10.3389/fpsyg.2013.00863

Ryan, R.M., & Deci, E.L. (2000b). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemp Educ Psychol, 25*(1), 54-67. https://doi.org/10.1006/ceps.1999.1020

Stipek, D.J. (2002). *Motivation to learn: Integrating theory and practice* (4th ed.). Needham Heights, MA: Allyn & Bacon.

Gamboa, V., Valadas, S., & Paixão, O. (2017). Validation of a Portuguese version of the Situational Motivation Scale (SIMS) in academic contexts. *Avances en Psicologia Latinoamericana,* 35, 547-557. https://doi.org/10.12804/revistas.urosario.edu.co/apl/a.4767

Martin-Albo, J., Núñez, J., & Navarro, J. (2009). Validation of the Spanish version of the Situational Motivation Scale (EMSI) in the educational context. *The Spanish journal of psychology,* 12, 799-807. https://doi.org/10.1017/S113874160000216X

Wasicek, B., & McHugh, D. (2024). Validity evidence for using the Situational Motivation Scale to assess pre-clerkship medical student motivation. *International Medical Education,* 3, 212-228. https://doi.org/10.3390/ime3030018

Muniandy, U.C. K.A., Zulnaidi, H., & Halili, S.H. (2023). Validity and reliability of the Situational Motivational Scale (SIMS) instrument: Using Rasch model and Amos. *MOJES: Malaysian Online Journal of Educational Sciences, 11*(1), 34-46. https://mojes.um.edu.my/index.php/MOJES/article/view/41265/15463

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

Deci, E., & Ryan, R. (1985). *Intrinsic motivation and self-determination in human behavior.* Springer Science & Business Media. https://doi.org/10.1007/978-1-4899-2271-7

Østerlie, O., Løhre, A., & Haugan, G. (2019). The Situational Motivational Scale (SIMS) in physical education: A validation study among Norwegian adolescents. *Cogent Education,* 6. https://doi.org/10.1080/2331186X.2019.1603613

Hayton, J., Allen, D., & Scarpello, V. (2004). Factor retention decisions in exploratory factor analysis: A tutorial on parallel analysis. *Organizational Research Methods,* 7, 191-205. https://doi.org/10.1177/1094428104263675

Floyd, F., & Widaman, K. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment,* 7, 286-299. https://doi.org/10.1037/1040-3590.7.3.286

Tabachnick, B., & Fidell, L. (2013). *Using multivariate statistics* (6th ed.). Boston, Amerika. In: Pearson Education.

Chirkov, V., Ryan, R.M., Kim, Y., & Kaplan, U. (2003). Differentiating autonomy from individualism and independence: a self-determination theory perspective on internalization of cultural orientations and well-being. *Journal of Personality and Social Psychology, 84*(1), 97. https://doi.org/10.1037/0022-3514.84.1.97

Vansteenkiste, M., Lens, W., & Deci, E.L. (2006). Intrinsic versus extrinsic goal contents in self-determination theory: Another look at the quality of academic motivation. *Educational Psychologist, 41*(1), 19-31. https://doi.org/10.1207/s15326985ep4101_4

Markus, H., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological review,* 98, 224-253. https://doi.org/10.1037/0033-295X.98.2.224

Vandenberg, R.J., & Lance, C.E. (2000). A Review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods, 3*(1), 4-70. https://doi.org/10.1177/109442810031002

Putnick, D.L., & Bornstein, M.H. (2016). Measurement invariance conventions and reporting: The state of the art and future directions for psychological research. *Developmental Review,* 41, 71-90. https://doi.org/10.1016/j.dr.2016.06.004

Переклад та психометрична валідизація арабської версії Шкали ситуативної мотивації в контексті фізичного виховання

Маджді Буазізі[1,2ABCD], Мохамед Баазіз[2,3ABCD], Зейнаб Хельмі Абумуаїлі[4ACD], Фуед Шеур[1AD]

[1]Віртуальний університет Тунісу
[2]Університет Гафси
[3] Університет Мануби
[4]Йорданський університет

Авторський вклад: A – дизайн дослідження; B – збір даних; C – статаналіз; D – підготовка рукопису; E – збір коштів

Реферат. Стаття: 13 с., 10 табл., 1 рис., 82 джерела.

Мета. Перекласти та валідизувати арабську версію Шкали ситуативної мотивації (Situational Motivation Scale, SIMS), а також оцінити її психометричні властивості серед учнів закладів загальної середньої освіти Тунісу в контексті фізичного виховання.

Матеріали та методи. У дослідженні взяли участь 580 учнів закладів загальної середньої освіти (середній вік = 17,48 ± 1,46 року) з різних регіонів Тунісу. Оригінальна версія SIMS містить 16 пунктів, що оцінюють внутрішню мотивацію, ідентифіковану регуляцію, зовнішню регуляцію та амотивацію. Під час уроків фізичного виховання учні заповнювали арабську версію шкали. Пошуковий факторний аналіз (EFA) було проведено на випадково відібраній підвибірці з 290 учасників, тоді як підтверджувальний факторний аналіз (CFA) виконано на незалежній підвибірці з 290 учасників. Оцінювали внутрішню узгодженість, тест-ретестову надійність, конструктивну валідність, конвергентну валідність і композитну надійність.

Результати. Один пункт субшкали амотивації продемонстрував факторне навантаження нижче критеріального значення 0,40 і був вилучений, унаслідок чого сформовано версію SIMS-15. Переглянута шкала продемонструвала добру внутрішню узгодженість (α Кронбаха = 0,846; ω Макдональда = 0,788; λ2 Гуттмана = 0,883) та відмінну часову стабільність упродовж двотижневого інтервалу (ICC = 0,950; 95% ДІ = 0,901–0,975; r = 0,905; 95% ДІ = 0,818–0,951; p < 0,001). Підтверджувальний факторний аналіз засвідчив чотирифакторну структуру SIMS-15 (χ^2/df = 1,542; CFI = 0,99; GFI = 0,94; RMSEA = 0,04). Середня вилучена дисперсія (AVE) становила від 0,708 до 0,864, тоді як композитна надійність (CR) — від 0,877 до 0,962, що свідчить про задовільну конвергентну валідність і надійність.

Висновки. Арабська версія SIMS-15 продемонструвала задовільні показники надійності та валідності й може бути рекомендована як психометрично обґрунтований інструмент для оцінювання ситуативної мотивації учнів закладів загальної середньої освіти на уроках фізичного виховання. Адаптована шкала зберігає оригінальну чотирифакторну структуру та підтверджує свою придатність для використання в арабомовному освітньому середовищі.

Ключові слова: психометричні властивості, ситуативна мотивація, арабська мова, транскультурна валідизація, фізичне виховання.

Information about the Authors:

Bouazizi, Majdi: majdibouazizi4@gmail.com; https://orcid.org/0000-0002-2117-8997; High Institute of Education and Continuing Training of Tunis, Virtual University of Tunis, Tunis, Tunisia; High Institute of Sport and Physical Education of Gafsa, University of Gafsa, Gafsa, Tunisia.

Mohamed, Baaziz: baazizmohamed420@gmail.com; https://orcid.org/0000-0001-7822-2015; High Institute of Sport and Physical Education of Gafsa, University of Gafsa, Gafsa, Tunisia; Higher Institute of Sport and physical education of Ksar Said, University of Manouba, Tunis, Tunisia.

Helmi Abumuaili, Zainab: Zainab.helmy2010@gmail.com; https://orcid.org/0000-0002-4765-842X; School of Sport Sciences, University of Jordan, Amman, Jordan.

Cheour, Foued: fouedcheour@yahoo.fr; https://orcid.org/0000-0002-1763-5016; High Institute of Education and Continuing Training of Tunis, Virtual University of Tunis,Tunis, Tunisia.

Cite this article as: Bouazizi, M., Baaziz, M., Helmi Abumuaili, Z., & Cheour, F. (2026). The Translation and Psychometric Validation of the Arabic Version of the Situational Motivation Scale (SIMS) in the Physical Education Context. *Physical Education Theory and Methodology, 26*(4), 734-746. https://doi.org/10.17309/tmfv.2026.4.08

Received: 16.06.2026. Accepted: 29.06.2026. Published: 25.07.2026