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Citation for final published version:

Aresi, Giovanni, Alfieri, Sara, Lanz, Margherita, Marta, Elena and Moore, Simon ORCID: <https://orcid.org/0000-0001-5495-4705> 2018. Development and validation of a multidimensional motivations to study abroad scale (MMSAS) among European credit mobility students. *International Journal of Intercultural Relations* 63 , pp. 128-134. 10.1016/j.ijintrel.2017.10.004 file

Publishers page: <http://dx.doi.org/10.1016/j.ijintrel.2017.10.004>
<<http://dx.doi.org/10.1016/j.ijintrel.2017.10.004>>

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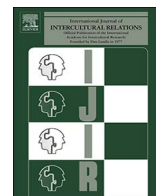
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Contents lists available at ScienceDirect

International Journal of Intercultural Relations

journal homepage: www.elsevier.com/locate/ijintrel

Development and validation of a Multidimensional Motivations to Study Abroad Scale (MMSAS) among European Credit Mobility Students

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ARTICLE INFO

Keywords:

Motivations
Study abroad
Credit mobility programmes
Scale development
Confirmatory factor analysis
Scale invariance

ABSTRACT

The aim was to establish and validate the Multidimensional Motivations to Study Abroad Scale (MMSAS) to measure university Credit Mobility Students' (CMSs) reasons (e.g., academic, cross-cultural, personal growth) for studying abroad. The instrument was administered to a multi-language sample of 1333 European CMSs. The final measure included 27 items.

Results supported nine factors for the English (both for native English speakers and the version for non-native English speakers), French, German, Italian, and Spanish versions; invariance across languages was demonstrated and evidence for construct validity is provided. Further research should explore the relevance of this measure to other populations (e.g., other languages, degree mobility students) and determine the relationship with students' experiences and behaviours abroad.

Introduction

Studying abroad as part of one's academic career is usually elective and motivated “to achieve a particular purpose” (Bochner, 2006, p. 182). Students' decisions to study abroad can be framed within the Push-pull Model, which distinguishes between “push” (i.e., that influence the demand for international education) and “pull” (i.e., that influence the selection of the destination) factors (Mazzarol & Soutar, 2002). Motivations to study abroad (i.e., push factors) are a crucial factor influencing students' social and cultural adaptation during the experience of studying abroad (Chirkov, Vansteenkiste, Tao, & Lynch, 2007), the development of cross-cultural skills and global understanding (Kitsantas, 2004), and even behaviours impacting on their health while abroad (Aresi, Moore, & Marta, 2016a; Pedersen, Skidmore, & Aresi, 2014).

There is a need to develop a multilingual, valid and reliable measure of students' motivations to study abroad. Such a measure could be used in higher education institutions to plan orientation activities, screen student applications, and develop intervention strategies to both promote social and cultural adjustment and healthy behaviour. Attempts have been made to develop such a measure but there are notable methodological and psychometric limitations in the existing literature, including a lack of disclosure on the process of scale development (e.g., Pope, Sánchez, Lehnert, & Schmid, 2014; Wiers-Jenssen, 2003), aggregating conceptually similar items into dimensions (Van Mol & Timmerman, 2014), and a lack of assessment of construct and criterion validity, and factor structure invariance, even when using a multi-country/multi-language samples (Beerkens, Souto-Otero, de Wit, & Huisman, 2015;

Abbreviations: MMSAS, Multidimensional Motivations to Study Abroad Scale; CMS, Credit Mobility Students

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<http://dx.doi.org/10.1016/j.ijintrel.2017.10.004>

Received 12 January 2017; Received in revised form 19 October 2017; Accepted 21 October 2017

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Sánchez, Fornerino, & Zhang, 2006). Furthermore, many instruments have also been developed using limited samples, including single-country single-language (e.g., Anderson & Lawton, 2015; Chirkov et al., 2007; Wiers-Jenssen, 2003), short-term study abroad summer programmes (Nyaupane, Paris, & Teye, 2011), or discipline-specific students (Pope et al., 2014). Any instrument should therefore reflect the diversity of study abroad students, in terms of discipline, country of origin and language (Kalocsai, 2014).

The present study

The present study was designed to develop and validate the Multidimensional Motivations to Study Abroad Scale (MMSAS) to measure European higher education students' motivations to study abroad. The MMSAS is expected to assess the different reasons why students decide to initiate a study abroad programme. We also aimed to test the structural validity of the English (for both native and non-native speakers), Dutch, French, German, Italian and Spanish versions of the scale. Finally, we aimed to verify the construct validity of the new scale and its dimensions.

Methods

To develop the MMSAS, a multi-step approach was implemented across six phases (see Supplement 1: Methods). Phases one to five included a literature review and a pilot qualitative study that generated a first pool of items ($N = 100$), followed by the assessment of their content adequacy by five experts¹ in the field. From this work 61 items (Pool 2) were retained. Analysis of data drawn from a pilot sample of 357 study abroad students supported nine factors and led to retaining 41 items (Pool 3). Phase six implemented the measure and is described here.

Final sample administration

Procedures

This study was part of a larger research project on health behaviours during study abroad experiences. The study used a longitudinal design, and the data were collected upon arrival abroad (T_1) and four months later (T_2). Two cohorts were invited to participate. The first cohort was invited at the beginning of the first semester (September 2015), and the second cohort at the beginning of the second semester (February 2016). At T_1 , leaders of an international student association approached approximately 1800 Credit Mobility Students (CMSs) (across both cohorts) who had just arrived in 200 cities across 40 European countries. At this point, European university students participating in exchange programmes were invited to complete an anonymous online questionnaire which included the Pool 3 items. Four months later (T_2), the participants were emailed a link to the second survey, with entry into a lottery for flight vouchers offered as an incentive. Participants were eligible for inclusion if they were either participating in a study abroad programme, internship or language training programme for an expected four months or more, and were normally residents of a European country.

Measures

Students were prompted as follows: "Think about the reasons why you want to study abroad. How important is each one of the following motivations to you?" Students were then presented with the randomised list of the 41 items in their preferred language and response options ranging from "one," not important at all, to "five," very important).

The items had been translated by native speakers into Dutch, French, German, Italian and Spanish and subsequently reverse translated into English (Brislin, 1980). The participants were also required to disclose their gender, age and other socio-demographic information (e.g., country of origin, primary language). They also completed questions regarding the type of study abroad experience (i.e., study abroad programme, host country, the amount of time they plan to spend abroad). The T_2 survey contained some criterion measures used to assess the validity of the scale, specifically students' self-reported host country language proficiency (Roever & Powers, 2005), their recreational habits at night (Calafat, Gomez, Juan, & Becona, 2007), and other measures of lifestyle habits, such as the number of hours a week spent studying or doing assignments (from 1 "None" to 7 "About 11 or more"). Students also completed three acculturation-related measures to assess their home and host country acculturation orientation (Brief Acculturation Orientation Scale). The scale assessed how effectively students were adapting to the host country (Brief Sociocultural Adaptation Scale) and their psychological well-being (Brief Psychological Adaptation Scale). These scales had been validated in different languages (English for natives, English for non-natives, German, Italian, Thai, Spanish, Portuguese, French) on a sample of study abroad students (Demes & Geeraert, 2014).

Data analyses

We performed a series of Exploratory Factor Analyses (EFA) on the overall sample for parsimony. A nine-factor solution was imposed in accordance with results of analyses on the pilot sample (Supplemental 1). The extraction method employed was Principal Axis Factoring with Oblimin Rotation.

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We then followed established guidelines on testing for the equivalence of a measure across different groups, or in our case languages (English for native speakers, English for non-native speakers, Dutch, French, German, Italian and Spanish) (Byrne, 2008). Our first step was to perform a separate Confirmatory Factor Analyses (CFA) for each language. The overall fit of the model was evaluated considering the values for acceptable absolute, relative, and parsimony fit indices. Selection of these indices was based on their statistical power and widespread use in Structural Equation Modelling (SEM) (Hu & Bentler, 1999; Kline, 2011; Ullman, 2006). As indicative of absolute fit, we considered the values of the Standardized Chi-square ($\chi^2/df < 5$), the Root Mean Square Error of Approximation (RMSEA < 0.08), and the Standardized Root Mean Square Residual (SRMR < 0.08). As a relative fit index, we used the values of the Comparative fit index (CFI > 0.90) (Hu & Bentler, 1999; Kline, 2011; Ullman, 2006).

After establishing the CFA model for each group separately, a simultaneous Multigroup Confirmatory Factory Analysis (MGCFA) was conducted to compare the measurement structure of the model across languages. The comparison of structure of the model/latent means across cultures requires that three levels of invariance are fulfilled: configural, metric, and scalar. Configural invariance is defined as the presence of the same number of factors and the same patterns of free and fixed factor loadings across groups without equality restrictions on any other model parameters. Metric (or weak measurement) invariance is defined as invariance of factor loadings across groups, and scalar (or strong measurement) invariance is defined as invariance of both factor loadings and item intercepts across groups (Wang & Wang, 2012). In sum, meaningful comparison of construct means across countries requires these three levels of invariance, and only when all three levels are met, scores are not biased. Differences between fit models were assessed by considering decreases in the CFI values, which could not be higher than 0.010, and increases in RMSEA values, which could not be higher than 0.015.

Results

Sample

The T₁ survey was completed by 1245 eligible students and 817 completed the T₂ survey, yielding a 65.6% retention rate. The scale took participants approximately five to eight minutes to complete. To achieve greater homogeneity of sample sizes across language groups, 60 Italian CMSs were randomly selected from a sample of students who participated in a related research project (Aresi, Moore, & Marta, 2016b) and were included in the study sample. Similarly, 28 native English-speaking CMSs from the pilot study were included. The final sample comprised 1333 CMSs. Participants had a mean age of 22.3 (SD = 3.03) years and 72.5% were female. The mean number of years in formal tertiary education was 3.15 (SD = 1.38). Areas of study varied with professions (e.g., Architecture Business, Education, Engineering, Media studies, Law, Medicine) (37.0%), Social Sciences (23.9%), Humanities and the Arts (e.g., Literature, Languages) (18.8%) and Natural Sciences (11.1%) being the most frequent. Students were mostly from Spain (14.2%), Germany (9.7%), Italy (8.3%), France (6.6%), the United Kingdom (6%), and the Netherlands (5.3%). Participants travelled to 43 different countries, with Spain (12.4%), Italy (8.4%), the United Kingdom (7.9%), France (7.9%), Germany (6.7%), Belgium (5.1%), and the Netherlands (4.6%) being the most frequent. Most students (67.6%) planned to spend up to one semester abroad, whereas the remaining percentage planned to spend the entire academic year in the host country. 13.1% (N = 175) of students indicated German, 13.1% (N = 175) Spanish, 12.4% Italian (N = 165), 9.2% (N = 122) English, 8.6% French (N = 114), and 6.2% Dutch (N = 83) as their mother language. Those who indicated other languages (e.g., Polish, Czech, Turkish, Portuguese, and Lithuanian) (37.4%, N = 499) completed the questionnaire in English and were included in the English as a foreign language group.

Scale dimensionality and reliability

The series of EFA resulted in the deletion of eight items that either significantly loaded (> 0.300) on more than one factors or presented the lowest communalities. The pattern matrix of the final EFA showed a net item distribution on nine factors (Table 1), which explained 59.52% of the variance. To further reduce the number of items and achieve three-item balanced sub-scales, items with the smallest loading on each factor were removed. The final model comprised 27 items (Table 2). Supplemental file 2 displays the items in English and translations in the other five languages. Results of reliability analyses showed acceptable internal consistency in the overall sample and across the sub-samples, with the majority of Cronbach's α values ranging from 0.700 to 0.915.

Confirmatory factory analysis for each language

The results of the six separate CFAs on the 27-item nine-factor model of the MMSAS showed that the model achieved satisfactory fit indices in all languages except Dutch (Table 3). Overall, values of CFI were higher than 0.90 and values of RMSEA and SMRM were lower than 0.080, suggesting good fit to the data. In the Dutch sample, CFI was 0.848, RMSEA was 0.087, and SRMR was 0.088, suggesting only a marginal fit to the data.

Tests of configural, metric, and scalar invariance

The results of the MGCFA (Table 4) pertaining to configural invariance revealed a good model fit. The CFI and RMSEA values of 0.925 and 0.059, respectively, were satisfactory, thus indicating that the hypothesized multigroup model of the MMSAS structure had satisfactory fit across all languages. Hence, the configural invariance of the nine-factor model was accepted, and it was possible to treat the factors' composition as invariant across the languages. The results of metric invariance analyses suggest that the item scores

Table 1
Factor loadings of items on the study abroad students' motivations measure.

Motivation factors, items, and internal consistency	Factor loading
1. Personal growth (21.93%)	
To know better myself	0.817
To learn more about myself	0.787
To encourage myself to change in some way	0.524
To build my self-confidence ^a	0.519
Personal growth subscale: Cronbach's alpha = 0.801 ^b	
2. Better academic knowledge (12.09%)	
To experience a higher academic level	0.886
To get a better university education	0.752
Because it is an opportunity to continue my studies at a higher educational level	0.661
To improve my academic knowledge ^a	0.641
Better academic knowledge subscale: Cronbach's alpha = 0.816 ^b	
3. Others' expectations (7.19%)	
Because others (relatives and friends) expected me to study abroad	0.796
Because others (relatives and friends) push me to do this	0.703
So that other people (relatives and friends) would be proud of me	0.619
To please my parents ^a	0.608
Others' expectations subscale: Cronbach's alpha = 0.730 ^b	
4. Learning or improving foreign language skills (5.18%)	
To learn/improve the local language	0.866
Because the host country language is useful	0.722
To learn/improve a foreign language	0.656
To learn/improve other languages ^a	0.542
Learning or improving foreign language skills subscale: Cronbach's alpha = 0.773 ^b	
5. Cross-cultural interest (3.87%)	
To meet people from different countries	0.847
To get in contact with people from other countries	0.789
To meet new people	0.582
To learn about other cultures ^a	0.443
Cross-cultural interest subscale: Cronbach's alpha = 0.860 ^b	
6. Get away from home environment (3.35%)	
To get a break from usual surroundings	0.790
To take a break from usual life	0.765
To escape day-to-day life	0.752
To get away from a stressful situation ^a	0.633
Get away from home environment subscale: Cronbach's alpha = 0.860 ^b	
7. Career perspectives (2.43%)	
To improve career prospects	-0.849
To more easily enter the job market	-0.771
To expand my career opportunities	-0.763
Career perspectives subscale: Cronbach's alpha = 0.859	
8. Search for independency (2.04%)	
To gain independency	-0.977
To find greater freedom	-0.665
To live independently without my family	-0.491
Search for independency subscale: Cronbach's alpha = 0.800	
9. Leisure (1.44%)	
To have an adventure	0.754
To have exciting experiences	0.738
To have fun	0.658
Leisure subscale: Cronbach's alpha = 0.814	

Note. ^a Item deleted in the 27-item version.; ^b Calculated on three items.

can be meaningfully compared across groups. Indeed, the Δ CFI value of less than the 0.01 and the increase in the value of RMSEA by less than 0.015 indicated that the measurement model was invariant. Finally, the test evaluating scalar invariance revealed that when constraining item weights and intercepts, the change in RMSEA was below the adopted criteria, whereas change in CFI was above, thus indicating only partial invariance across the languages. This result suggests that the meaning of each factor (e.g., enhancement) is similar, but the size of the relations between the items assessed in the MMSAS may vary as a function of language. Statistically significant factor correlations from the nine-factor confirmatory analysis ranged from 0.045 to 0.468 (Table 5).

Preliminary examination of scale validity

The criterion-related validity assessment showed that the motivation to pursue improved academic knowledge was positively related to the number of hours a week spent studying or doing assignments during the study abroad experience ($r = 0.153$, $p < 0.001$). As expected, students' cross-cultural interest was negatively related to the acculturation orientation toward one's

Table 2
Cronbach's alpha (α) of sub-scales for total sample and single languages.

Alpha	Total	English ML	English FL	Dutch	French	German	Italian	Spanish
1. Personal growth	0.801	0.834	0.812	0.762	0.798	0.792	0.726	0.818
2. Academic	0.816	0.702	0.797	0.790	0.825	0.848	0.786	0.776
3. Others' expectations	0.730	0.685	0.733	0.744	0.727	0.656	0.754	0.781
4. Foreign language	0.773	0.913	0.742	0.828	0.742	0.827	0.733	0.658
5. Cross-cultural	0.860	0.915	0.761	0.862	0.768	0.824	0.711	0.664
6. Get away	0.860	0.887	0.854	0.881	0.826	0.843	0.875	0.835
7. Career	0.859	0.865	0.850	0.861	0.880	0.859	0.822	0.814
8. Independency	0.800	0.825	0.796	0.742	0.841	0.742	0.820	0.852
9. Leisure	0.814	0.862	0.786	0.790	0.809	0.832	0.825	0.800
N	1333	122	499	83	114	175	165	175

Note. ML = mother language, FL = foreign language.

Table 3
Fit indices.

Language	χ^2/df	CFI	RMSEA	SRMR
English ML	1.651	0.906	0.074	0.068
English FL	2.463	0.936	0.054	0.054
Dutch	1.626	0.848	0.087	0.088
French	1.373	0.933	0.057	0.073
German	1.407	0.943	0.048	0.060
Italian	1.582	0.925	0.060	0.064
Spanish	1.552	0.927	0.056	0.064

Note. 288 degree freedom. ML = mother language, FL = foreign language.

Table 4
Invariance tests for the seven languages.

Language	χ^2	df	χ^2/df	CFI	RMSEA	Comparison	ΔCFI	$\Delta RMSEA$
1. Unconstrained (configural invariance)	3356.779	2016	11.665	0.925	0.059	–	–	–
2. Measurement weights (metric invariance)	3601.922	2124	11.696	0.917	0.061	2 vs. 1	0.008	0.002
3. Structural covariance (scalar invariance)	4628.101	2268	2.041	0.868	0.074	3 vs. 2	0.049	0.013

Table 5
Correlations among MMSAS factors.

	1	2	3	4	5	6	7	8	9
1. Personal growth	–								
2. Academic	0.193***	–							
3. Others' expectations	0.083***	0.151***	–						
4. Foreign language	0.049	0.192***	0.077*	–					
5. Cross-cultural	0.261***	0.092***	–0.002	0.090***	–				
6. Get away	0.278***	0.012	0.045*	0.014	0.303***	–			
7. Career	0.361***	–0.004	0.119***	–0.048	0.232***	0.377***	–		
8. Independency	0.104***	0.422***	0.057**	0.210***	0.097***	0.048**	–0.034	–	
9. Leisure	0.461***	0.169***	0.107***	0.079*	0.240***	0.293***	0.468***	0.108***	–

Note. * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$.

country of origin culture ($r = -0.101, p < 0.01$), whereas it was positively related to the acculturation orientation toward the host country culture ($r = 0.196, p < 0.001$) and both students' sociocultural ($r = 0.157, p < 0.001$) and psychological ($r = 0.262, p < 0.001$) adaptation abroad. The motivation to improve one's foreign language skills was significantly related to participants' capacity to participate in conversations or discussions ($r = 0.387, p < 0.001$) and to understand the main ideas of lectures and conversations ($r = 0.410, p < 0.001$) in the host country language. The leisure motivation was positively related to the frequency of going out at night to different settings such as bars/pubs ($r = 0.199, p < 0.001$), clubs ($r = 0.171, p < 0.001$), and of participating in private parties at a friend's house ($r = 0.176, p < 0.001$). Finally, those students living with their family of origin in their home country scored higher on the motivation related to search for independence ($t(1;1232) = 6.272, p < 0.001$) compared to those who lived in alternative accommodations (e.g., a dorm, an apartment with other students). However, the motivation related to personal growth was unrelated to students' age ($r = -0.021, p > 0.05$).

Discussion

The present study described the process of development and validation of the MMSAS, a multidimensional measure of European CMSs' motivations to study abroad. The results supported a nine-factor structure of the 27 items across five languages (English for both native and non-native English speakers, French, German, Italian, and Spanish). The results for the Dutch sample, however, revealed marginal fit to the data, and the Dutch version of the MMSAS should be used with caution. More research is needed to provide evidence of the scale dimensionality and reliability in this population. Overall, the results from the multigroup analysis supported the configural and metric invariance of the 27-item model across the languages, although the strength of the relationship between each item and its underlying constructs may vary. Thus, in spite of language differences across languages, CMSs appeared to understand the items in a similar manner.

The MMSAS encompasses the different reasons why students decide to initiate a programme of study abroad. Some of these dimensions (i.e., opportunities for career perspectives, self-development and personal growth, socialisation and leisure, cross-cultural interest) broadly overlap with those of some previous scale construction attempts (Anderson & Lawton, 2015; Kitsantas, 2004). In addition the MMSAS introduces further relevant goals, such as improving one's language skills, that students may pursue while studying in a foreign country, thus providing a more comprehensive assessment compared to previous measures (Anderson & Lawton, 2015). The MMSAS overcomes most of the methodological and psychometric limitations of previous scale construction studies and, most notably, it is the only instrument that measures motivations to study abroad in the most popular languages in Europe and North America. Finally, the present study also provided preliminary empirical evidence of construct validity of most dimensions of the MMSAS.

Future research should further test the validity of the scale using other criterion measures. It should also test the invariance of the meanings in other countries and languages, and possibly attempt to validate the MMSAS in different populations of students who study abroad such as those who pursue an entire bachelor or master's degree in a foreign country (degree mobility). The present study has several limitations, mainly the use of a convenience sample which may not be fully representative of the diverse European study abroad student population. In addition, although performing CFA following EFA on the same sample is not a standard approach, this was motivated by the need to select a parsimonious number of the items to be tested across several languages with relatively limited sample size. As in previous attempts to develop a motivation to study abroad scale, the MMSAS lacks a clear theoretical conceptualization, thus the identification of the dimensions of the resulting scale is data driven. Furthermore, since study abroad programmes provide a formal framework through which learning can occur, educational institutions highlight the educational and career benefits of the study abroad experience (Jarvis & Peel, 2008). Especially in contexts where students are selected for participation in study abroad programmes, they may be motivated to adhere to what they consider their institution's expectations, thus potentially exposing some subscales of the MMSAS (e.g., those related to improved academic knowledge or leisure-related reasons) to a social desirability bias. Future studies might test its susceptibility to such biases by administering the MMSAS together with a social desirability scale (Stöber, 2001). Finally, a criterion-validity assessment was not performed on all the dimensions of the scale and more research is needed in this regard.

Conclusion

The MMSAS has been found to be a valid and reliable measure of CMSs' motivations to study abroad in several different languages. The completions of the scale is a relatively straightforward task suitable for use by different entities (e.g., higher education institutions and researchers) that could use it for different purposes, such as planning orientation activities and cross-cultural training for both incoming and outgoing students, providing support and guidance on the selection process of student applications to study abroad, and in the development and implementation of activities that promote integration and healthy behaviour in students.

Declaration of conflicting interests

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Acknowledgments

This work was supported by the European Foundation for Alcohol Research (Lifestyle in Mobility research study – ERAB; EA 14 11). We are also grateful to the *UCSC International – Cooperation, Mobility & Internationalization* of the Università Cattolica del Sacro Cuore (Italy) for its support in conducting the present research study. SCM also acknowledges support from the Economic and Social Research Council, the Medical Research Council and Alcohol Research UK to the ELAStiC Project (ES/L015471/1). The research was further supported by DECIPHer, a UKCRC Public Health Research Centre of Excellence, which receives funding from the British Heart Foundation, Cancer Research UK, Medical Research Council, the Welsh Government and the Wellcome Trust (WT087640MA), under the auspices of the UK Clinical Research Collaboration.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.ijintrel.2017.10.004>.

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