

ASSESSING MOTIVATION IN UNIVERSITY STUDENTS: FACTOR STRUCTURE AND PSYCHOMETRIC PROPERTIES OF THE ITALIAN VERSION OF THE ACADEMIC MOTIVATION SCALE-COLLEGE (AMS-C)

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The study aims to analyze factor structure and psychometric properties of the Italian version of the Academic Motivation Scale-College (AMS-C). Overall, 797 university students completed the AMS-C (28 items). Measurement invariance across gender was tested. Confirmatory factor analysis did not confirm the original 7-factor structure. Exploratory factor analysis was conducted with one split-half subsample indicating a good model fit for a 4-factor solution, which was confirmed by the CFA with the second split-half subsample. The Italian version of the AMS-C consists of 26 items, tapping four meaningful and reliable factors (Introjected Motivation, Intrinsic Motivation, Extrinsic Motivation, Amotivation) which covered, with a new meaningful configuration, all the seven factors of the original tool. Findings revealed satisfactory internal consistency, convergent, discriminant, and criterion validity. Measurement invariance across gender was also supported. The AMS-C represents a reliable and valid tool to be used for the assessment of university students' motivation in the Italian context.

Keywords: Academic Motivation Scale; Factor structure; University students; Validation; Italian version.

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Motivation is defined as “the hypothetical construct used to describe the internal and/or external forces that produce the initiation, direction, intensity and persistence of behavior” (Vallerand & Thill, 1993, p. 18). In the field of research on human motivation in social contexts, the Self-Determination Theory (SDT; Deci & Ryan, 1985) has become one of the most widely used motivation theories. The SDT distinguished between “self-determined” and “controlled” types of intentional regulation processes and behaviors (Deci & Ryan, 1991, 2002; Deci et al., 1991). Specifically, within the SDT behaviors are self-determined whether the regulatory process is a choice, actions are engaged in wholly volitionally, and are endorsed by one’s sense of self (i.e., the locus of causality is perceived as internal to the self). On the one other hand, behaviors are controlled whether the regulatory process is compliance and actions are compelled by interpersonal or intrapsychic forces (i.e., the locus of causality is perceived as external to the self).

The SDT has been successfully applied across different target populations, including customers (Mustak et al., 2013), medical patients (Abadi et al., 2020; Osei-Frimpong, 2017), athletes (Bartholomew et al., 2011), as well as employees and employers (Lynch Jr et al., 2005; Deci et al., 2017). However, the

majority of studies adopting the SDT have focused on the educational context and explored the academic motivation processes and behaviors targeting students' perspectives (Liu et al., 2017; Müller & Louw, 2004; Rigby & Przybylski, 2009; Ryan et al., 2006). Indeed, academic motivation represents a key dimension significantly related to students' procrastination (Malkoç & Mutlu, 2018), intention to leave and drop-out university (Jeno et al., 2018; Morrow & Ackermann, 2012), as well as psychological health conditions (Bailey & Phillips, 2015; Huang et al., 2016; Janke, 2020).

Research based on the SDT has provided specific measures to assess academic motivation. In particular, the Academic Self-Regulation Questionnaire (SRQ-A; Ryan & Connell, 1989) and the Academic Motivation Scale (AMS, 28 items; Vallerand et al., 1989) are among the most acknowledged tools for the evaluation of students' motivation.

The SRQ-A (32 items) was used to measure: 1) external motivation; 2) introjected motivation; 3) identified motivation; 4) intrinsic motivation. This instrument is, however, specifically developed for the assessment of academic motivation in late primary and secondary school.

Conversely, the AMS is one of the most adopted instruments globally, because it sought to provide a single and comprehensive tool that could be used across different student populations. Indeed, specific versions are provided according to the age and educational level, that is: AMS for primary school (Vallerand et al., 1989); AMS for secondary school (Vallerand et al., 1992); AMS for college students (AMS-C; Vallerand et al., 1992).

The AMS consists of 28 items divided into seven subscales, assessing students' perceived Amotivation, three types of Extrinsic Motivation (i.e., introjected motivation, identified motivation, external regulation), and three types of Intrinsic Motivation (i.e., motivation to know, motivation toward accomplishment, motivation to experience stimulation). Overall, the different types of motivation are located along a continuum, with Amotivation at one end, Extrinsic Motivation in the middle, and Intrinsic Motivation at the other end (Deci & Ryan, 2000).

Firstly, Amotivation (A) describes students who do not perceive contingencies between outcomes and their action (e.g., individuals experience feelings of incompetence and expectancies of uncontrollability, either they do not act at all or they act passively). Secondly, Extrinsic Motivation (EM) describes students who perform activities to attain some specific outcomes and whose behaviors are assumed not to be self-determined. Within the original AMS, Extrinsic Motivation can be distinguished into three categories, namely: 1. EM-external regulation (e.g., individuals regulate their own behaviors through external means such as rewards and constraints); 2. EM-identified (e.g., individuals value and judge their own actions and behaviors as choices); 3. EM-introjected (e.g., individuals have begun the process of internalizing the reasons for his/her actions). Finally, Intrinsic Motivation (IM) describes students who engage in activities for the pleasure and satisfaction inherent in the activity itself. IM can be distinguished into three categories, namely: 1. IM-to know (e.g., individuals perform activities because of the pleasure derived from learning, exploring, and/or understanding new things); 2. IM-toward accomplishment (e.g., individuals perform activities because of the pleasure derived from trying to surpass oneself, creating something, and/or achieving goals); 3. IM-to experience stimulation (e.g., individuals perform activities because of the stimulating sensations associated with them).

The AMS was originally developed in French (Vallerand et al., 1989) and then adapted into its English version (Vallerand et al., 1992). The AMS versions for primary and high school students have been validated in Greece (Barkoukis et al., 2008), Singapore (Caleon et al., 2015), China (Zhang et al., 2016), as well as in Italy (Alivernini & Lucidi, 2008).

Considering the AMS for college students, the tool has been validated in Paraguay (Alonso, 2006), Malaysia (Chong & Ahmed, 2012), Argentina (Stover et al., 2012), Hungary (Tóth-Királi et al., 2017),

Indonesia (Natalya & Purwanto, 2018), and Vietnam (Nguyen & Nguyen, 2019), confirming the original 7-factor structure. However, also other countries — Croatia (Koludrović & Ercegovic, 2015), Germany (Wilkesmann et al., 2012), the United States (Smith et al., 2012), Poland and Turkey (Ardeńska et al., 2016), and Jordan (Algharaibeh, 2021) — have provided valid and reliable versions of the AMS-C, underlining alternative factor solutions which, however, supported the multidimensionality of the original framework. This suggests that academic motivation structure may be affected by cultural factors (Algharaibeh, 2021). In particular, the validation study conducted in Croatia revealed a 5-factor structure, in which the three subscales of Extrinsic Motivation (i.e., introjected, identified, and external regulation) and the Amotivation subscale of the original validation study were confirmed, while the three subscales of Intrinsic Motivation merged into a single factor.

Furthermore, the validation studies conducted in Germany (Wilkesmann et al., 2012), the United States (Smith et al., 2012), Poland and Turkey (Ardeńska et al., 2016) all revealed 4-factor solutions. Specifically, the study conducted in Germany (Wilkesmann et al., 2012) revealed the following structure: 1. Intrinsic Motivation (merging all the intrinsic motivation dimensions into one); 2. Extrinsic Motivation-introjected; 3. Extrinsic Motivation-external regulation merged with Extrinsic Motivation-identified; 4. Amotivation (the latter as in the original validation study).

Similarly, the study conducted in the United States (Smith et al., 2012) revealed the same configuration as for Germany for three out of four factors (i.e., Extrinsic Motivation-introjected; Extrinsic Motivation-external regulation merged with Extrinsic Motivation-identified; Amotivation). Differently, all the items from Intrinsic Motivation-toward accomplishment were deleted, and Intrinsic Motivation-to experience stimulation merged with Intrinsic Motivation-to know.

Moreover, the study conducted in Poland and Turkey (Ardeńska et al., 2016) revealed the following 4-factor structure: Extrinsic Motivation-introjected merged with Intrinsic Motivation-toward accomplishment; Intrinsic Motivation-to know merged with Intrinsic Motivation-to experience stimulation; Extrinsic Motivation-external regulation merged with Extrinsic Motivation-identified; Amotivation. Finally, the recently proposed Jordanian version of AMS-C (Algharaibeh, 2021) has suggested a 3-factor structure: Intrinsic Motivation; Extrinsic Motivation; Amotivation. All the above-mentioned studies, despite displaying different configurations, provided valid and reliable versions of the AMS-C, sustaining the multidimensionality of the original framework (Vallerand et al., 1992).

The Present Study

Considering the wide adoption of the AMS and the great interest toward its application to investigate motivation processes among university students, the present study aims to examine factor structure and psychometric properties of the Italian version of the Academic Motivation Scale-College (AMS-C). This, indeed, could also contribute to the international debate concerning its factor structure across different cultures and languages. Indeed, despite the AMS for college students having been translated, adapted, and validated with different samples in different cultural contexts, to the best of our knowledge, there is no Italian version yet.

To rigorously check the validity and reliability of the AMS-C, specific research objectives (RO) were defined. Firstly, we aimed to test whether the factor structure of the Italian version of the AMS-C confirms those of the original 7-factor structure of AMS-C (28 items) (RO1; construct validity). Secondly, we aimed to test whether the Italian version of the AMS-C has satisfactory convergent validity (RO2; convergent validity) and discriminant validity (RO3; discriminant validity). Thirdly, we aimed to test whether the Italian version of the AMS-C has satisfactory criterion validity (RO4; criterion validity). Therefore, we

aimed to explore correlations between the AMS-C subscales scores and a conceptually relevant construct, namely students' leaving intention. Based on previous research conducted in the educational field (Alivernini & Lucidi, 2011; Jenő et al., 2018; Morrow & Ackermann, 2012; Vallerand et al., 1997), we expect that the more the students are motivated (mainly intrinsically motivated) the less they would report wishing to leave university study (drop-out). Afterward, we aimed to test whether the Italian version of the AMS-C has satisfactory internal consistency (RO5; reliability: internal consistency).

Finally, we aimed to test potential gender differences (RO6; measurement invariance and gender differences). Therefore, we aimed to test whether the factorial structure of the Italian version of the AMS-C would be invariant across gender and to explore potential gender differences in the AMS-C factors scores. Based on the previous literature (Alonso, 2006; Ardeńska et al., 2016; Vallerand et al., 1989, 1992), which underlined that male students display a less self-determined motivational profile than females, we expect that women would report higher levels of Extrinsic Motivation/Intrinsic Motivation and lower levels of Amotivation than men.

METHOD

Participants and Sampling

A cross-sectional study was conducted to examine the psychometric properties and factor structure of AMS-C among Italian university students. The study protocol was approved by the Ethical Committee of the University where this study took place and research was performed in accordance with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. An online survey form was developed for this study. The survey link was sent to Italian university students via academic mailing lists and social media groups. The research project and its objectives were also widely diffused by the authors during their class. Students were asked to participate voluntarily and did not receive rewards for completing the survey. At the beginning of the survey, there was an information sheet explaining the research aims and students' rights (i.e., rights to not participate in the study and to withdraw at any time, without giving any reason and without suffering consequences of any kind). Researchers' contact details were provided to allow students to raise any queries. Students were also given information about the privacy policy (i.e., only researchers will have access to the data that will be processed per the current regulations; data collected can be used for future research; data will be analyzed for research objectives only; statistical data obtained can be presented at scientific conferences and publications; personal information will remain fully anonymous and confidential). After reading the information sheet, students were asked to complete the informed consent form (written consensus to participate in the study and the consequent processing of their personal data). Every precaution was taken to protect the privacy of participants, and the questionnaires were anonymously completed. To be eligible, participants must be university students (undergraduate students and postgraduate students — masters or equivalent) with an age ≥ 18 years. Students who did not give consent, who were doctoral-level students (Ph.D. student or equivalent), or who did not complete the questionnaire were removed from the final dataset. Overall, 797 Italian university students provided informed consent and completed the questionnaire in all its parts (there were no missing data).

Characteristics of participants ($N = 797$) are displayed in Table 1. The total sample consisted of 588 women and 209 men, with a combined mean age of 21.82 years ($SD = 2.82$). Most of the students lived in urban areas ($n = 755$; 94.7%). They were studying a range of subjects, and the majority were enrolled in

Humanities courses (i.e., History, Philosophy, Philology, Languages, Psychology; $n = 515$; 64.6%), followed by STEM courses (i.e., Science, Technology, Engineering, Mathematics; $n = 176$; 22.1%), and Political and Social Sciences courses (i.e., Political Sciences, Law, Economy, Sociology; $n = 106$; 13.3%). Overall, all the academic levels are represented: 439 (55.1%) students were Juniors (1st and 2nd year of study), while 358 (44.9%) students were Seniors (from the 3rd years of study onwards). Moreover, about one-third were part-time students ($n = 229$; 28.7%). Finally, about one-quarter of the students stated they have considered the possibility of leaving the university ($n = 202$; 25.3%).

TABLE 1
Characteristics of study participants

| | Subsample A $n = 399$ | Subsample B $n = 398$ | Total Sample $N = 797$ |
|-------------------------------|--------------------------|--------------------------|---------------------------|
| Gender — n (%) | | | |
| Male | 103 (25.8%) | 106 (26.6%) | 209 (26.2%) |
| Female | 296 (74.2%) | 292 (73.4%) | 588 (73.8%) |
| Age — Mean (SD) | 22.15 (3.96) | 22.12 (3.75) | 21.82 (2.82) |
| Living area — n (%) | | | |
| Urban area | 377 (94.5%) | 378 (94.9%) | 755 (94.7%) |
| Rural area | 22 (5.5%) | 20 (5.1%) | 42 (5.3%) |
| Field of study — n (%) | | | |
| Humanities | 256 (64.2%) | 259 (65.1%) | 515 (64.6%) |
| Political and Social Sciences | 54 (13.5%) | 52 (13.1%) | 106 (13.3%) |
| STEM | 89 (22.3%) | 87 (21.8%) | 176 (22.1%) |
| Year of study — n (%) | | | |
| Junior | 234 (61.0%) | 205 (51.5%) | 439 (55.1%) |
| Senior | 165 (39.0%) | 193 (48.5%) | 358 (44.9%) |
| Part-time student — n (%) | | | |
| No | 283 (70.9%) | 285 (71.6%) | 568 (71.3%) |
| Yes | 116 (29.1%) | 113 (28.4%) | 229 (28.7%) |
| Leaving intention — n (%) | | | |
| No | 300 (75.2%) | 310 (77.9%) | 595 (74.7%) |
| Yes | 99 (24.8%) | 88 (22.1%) | 202 (25.3%) |

Note. The total sample was split into two using a computer-generated random seed to conduct exploratory factor analysis (Subsample A) and confirmatory factor analysis (Subsample B).

Measures

The survey consisted of a questionnaire including background information (i.e., gender, age, living area, field of study, years of study, being full/part-time student), a single item assessing leaving intention (i.e., “Have you ever considered the possibility of leaving the university?”; dichotomous answer: *No* = 0/*Yes* = 1) and the Academic Motivation Scale-College version (AMS-C; Vallerand et al., 1992).

The AMS-C consists of 28 items on a 5-point Likert scale ranging from 1 (*Does not correspond at all*) to 5 (*Corresponds a lot*). The questionnaire is introduced by a question (e.g., “Why do you go to college?”) and by instructions on the use of the response scale (i.e., “Using the scale below, indicate to what extent each of the following items presently corresponds to one of the reasons why you go to college”). The 28 items are divided into seven subscales, namely: Amotivation (e.g., Item 5 “Honestly, I don’t know; I really feel that I am wasting my time in school”; Item 12 “I once had good reasons for going to college; however, now I wonder whether I should continue”); Extrinsic Motivation-introjected (e.g., Item 7 “To prove to myself that I am capable of completing my college degree”; Item 14 “Because of the fact that when I succeed in college I feel important”); Extrinsic Motivation-identified (e.g., Item 3 “Because I think that a college education will help me better prepare for the career I have chosen”; Item 10 “Because eventually it will enable me to enter the job market in a field that I like”); Extrinsic Motivation-external regulation (e.g., Item 8 “In order to obtain a more prestigious job later on”; Item 15 “Because I want to have ‘the good life’ later on”); Intrinsic Motivation-to know (e.g., Item 2 “Because I experience pleasure and satisfaction while learning new things”; Item 9 “For the pleasure I experience when I discover new things never seen before”); Intrinsic Motivation-toward accomplishment (e.g., Item 6 “For the pleasure I experience while surpassing myself in my studies”; Item 27 “Because college allows me to experience a personal satisfaction in my quest for excellence in my studies”); Intrinsic Motivation-to experience stimulation (e.g., Item 11 “For the pleasure that I experience when I read interesting authors”; Item 18 “For the pleasure that I experience when I feel completely absorbed by what certain authors have written”).

As in previous studies validating the AMS-C in the United States (Smith et al., 2012) and Germany (Wilkesmann et al., 2012), the 5-point Likert scale was used — instead of the 7-point Likert scale — thus facilitating student’s response. To obtain the Italian version of the AMS-C, after gaining the author’s permission, a back-translation process was carried out following the international guidelines (Muñiz & Bartram, 2007; World Health Organization, 2020). Firstly, a forward-to-back translation procedure was conducted by two researchers. Specifically, a researcher translated the original version into Italian, while a second translated this version back. No significant discrepancies were found between the two versions. Afterward, three bilingual researchers evaluated both translations and minor changes were made. The final Italian version of the AMS-C was, therefore, administered.

Data Analyses

The statistical analyses were carried out using SPSS Version 23 and AMOS tool Version 26. Firstly, to examine the construct validity (RO1), confirmatory factor analysis (CFA) was performed to test the goodness-of-fit of the original 7-factor model by using the maximum likelihood (ML) as the estimation method. Standard goodness-of-fit indices were selected a priori to assess the measurement models: χ^2 nonsignificant ($p > .05$), Tucker-Lewis index (TLI $> .90$), root-mean-square error of approximation (RMSEA $< .08$), standardized root-mean-square residual (SRMR $< .08$), and comparative fit index (CFI $> .90$) (Hu & Bentler, 1998, 1999; Schermelleh-Engel et al., 2003).

Because data did not confirm the original 7-factor structure, we tested the minimum average partial correlation (MAP; Velicer, 1976) to provide accurate guidance on the number of components to retain. Therefore, based on the data that emerged, the 4-factor solutions of the AMS validation studies conducted in the United States (Smith et al., 2012), Germany (Wilkesmann et al., 2012), and Poland and Turkey (Ardeńska

et al., 2016) were tested by conducting CFA. However, all of these 4-factor solutions were not confirmed by our data.

Therefore, we used a 2-step analytic strategy to explore the underlined dimensional structure. Preliminarily, the entire study sample ($N = 797$) was split using a computer-generated random seed. According to the rules of thumb for sample size in factor analysis, a ratio of five to 10 participants per item for $n = 300$ should be adopted (for $n > 300$ this ratio can become progressively lower). Moreover, overall, for conducting factor analyses, a sample of 50 was considered very poor, 100 poor, 200 fair, and 300 good (Comrey & Lee, 1992; Costello & Osborne, 2005; DeVellis, 2017). Therefore, in the present study, the sample size for each subsample (subsample A, $n = 399$; subsample B, $n = 398$) was considered adequate to explore the structure of the 28-item AMS-C. The two subsamples were preliminarily compared by gender (χ^2 test) and age (student's t -test). Construct validity (RO1) was, therefore, tested by using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA).

EFA was performed in the first split-half (subsample A, $n = 399$) to explore the latent dimensional structure and to identify significant and coherent factors. Principal axis factoring analysis with oblique promax rotation was performed. The choice of nonorthogonal rotation was justified based on the hypothesis that the factors would be correlated. The factorability of the correlation matrix of the AMS-C was evaluated by the Kaiser-Meyer-Olkin (KMO) measure and the Barlett test of sphericity. Criteria for extraction and interpretation of factors were as follows: eigenvalues > 1.0 , Cattell's scree test and inspection of scree plot, communality $\geq .30$ for each item, and factor loading $> .32$ for each item loading on each factor (Costello & Osborne, 2005). Item means/standard deviations were also calculated, and item analysis was carried out. Skewness and kurtosis were used to judge the normality of the data by using the rule of thumb provided by Curran et al. (1996), which suggested skewness = 2 and kurtosis = 7 to be a violation of multivariate normality (Ryu, 2011). Afterward, CFA was performed in the second split-half subsample (subsample B, $n = 398$) to determine the goodness-of-fit of the extracted factor model.

Secondly, evidence based on convergent validity was explored (RO2). Standardized factor loadings and average variance extracted (AVE) of factors were calculated. AVE reflects the amount of variance that is captured by a construct in relation to the amount of variance due to the measurement error (i.e., an average of squared standardized loadings). If the standardized factor loadings of a questionnaire are $> .50$ and statistically significant, and the values of AVE of each factor are higher than $.50$, the questionnaire is considered as having satisfactory convergent validity (Fornell & Larcker, 1981; Hair et al., 2010).

Thirdly, evidence based on discriminant validity was explored (RO3). The maximum shared variance (MSV), which represents the strongest squared correlation between latent constructs, and average shared variance (ASV), which represents the average of the squared correlations between latent constructs, were calculated for each factor and compared with the corresponding AVE scores. Moreover, the square root of the AVE (SQRT AVE) was compared with the correlations between latent constructs. When the MSV and ASV scores are less than AVE scores and SQRT AVE is above the correlations among factors, a questionnaire is considered as having satisfactory discriminant validity (Fornell & Larcker, 1981; Hair et al., 2018).

Afterward, criterion validity was tested (RO4) by exploring Spearman's correlations between the AMS-C subscales and the single item assessing leaving intention. The effect sizes were evaluated by using Cohen's thresholds ($r < .30$ represents a weak/small correlation; $.30 < r < .50$ represents a moderate/medium correlation; $r > .50$ represents a strong/large correlation; Cohen, 1988). Moreover, reliability tests were carried out (RO5). Mean interitem correlation (falling within the range $.15$ to $.50$; Clark & Watson, 1995), composite reliability (CR $\geq .70$; Fornell & Larcker, 1981), McDonald's ω ($\omega \geq .70$; McDonald, 1999), and Cronbach's α ($\alpha \geq .70$; Cronbach, 1951; Santos, 1999) were evaluated.

Finally, the measurement invariance (RO6) of the Italian version of the AMS-C was evaluated (i.e., configural, metric, and scalar invariance). Multigroup CFA was used to test a restrictive model in relation to gender. A change greater than (or equal to) $-.010$ in CFI, a change greater than (or equal to) $.015$ in RMSEA, and a change greater than (or equal to) $.030$ in SRMR would indicate noninvariance (Chen, 2007; Cheung & Rensvold, 2002). Configural invariance examines the degree to which the same factor solution holds across the subgroups of interest. Metric invariance tests whether the factor structure and factor loadings are invariant across subgroups. Scalar invariance tests factor structure, factor loadings, and item intercepts (Bontempo & Hofer, 2007). If a tool possesses scalar invariance mean differences are valid across tested subgroups and are not a result of measurement bias. Therefore, the differences between the composite scores of subgroups (male and female) were tested using multivariate analyses of variance (MANOVA).

RESULTS

Construct Validity (RO1)

The theoretical model of the AMS-C was tested by CFA, which indicated a poor fit between the data collected and the theoretical model: χ^2 value statistically significant ($p < .05$); CFI = $.85$; TLI = $.82$; RMSEA = $.23$; SRMR = $.09$. Therefore, we have preliminarily tested the minimum average partial correlation (MAP; Velicer, 1976) to provide accurate guidance on the number of components to retain. Velicer's minimum average partial test involves comparing the actual eigenvalues with the random data eigenvalues (O'Connor, 2000). In our output, the first four eigenvalues from the actual data were larger than the corresponding first four 95th percentile (and mean) random data eigenvalues. However, the fifth eigenvalue from the actual data was less than the fifth 95th percentile (and mean) random data eigenvalue (eigenvalues: 8.901, 3.428, 2.391, 1.730, .823; percentiles: 1.568, 1.475, 1.420, 1.350, 1.255). This indicates that four components should be retained. Accordingly, the 4-factor solutions of the AMS validation studies conducted in the United States (Smith et al., 2012), Germany (Wilkesmann et al., 2012), and Poland and Turkey (Ardeńska et al., 2016) were tested by conducting CFA. All values indicated a poor fit between the theoretical model and the data collected in the current survey (CFA United States χ^2 value statistically significant $p < .05$; CFI = $.82$; TLI = $.83$; RMSEA = $.26$; SRMR = $.09$; CFA Germany χ^2 value statistically significant $p < .05$; CFI = $.84$; TLI = $.82$; RMSEA = $.28$; SRMR = $.10$; CFA Poland χ^2 value statistically significant $p < .05$; CFI = $.87$; TLI = $.87$; RMSEA = $.30$; SRMR = $.09$; CFA Turkey χ^2 value statistically significant $p < .05$; CFI = $.86$; TLI = $.87$; RMSEA = $.29$; SRMR = $.09$).

These results suggested carrying out some modifications to the model in an attempt to improve it. In these cases, the first procedure recommended is exploratory rather than confirmatory analysis (Browne, 2001). Therefore, the entire study sample ($N = 797$) was randomly split, and EFA was conducted with one split-half subsample (subsample A, $n = 399$) and, afterward, a CFA was conducted with the second split-half subsample (subsample B, $n = 398$). The two subsamples did not statistically differ by gender (χ^2 value = 0.069 ; $p = .79$) and age (t value = 0.245 ; $p = .83$).

The EFA was conducted using principal axis factoring analysis with oblique promax rotation on the first random split-half sample (subsample A, $n = 399$) to investigate the underlining dimensional structure of the Italian version of the AMS-C (Table 2).

TABLE 2
Four-factor structure of the 26-item Academic Motivation Scale-College (AMS-C) — Italian version:
Exploratory factor analysis on first random split-half sample (subsample A, $n = 399$)
(the Italian version in square brackets)

| Factors and items | 1 | 2 | 3 | 4 | h^2 |
|--|-------------|-------------|-------|-------|-------|
| <i>Factor 1: Introjected Motivation [INM]</i> | | | | | |
| EMIN28. Because I want to show myself that I can succeed in my studies [Perché voglio dimostrare a me stesso che posso avere successo nei miei studi] | .862 | -.034 | .062 | .028 | .764 |
| IMA13. For the pleasure that I experience while I am surpassing myself in one of my personal accomplishments [Per il piacere che provo mentre cerco di superare me stesso raggiungendo nuovi traguardi personali] | .803 | .103 | -.141 | -.126 | .681 |
| EMIN21. To show myself that I am an intelligent person [Per dimostrare a me stesso che sono una persona intelligente] | .741 | -.039 | .076 | .143 | .571 |
| EMIN7. To prove to myself that I am capable of completing my college degree [Per dimostrare a me stesso che sono in grado di giungere fino alla mia laurea] | .740 | -.036 | .100 | .072 | .590 |
| EMIN14. Because of the fact that when I succeed in college I feel important [Perché quando ottengo buoni risultati all'università mi sento importante] | .724 | -.067 | .132 | -.040 | .595 |
| IMA6. For the pleasure I experience while surpassing myself in my studies [Per il piacere che provo nel superare me stesso nel mio percorso di studi] | .723 | .129 | -.185 | -.163 | .579 |
| IMA20. For the satisfaction I feel when I am in the process of accomplishing difficult academic activities [Per la soddisfazione che provo quando sono portate a compimento attività universitarie difficili] | .712 | .114 | .017 | -.051 | .625 |
| IMA27. Because college allows me to experience a personal satisfaction in my quest for excellence in my studies [Perché l'università mi permette di provare soddisfazione personale eccellendo negli studi] | .658 | .102 | .079 | -.016 | .569 |
| <i>Factor 2: Intrinsic Motivation [IM]</i> | | | | | |
| IMES25. For the “high” feeling that I experience while reading about various interesting subjects [Per la forte attrazione che provo quando leggo vari argomenti interessanti] | -.021 | .883 | -.022 | .158 | .643 |
| IMES11. For the pleasure that I experience when I read interesting authors [Per il piacere che provo quando leggo autori interessanti] | -.041 | .825 | -.005 | .130 | .563 |

(table 2 continues)

Table 2 (continued)

| Factors and items | 1 | 2 | 3 | 4 | <i>h</i> ² |
|--|-------|-------------|-------------|-------|-----------------------|
| IMK16. For the pleasure that I experience in broadening my knowledge about subjects that appeal to me [Per il piacere che provo nell'ampliare le mie conoscenze su argomenti che mi piacciono] | -.030 | .785 | .039 | -.061 | .668 |
| IMES18. For the pleasure that I experience when I feel completely absorbed by what certain authors have written [Per il piacere che provo quando mi sento completamente assorbito da ciò che alcuni autori hanno scritto] | .094 | .773 | -.112 | .112 | .551 |
| IMK9. For the pleasure I experience when I discover new things never seen before [Per il piacere che provo quando scopro cose nuove mai viste prima] | .142 | .731 | -.006 | .070 | .599 |
| IMK23. Because my studies allow me to continue to learn about many things that interest me [Perché i miei studi mi permettono di continuare a imparare molte cose che mi interessano] | -.005 | .712 | .064 | -.110 | .630 |
| IMK2. Because I experience pleasure and satisfaction while learning new things [Perché provo piacere e soddisfazione nell'apprendere cose nuove] | .073 | .648 | -.080 | -.032 | .455 |
| <i>Factor 3: Extrinsic Motivation [EM]</i> | | | | | |
| EMER8. In order to obtain a more prestigious job later on [Per ottenere un lavoro più prestigioso in futuro] | .218 | -.146 | .800 | .125 | .732 |
| EMER22. In order to have a better salary later on [Per avere un salario migliore in futuro] | .099 | -.204 | .754 | .150 | .550 |
| EMER15. Because I want to have "the good life" later on [Perché voglio avere una bella vita in futuro] | .084 | -.109 | .704 | .037 | .500 |
| EMID10. Because eventually it will enable me to enter the job market in a field that I like [Perché alla fine mi permetterà di entrare nel mercato del lavoro in un settore che mi piace] | -.144 | .110 | .685 | -.140 | .532 |
| EMID17. Because this will help me make a better choice regarding my career orientation [Perché questo mi aiuterà a fare la scelta migliore nella mia futura professione] | -.043 | .166 | .652 | -.089 | .549 |
| EMID24. Because I believe that a few additional years of education will improve my competence as a worker [Perché credo che ulteriori anni di formazione all'università miglioreranno le mie competenze sul lavoro] | -.069 | .299 | .485 | -.144 | .476 |
| EMID3. Because I think that a college education will help me prepare for a career that I have chosen [Perché penso che una formazione universitaria mi aiuterà a prepararmi per la professione che ho scelto di fare] | -.093 | .279 | .428 | -.224 | .450 |

(table 2 continues)

Table 2 (continued)

| Factors and items | 1 | 2 | 3 | 4 | <i>h</i> ² |
|--|-------|-------|-------|-------------|-----------------------|
| <i>Factor 4: Amotivation [AM]</i> | | | | | |
| AM26. I don't know; I can't understand what I am doing in school [Non lo so; non riesco a capire quello che ci faccio all'università] | -.019 | .164 | .028 | .791 | .517 |
| AM19. I can't see why I go to college and, frankly, I couldn't care less [Francamente non so perché vado all'università. Non me ne importa nulla] | -.032 | .137 | .014 | .768 | .505 |
| AM12. I once had good reasons for going to college; however, now I wonder whether I should continue [Una volta avevo buone ragioni per andare all'università; tuttavia, ora mi chiedo se sia il caso di continuare] | -.009 | .043 | -.008 | .759 | .551 |
| AM5. Honestly, I don't know; I really feel that I am wasting my time in school [Onestamente, non lo so; in realtà sento che sto sprecoando il mio tempo frequentando l'università] | -.032 | -.059 | .018 | .702 | .537 |

Note. Total variance explained = 57.62%; Cronbach's $\alpha = .89$; *h*² is item communality. Values in bold indicate major loadings. EMIN = Extrinsic Motivation-introjected; EMER = Extrinsic Motivation-external regulation; EMID = Extrinsic Motivation-identified; IMA = Intrinsic Motivation-toward accomplishment; IMES = Intrinsic Motivation-to experience stimulation; IMK = Intrinsic Motivation-to know; AM = Amotivation.

The assessment of factorability showed that the KMO was 0.91 and Barlett's test of sphericity was significant ($p < .001$) indicating that the data were adequate for the factor analysis. The examination of the scree plot and the scree test suggested that our data should be analyzed for four factors. The first four eigenvalues were 9.02, 3.59, 2.75, and 1.77. The 4-factor solution explained a variance of 56.91% from a total of 28 items, with two items having communality $< .30$, namely Item 1 ("Because with only a high school degree I would not find a high-paying job later on") originally from the EM-external regulation subscale, and Item 4 ("For the intense feelings I experience when I am communicating my own ideas to others") originally from the IM-to experience stimulation subscale. In the above-mentioned solution, these items would still have belonged, respectively, to EM and IM factors. After eliminating these items, a rerun of the model produced a cleaner solution with 26 items and four factors which had an explained variance of 57.62%. The assessment of factorability showed that the KMO was 0.91 and Barlett's test of sphericity was significant ($\chi^2 = 6303.36$, $df = 325$, $p < .001$) indicating that the data were adequate for the factor analysis. The first four eigenvalues were: 8.90, 3.40, 2.67, and 1.71. The scree-test supported that our data should be examined for four factors. Factor loading $> .32$ for each item loading on each factor was found. Moreover, mean scores for the single items varied from a maximum score of 4.38 (Item 3 "Because I think that a college education will help me prepare for a career that I have chosen") to a minimum of 1.28 (Item 19 "I can't see why I go to college and frankly, I couldn't care less"). *SDs* for the single items varied from 1.32 (Item 21 "To show me that I am an intelligent person") to 0.73 (Item 19 "I can't see why I go to college and, frankly, I couldn't care less"). Skewness values fall within the range of -2 to $+2$ (i.e., skewness values ranged from $-.368$ to $+1.94$) and kurtosis values fall within the range of -7 to $+7$ (i.e., kurtosis values ranged from $-.422$ to 4.00). Consistent

with the rule of thumb provided by Curran et al. (1996), our data were approximately normally distributed. No further items were excluded.

The first factor (eight items) included items that referred to the introjection of extrinsic motivation and items that referred to the intrinsic motivation related to the accomplishment of academic goals. This factor grouped the two scales of Extrinsic Motivation-introjected and Intrinsic Motivation-toward the accomplishment from the original version. This scale was labeled Introjected Motivation (INM).

The second factor (seven items) included items that referred to intrinsic motivation. This factor grouped the two scales of Intrinsic Motivation-to know and Intrinsic Motivation-to experience stimulation from the original version. This scale was labeled Intrinsic Motivation (IM).

The third factor (seven items) included items that referred to different types of extrinsic motivation. This factor grouped the two scales of Extrinsic Motivation-external regulation and Extrinsic Motivation-identified from the original version. This scale was labeled Extrinsic Motivation (EM).

The last factor (four items) included the items of the original Amotivation scale. Therefore, it was labeled Amotivation (AM).

CFA on the second random split-half sample (subsample B, $n = 398$) was conducted to test the 4-factor solution. Data revealed acceptable model fit: that is, χ^2 nonsignificant $p > .05$; CFI = .92; TLI = .92; RMSEA = .06; SRMR = .03 (Figure 1).

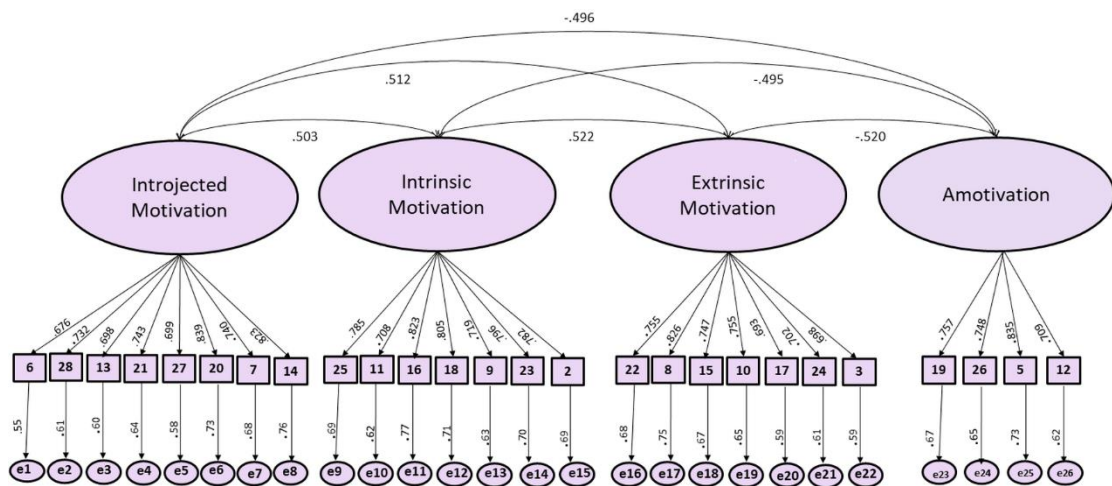


FIGURE 1
Path diagram and estimates for the 4-factor Academic Motivation Scale-College (AMS-C) students:
Confirmatory factor analysis on second random split-half sample (subsample B, $n = 398$)

Therefore, evidence based on the construct validity of the Italian version of the AMS-C suggested a 4-factor structure (Introjected Motivation; Intrinsic Motivation; Extrinsic Motivation; Amotivation) which covered all the seven factors, supporting the original multidimensionality of the tool, yet underlining a new valid and meaningful configuration (RO1).

Convergent Validity (RO2)

Concerning convergent validity (RO2), the standardized factor loadings of the Italian version of the AMS-C items were all $> .50$ (Figure 1) and statistically significant ($p < .001$). The values of AVE of all factors

were $> .50$ (i.e., Introjected Motivation AVE = $.56$; Intrinsic Motivation AVE = $.60$; Extrinsic Motivation AVE = $.55$; Amotivation AVE = $.58$). Therefore, data indicated satisfactory convergent validity.

Discriminant Validity (RO3)

Concerning discriminant validity (RO3), all the MSV and ASV values (i.e., Introjected Motivation MSV = $.26$, ASV = $.25$; Intrinsic Motivation MSV = $.27$, ASV = $.26$; Extrinsic Motivation MSV = $.27$, ASV = $.27$; Amotivation MSV = $.27$, ASV = $.25$) were less than AVE values. Furthermore, all the square roots of AVE values (i.e., Introjected Motivation SQRT = $.75$; Intrinsic Motivation SQRT = $.78$; Extrinsic Motivation SQRT = $.74$; Amotivation SQRT = $.76$) were above the correlation values (i.e., Introjected Motivation with Intrinsic Motivation $r = .50$; Intrinsic Motivation with Extrinsic Motivation $r = .52$; Extrinsic Motivation with Amotivation $r = -.52$; Introjected Motivation with Amotivation $r = -.50$; Introjected Motivation with Extrinsic Motivation $r = .51$; Intrinsic Motivation with Amotivation $r = -.50$). Therefore, data indicated satisfactory discriminant validity.

Criterion Validity (RO4)

Concerning criterion validity (RO4), Spearman's correlation coefficients were calculated, thus exploring the associations between the AMS-C subscales scores and leaving intention. Data revealed statistically significant correlations between all the AMS-C subscales scores and leaving intention, supporting criterion validity. In particular, Introjected Motivation ($r = -.14$, $p < .001$), Intrinsic Motivation ($r = -.21$, $p < .001$), and Extrinsic Motivation ($r = -.14$, $p < .001$) significantly and negatively related to leaving intention ($r < .30$; small correlations; Cohen, 1988). Conversely, Amotivation significantly and positively related to leaving intention ($r = .34$; $p < .001$) ($.30 < r < .50$; medium correlation; Cohen, 1988).

Reliability (RO5)

The mean interitem correlation was $.22$, the values of CR were all $> .70$ (i.e., Introjected Motivation CR = $.93$; Intrinsic Motivation CR = $.91$; Extrinsic Motivation CR = $.89$; Amotivation CR = $.85$), and McDonald's ω and Cronbach's α coefficients for Introjected Motivation ($\omega = .91$; $\alpha = .91$), Intrinsic Motivation ($\omega = .90$; $\alpha = .90$), Extrinsic Motivation ($\omega = .86$; $\alpha = .86$), and Amotivation ($\omega = .84$; $\alpha = .82$) were all satisfactory. Therefore, the Italian version of the AMS-C revealed strong internal consistency.

Measurement Invariance and Gender Differences (RO6)

Multi-group SEM was carried out to assess configural invariance by analyzing the two groups without constraining equality across the groups. As shown in Table 3, the results of goodness-of-fit in the configural invariance tests indicated that the structural patterns are similar across gender. This implies that the configural model can be a baseline to compare with other restricted models in the invariance hierarchy. Secondly, metric invariance was executed by constraining the factor loadings to be equal across groups. The

results of the metric invariance model provided in Table 3 suggest a good model fit ($\Delta\chi^2 = 13.35$, $df = 34$, $p > .05$; $\Delta CFI < .01$; $\Delta RMSEA < .015$; $\Delta SRMR < .030$). Thirdly, a scalar invariance test was performed by restricting the intercepts across gender to be invariant. In Table 3, the model fit indices of the scalar invariance model were shown, indicating that the invariance hypothesis was supported ($\Delta\chi^2 = 10.26$, $df = 26$, $p > .05$; $\Delta CFI < .01$; $\Delta RMSEA < .015$; $\Delta SRMR < .030$).

TABLE 3
Equivalence of the factor structure of the Academic Motivation Scale-College students across gender

| Subgroup comparison | Configural invariance model | Metric invariance model | Scalar invariance model |
|------------------------|-----------------------------|-------------------------|-------------------------|
| Male/Female | | | |
| χ^2 [<i>df</i>] | 202.403 [189] | 215.758 [223] | 226.022 [249] |
| CFI | .958 | .959 | .958 |
| RMSEA | .035 | .034 | .034 |
| SRMR | .037 | .038 | .039 |

Note. *df* = degrees of freedom; CFI = comparative fit index; RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residual.

Table 4 displays items, composite scores (means, standard deviations), and ranges of the AMS-C scales both for the total sample and according to gender. Using MANOVA, we examined the mean differences associated with the four factors of the AMS-C across gender. As for gender, the main multivariate effect was significant, $F(4, 792) = 7.12$, $p < .000$, $\eta^2_{\text{par}} = .035$. Data showed that women reported higher levels of Introjected Motivation, $F(1, 795) = 18.42$, $p < .000$, $\eta^2_{\text{par}} = .023$, and Extrinsic Motivation, $F(1, 795) = 10.18$, $p = .001$, $\eta^2_{\text{par}} = .013$, and lower levels of Amotivation than men, $F(1, 795) = 10.76$, $p = .001$, $\eta^2_{\text{par}} = .013$. No significant differences by gender were found with respect to Intrinsic Motivation scores, $F(1, 795) = 1.75$, $p = .186$, $\eta^2_{\text{par}} = .002$.

TABLE 4
Items, means, *SDs*, and range scores of the Italian version of the AMS-C for the total sample and by gender

| AMS-C factors | Items | Range | Total | Male | Female | <i>p</i> values ^a |
|--|-----------------------|-------|------------------|------------------|------------------|------------------------------|
| | | | Mean ± <i>SD</i> | Mean ± <i>SD</i> | Mean ± <i>SD</i> | |
| Factor 1. Introjected Motivation [INM] | 6-7-13-14-20-21-27-28 | 1-5 | 3.38 ± 0.96 | 3.14 ± 1.00 | 3.47 ± 0.92 | .000*** |
| Factor 2. Intrinsic Motivation [IM] | 2-9-11-16-18-23-25 | 1-5 | 3.97 ± 0.75 | 3.91 ± 0.72 | 3.99 ± 0.75 | .186 |
| Factor 3. Extrinsic Motivation [EM] | 3-8-10-15-17-22-24 | 1-5 | 3.97 ± 0.74 | 3.83 ± 0.84 | 4.01 ± 0.70 | .001** |
| Factor 4. Amotivation [AM] | 5-12-19-26 | 1-5 | 1.45 ± 0.70 | 1.58 ± 0.83 | 1.40 ± 0.65 | .001** |

Note. ^aGender differences are determined by MANOVA.
*** $p < .001$; ** $p < .01$

DISCUSSION

The present study aimed to examine the factor structure and psychometric properties of the Italian version of the Academic Motivation Scale-College (AMS-C). Firstly, considering construct validity (RO1), because confirmatory factor analysis provided a poor fit for the original 7-factor structure of the AMS-C (Vallerand et al., 1992), alternative configurations were explored, as in previous validation studies conducted worldwide (i.e., Ardeńska et al., 2016; Koludrović & Ercegovac, 2015; Smith et al., 2012; Wilkesmann et al., 2012).

Based on the data that emerged (i.e., MAP), which suggested retaining four factors, we have tested the 4-factor solutions provided, respectively, in the United States (Smith et al., 2012), in Germany (Wilkesmann et al., 2012), as well as in Poland and Turkey (Ardeńska et al., 2016). Nevertheless, also these configurations resulted in poor model fit with our data, requiring the development of further analyses to establish the factor structure of the Italian version of the AMS-C.

Findings revealed that the Italian version of the AMS-C consisted of 26 items, and possessed adequate validity and reliability, tapping four meaningful and reliable factors which still allowed to substantially confirm the original multidimensional structure of the AMS-C (Vallerand et al., 1992). In particular, the first factor labeled Introjected Motivation (INM) merged those items from Extrinsic Motivation-introjected with those from Intrinsic Motivation-toward accomplishment. This supported a more recent research trend underlining the possibility of observing stronger correlations between Extrinsic and Intrinsic Motivation dimensions than in the original SDT framework (Ardeńska et al., 2016; Smith et al., 2012), and suggested a meaningful configuration describing students' fulfillment of internalization processes of extrinsic motivation. Such configuration seems to reflect the specificity of university students, which are in a transitional stage of emerging adulthood, thus experiencing the specific developmental changes featured by both the self-determined intrinsic motivation to achieve academic goals and the introjection of external regulation processes in the direction of reaching more self-determined motivations and behaviors than secondary school students.

Moreover, in line with previous studies (Ardeńska et al., 2016; Smith et al., 2012), the remaining items from, respectively, Intrinsic Motivation and Extrinsic Motivation collapsed into single factors, clearly distinguishing university students' internal and external motivation processes. Specifically, the second factor, labeled Intrinsic Motivation (IM), grouped those items from Intrinsic Motivation-to know and Intrinsic Motivation-experience stimulation, whereas the third factor, labeled Extrinsic Motivation (EM), grouped those items from Extrinsic Motivation-external regulation and Extrinsic Motivation-identified. Finally, the last factor, namely Amotivation (AM), comprised all four items of the original subscale and describes "amotivated" and passive university students who do not perceive competence/control over their actions to achieve academic goals.

Therefore, overall, our findings supported a 4-factor structure that agrees with the 4-factor solutions that emerged in the United States (Smith et al., 2012) and Germany (Wilkesmann et al., 2012) and that substantially recall the configurations reported in the validation study conducted in Poland and Turkey (Ardeńska et al., 2016), however with different excluded/included items. The above-mentioned similarities could contribute to the international debate concerning the factor structure of the AMS-C across different countries (with different cultures and languages). Indeed, beyond the differences, all these versions were similar in factor configurations, and preserved the distinctiveness among Intrinsic Motivation, Extrinsic Motivation, and Amotivation, as well as the expected multidimensionality of the construct (not violating the theoretical framework underpinning the tool). Nonetheless, all these versions suggested the possibility of reflecting on the greater and more complex bond between Extrinsic and Intrinsic Motivation (i.e., by

underlining Extrinsic Motivation-introjected as a single factor — in Germany and the United States — and by merging items from Extrinsic Motivation-introjected with items from Intrinsic Motivation — in Poland, Turkey, and Italy). Further research exploring the introjection dynamics related to the motivational process is, however, needed.

With respect to the psychometric properties of the Italian version of the AMS-C, data confirmed that the tool possessed satisfactory convergent validity, discriminant validity, criterion validity, as well as internal consistency. In particular, concerning convergent validity (RO2), the standardized factor loadings, and the values of AVE were all above the suggested threshold (Hair et al., 2010). In the same direction, concerning discriminant validity (RO3), findings revealed that MSV and ASV were less than AVE, and the SQRT AVE values of each AMS-C subscale were greater than the correlations between the four factors, so revealing satisfactory discriminant validity. Concerning criterion validity (RO4), in line with previous studies (Alivernini & Lucidi, 2011; Jenó et al., 2018; Morrow & Ackermann, 2012; Vallerand et al., 1997), significant correlations between AMS-C subscales and leaving intention in the expected direction were found. Indeed, data suggested that intrinsically and extrinsically motivated students, as well as those who have introjected their motivation toward accomplishment, were less likely to consider withdrawing from university. Conversely, those “amotivated” and passive students were more likely to consider the possibility of leaving academic studies. Concerning reliability testing (RO5), mean interitem correlation, composite reliability, McDonald’s ω , and Cronbach’s α values all confirmed that the Italian version of the AMS-C had strong internal consistency.

Finally, the present study also contributed to the still underresearched topic of gender differences in motivation processes. Indeed, despite several studies explored gender differences (e.g., Alonso, 2006; Ardeńska et al., 2016; Vallerand et al., 1989, 1992), only a few studies tested the measurement invariance of AMS across gender (Alivernini & Lucidi, 2008; Guay et al., 2015; Tóth-Király et al., 2017). Our findings supported the measurement equivalence of the AMS-C by gender. The presence of configural invariance of the AMS-C indicated equivalent factor structure across gender. In addition, the metric invariance indicated that the strength of the item-factor relationships was similar across male and female students. Furthermore, the presence of scalar invariance (or invariant intercept terms) showed that differences in the means of the observed items reflected true differences in the means of the latent construct motivation. These results revealed that the scale items may be adopted to assess this construct in both male and female university students. Therefore, we have explored potential gender differences. Data revealed that women reported higher levels of Introjected Motivation and Extrinsic Motivation and lower levels of Amotivation than their male colleagues. These findings substantially reproduced those from the original validation study (Vallerand et al., 1989, 1992) and from other studies in the field (e.g., Alonso, 2006; Ardeńska et al., 2016) highlighting that female students show a more self-determined motivational profile than male students. Further research is, however, needed to achieve a greater understanding of gender differences in motivation processes.

Despite the strengths, some limitations need to be reported. Firstly, the participant pool comprised a convenience sample of Italian students, with the majority being women, so limiting the generalizability of research results. Therefore, further investigation on bigger and more representative samples is needed to confirm our results (e.g., a nationally representative sample, more male students). Secondly, the study relies on participants’ self-reports, and, consequently, data could be affected by the risk of social-desirability bias. Thirdly, the study lacks available data for a more robust examination of reliability beyond internal consistency, such as test-retest, and future research could be designed as a longitudinal survey to conduct such analyses. In conclusion, notwithstanding these limitations, this study provided the Italian version of the

Academic Motivation Scale-College (AMS-C) a valid and reliable tool to be used for research and assessment of motivation processes among Italian university students.

FUNDINGS

This work was supported by Erasmus+Project Code: 2020-1-UK01-KA226-HE-094622. This publication only reflects the views of the authors and the Commission cannot be held responsible for any use which may be made of the information contained therein.

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