



Adaptation and Psychometric Properties of the Academic Stressors Questionnaire Among Peruvian University Students

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ABSTRACT

University life is characterized by diverse academic demands that, when sustained over time, may be perceived by students as difficult to cope with and may be associated with various indicators of academic and psychological adjustment. In this context, there is a need for instruments that assess academic stressors and provide adequate psychometric evidence and contextual relevance. The present study aimed to analyze the psychometric properties of the Academic Stressors Questionnaire among Peruvian university students. An instrumental, cross-sectional study included 700 students aged 18–46 years ($M = 21.33$; $SD = 4.18$). The instrument was linguistically adapted from Portuguese into Spanish, and its content validity was assessed through expert judgment. We then conducted descriptive item analyses, computed polychoric correlations, fitted a confirmatory factor model using WLSMV, tested measurement invariance across gender, and estimated internal consistency using ordinal alpha and omega. The results supported a 12-item unidimensional structure with adequate item performance, factor loadings ranging from 0.59 to 0.80, and acceptable fit according to the CFI, TLI, and SRMR indices ($CFI = 0.982$; $TLI = 0.978$; $SRMR = 0.064$). Configural, metric, scalar, and strict invariance across gender were also supported. High levels of internal consistency were also observed (ordinal $\alpha = 0.91$; ordinal $\omega = 0.91$). It is concluded that the questionnaire provides initial evidence of content and construct validity, as well as satisfactory internal consistency. These findings support its preliminary use for assessing academic stressors in Peruvian university students, while further studies are required to corroborate its psychometric properties.

KEYWORDS

Academic stressors; psychometric properties; university students; content validity; internal consistency.

INTRODUCTION

Currently, university life involves a range of academic demands that form part of students' daily lives (Allsopp et al., 2025). The volume of assignments, assessment systems, deadlines, performance expectations, and relationships with lecturers and peers all influence how students approach their studies (Dev et al., 2023; Micheluzzi et al., 2025; Nunes & Matete, 2023). Although these demands are inherent to higher education, not all students experience them in the same way (Barbayannis et al., 2022). While some manage to adapt without major difficulties, others perceive them as constant pressure that can affect both their academic performance and their psychological well-being (Chongjin et al., 2025; Modna et al., 2023; Muryono, 2024; Naidoo et al., 2024).

Studies on academic stress indicate that the difficulties faced by university students are not solely due to isolated situations, such as exams or a temporary accumulation of tasks (Zhao, 2024). Often, distress is linked to academic conditions that persist over time and which students perceive as difficult to manage. These conditions are known as academic stressors and refer to factors within the educational environment that precede stress responses (Bedewy & Gabriel, 2015). Distinguishing between stress and stressors clarifies the subject of analysis, focusing on the academic sources that may generate such responses rather than on the emotional or physiological reactions themselves (De la Fuente et al., 2020).

Academic stressors are demands intrinsic to the university environment that may exceed the resources students perceive as available for managing them, including excessive workload, assessment-related pressure, and other challenges within the academic setting (Carlotto et al., 2005; Wang et al., 2023). These demands do not cause distress in all cases; however, they can become problematic when their intensity or frequency exceeds the perceived capacity to cope (Lazarus & Folkman, 1984). From this perspective, the analysis focuses primarily on the conditions of the academic environment rather than on individual differences, which allows for a clearer understanding of the factors that facilitate or hinder adaptation to university life (Bakker & Demerouti, 2017).

Nevertheless, the way in which these demands are conceptually organized and empirically operationalized is not uniform. While some approaches tend to treat them as a global construct associated with the general perception of academic pressure—as reflected in studies that have employed the questionnaire under a unidimensional approach (Estrada-Araoz et al., 2024a; Estrada-Araoz et al., 2024b), others have operationalized academic stressors across multiple dimensions linked to different domains of the university environment, such as academic demands, interpersonal relationships, or role balancing (Chávez et al., 2019; Serpa-Barrientos et al., 2022; Tito-Huamaní et al., 2023).

Various studies conducted among university students have documented associations between exposure to academic stressors and various indicators of psychological and academic adjustment, including cognitive, emotional, and physiological manifestations of distress (Ruiz-Camacho et al., 2025; Vizoso & Arias, 2016). Among the most consistent findings are links to

higher levels of anxiety, emotional exhaustion, difficulties concentrating, and reduced engagement with academic activities (Estrada-Araoz et al., 2024a; Olson et al., 2025; Sabaliauskas et al., 2025; Tamba & Iancu, 2023). Furthermore, links have been observed between academic stressors and sleep problems, as well as lower overall life satisfaction (Caldera-Montes et al., 2025; Waqas et al., 2015). These results indicate that academic conditions generating sustained pressure may have effects that extend beyond the strictly educational sphere.

However, the way academic stressors manifest and are organized can vary across institutional and cultural contexts. Differences in curriculum structure, assessment methods, academic expectations, and support systems influence which aspects of the university environment are perceived as most demanding. This variability poses a challenge for empirical research, as it limits comparability across studies when the instruments used do not adequately reflect the characteristics of their contexts. In this regard, the measurement of academic stressors depends not only on the availability of instruments but also on the conceptual clarity with which they operationalize the construct and on the psychometric evidence supporting the interpretation of their scores.

Several instruments have been developed to assess academic stressors in university students, particularly those based on models that conceptualize specific conditions of the academic environment as sources of sustained pressure (Chávez et al., 2019; Serpa-Barrientos et al., 2022; Tito-Huamaní et al., 2023). Some of these instruments assess several dimensions of academic stressors, whereas others include, within the same measure, not only stressors but also stress responses and coping strategies (Barraza, 2006). The Academic Stressors Questionnaire, developed by Carlotto et al. (2005), differs from these instruments in that it comprises only 12 items and focuses exclusively on university-related situations that students may perceive as stressful. This feature enables the calculation of an overall score of perceived academic stressors and facilitates its use in studies requiring brief measures. The questionnaire has already been used in recent research with Peruvian university students; however, its psychometric properties have not yet been examined systematically in this context.

The academic stressors questionnaire used in this study was originally developed to assess perceived stress in various university settings. The original version was used to examine the construct's relationship with psychological and academic adjustment variables (Carlotto et al., 2005). In its initial version, the instrument was not designed as a psychometric scale with a defined dimensional structure, nor did it include analyses of its internal structure. Over time, the questionnaire has been used in several studies, including recent applications, where it has served as an indicator of academic stressors and has been analyzed for its predictive capacity for various academic and psychological outcomes (Carlotto & Gonçalves, 2023; Gonçalves & Carlotto, 2024).

Previous studies using the questionnaire have reported evidence of content validity based on expert judgment, alongside adequate internal consistency, as estimated by Cronbach's

alpha. This background has enabled its use in descriptive and correlational studies conducted in different university contexts. However, to date, no psychometric analyses have been conducted to examine its internal structure in greater detail from a factor-analytic perspective, which limits the interpretation of the scores, as to the best of our knowledge, previous psychometric studies do not allow us to determine whether the items represent a unidimensional construct or group conceptually distinct dimensions.

In the Peruvian context, the questionnaire has been used in recent studies; however, there is as yet no research that has systematically examined its psychometric properties (Estrada-Araoz et al., 2024a; Estrada-Araoz et al., 2024b). Specifically, there is no evidence of its internal structure or reliability, as measured by any metric other than Cronbach's alpha, among Peruvian university students. This lack of information limits the robustness of inferences drawn from its use and highlights the need for a more comprehensive psychometric evaluation of the instrument in this context. Given that the instrument was originally developed in Portuguese, it is necessary to examine its psychometric performance with a Spanish adaptation for use in the Peruvian university context.

The questionnaire was originally developed to assess academic demands in the university environment that students may find difficult to cope with. Although it was not initially conceived as a psychometric scale with a predefined factorial structure, its items were designed to capture situations that may function as sources of academic stress. Based on these considerations, the present study aimed to analyze the psychometric properties of the Academic Stressors Questionnaire among Peruvian university students. Specifically, the study addressed the following research questions:

- Does the Spanish-adapted version of the Academic Stressors Questionnaire show adequate content validity?
- Does the questionnaire support a unidimensional structure in Peruvian university students?
- Does the questionnaire demonstrate measurement invariance across gender?
- Do the 12 items show adequate item performance and internal consistency?

METHOD

Design

The study employed a cross-sectional, instrumental design to assess the psychometric properties of a measurement instrument—in terms of validity and reliability—among a sample of university students at a single point in time (Ato et al., 2013). A cross-sectional approach was appropriate because the study evaluated psychometric performance rather than changes over time or causal relationships.

Participants

The sample consisted of 700 Peruvian university students. The majority of participants were women (57.6%), aged 18–46 years ($M = 21.33$; $SD = 4.18$). Furthermore, unemployed students

predominated (62.9%), as did those without a stable partner (79%) and those from the National Amazonian University of Madre de Dios (61%). The sample was selected using non-probability sampling, taking into account the criteria of accessibility and voluntary participation. Although the questionnaire contains only 12 items, a sample of 700 students was considered appropriate to obtain stable estimates of polychoric correlations, factor loadings, thresholds, and model fit indices in the confirmatory factor analysis conducted with ordinal data.

Instrument

To assess academic stressors, the questionnaire proposed by Carlotto et al. (2005) – originally developed in Portuguese – was used. The instrument consists of 12 items designed to identify situations within the university environment that students may experience as sources of stress. These items address aspects of academic workload, interpersonal relationships, the balance between studies and other areas of personal and social life, and the economic demands associated with university studies. In previous research, the questionnaire has been used with a unidimensional approach, which yields an overall score of perceived academic stressors (Estrada-Araoz et al., 2024a; Estrada-Araoz et al., 2024b). Responses are recorded using a five-point Likert scale, ranging from “no stress” to “too much stress”, allowing the intensity with which each situation is perceived as stressful to be estimated.

The questionnaire assesses a single construct, academic stressors, understood as demands inherent to the university environment that students may perceive as difficult to cope with. For descriptive purposes, the 12 items cover four content areas: academic workload and evaluation demands (items 1–3), group and interpersonal academic demands (items 4–6), role balance between study and other life domains (items 7–11), and economic demands related to study (item 12). These content areas are intended to describe the substantive coverage of the construct and do not imply a multidimensional structure.

The data collection procedure was organized into three sections. The first section included general information about the study and the informed consent form. The second section collected sociodemographic data, specifically gender, age, employment status, and relationship status. The third section comprised the questionnaire items. The questionnaire was administered online via Google Forms, which was shared through academic WhatsApp groups, facilitating access and participation among students.

Procedure

The questionnaire was translated from Portuguese into Spanish as part of the adaptation process for use with Peruvian university students, following procedures commonly used in the cross-cultural adaptation of self-report instruments. Two bilingual translators, native Spanish speakers, produced independent translations of the items. Subsequently, both versions were compared and synthesized into a single preliminary version, taking into account the semantic and conceptual equivalence of the items. This version underwent back-translation by an independent translator to verify its correspondence with the original. A group of specialists in academic stressors and psychometric assessment then reviewed the items, evaluating their

relevance and suitability within the Peruvian university context. Based on their observations, adjustments were made to the wording to improve clarity and comprehensibility, while endeavoring to maintain the original meaning of the items. This process ensured the instrument's linguistic and conceptual equivalence within the context of its application.

In the first stage, content validity was assessed through expert judgment, with the participation of seven university lecturers holding a PhD and with research experience in education and psychometrics. The number of judges is considered adequate for estimating Aiken's V coefficient and for obtaining stable judgments on item quality. The experts assessed each item for clarity, representativeness, and relevance using the format proposed by Ventura-León (2022), with a rating scale of 0 to 3 for each criterion. Based on these assessments, Aiken's V coefficients and their confidence intervals were calculated, enabling an estimate of the degree of agreement among the judges regarding the items' suitability for the construct under evaluation.

Data analysis

The data were processed and analyzed using R (version 4.3.3), primarily in RStudio (version 2025.05.1). The polycor package was used to estimate polychoric correlation matrices. The measurement model analysis was carried out using the lavaan, semPlot, and semTools packages, which enabled confirmatory factor analysis and the estimation of the internal consistency of the unidimensional model.

Firstly, a diagnostic analysis of the 12 items' behavior was conducted based on participants' responses. We calculated relative frequencies, means, standard deviations, the corrected item–total correlation, and item uniqueness (variance not explained by the common factor). Skewness and kurtosis were inspected to assess the response distribution. Furthermore, the potential impact on internal consistency after removing each item was analyzed. Secondly, polychoric correlations between the items were assessed, given the ordinal nature of the rating scale, to examine the strength of associations among the items and the appropriateness of estimating a common factor model.

Thirdly, the internal structure was assessed using confirmatory factor analysis (CFA) to test the proposed unidimensional model empirically. The analysis evaluated the fit of the unidimensional model within the educational context of university students in Peru. Due to the ordinal nature of the items, the Weighted Least Squares Mean and Variance Adjustment (WLSMV) estimator was chosen, as it is appropriate for ordinal variables and robust to non-normality.

The items were treated as ordinal variables and analyzed using polychoric correlations and the WLSMV estimator, which does not assume multivariate normality. Because the internal structure was evaluated through confirmatory factor analysis with a theoretically specified model, KMO and Bartlett's test were not deemed essential. The fit of the proposed model was assessed based on the chi-square (χ^2) fit index, the comparative fit index ($CFI \geq 0.95$), the Tucker-Lewis index ($TLI \geq 0.95$), Root Mean Square Error of Approximation ($RMSEA \leq 0.06$), and

Standardized Root Mean Square Residual ($SRMR \leq 0.08$), as proposed by Hu and Bentler (1999). Measurement invariance across gender was subsequently evaluated through multigroup confirmatory factor analysis. Configural, metric, scalar, and strict invariance were examined sequentially. Invariance was considered supported when changes in the comparative fit index (ΔCFI) were ≤ 0.01 and changes in the root mean square error of approximation ($\Delta RMSEA$) were minimal across nested models.

Finally, the instrument's internal consistency measures were estimated using the ordinal alpha ($\alpha > 0.70$) and ordinal omega ($\omega > 0.70$) coefficients, based on the nature of the items (ordinal) and in accordance with the recommendations of Ventura-León & Caycho (2017).

Ethical considerations

The research was conducted in accordance with ethical principles for research involving human subjects, in compliance with confidentiality standards and the provisions of the Declaration of Helsinki. Prior to data collection, participants received clear and sufficient information about the study's objectives, procedures, and scope, as well as the voluntary nature of their participation and the protection of their information. All participants gave their informed consent prior to inclusion in the study, with anonymity guaranteed and the data used exclusively for academic and scientific purposes.

RESULTS

Table 1 (see Appendix) presents the original Portuguese wording and the Spanish adaptation of the items from the Academic Stressors Questionnaire used in this study. Overall, the linguistic adaptation maintained semantic equivalence to the original version, with no substantial changes to the items' content.

Table 2 (see Appendix) presents Aiken's V coefficients and their 95% confidence intervals for the criteria of relevance, representativeness, and clarity. Overall, the items achieved V point estimates above 0.75, exceeding the recommended cutoff of 0.70 and providing favorable initial evidence based on the instrument's content. Item 10 obtained the highest value for relevance ($V = 0.95$; 95% CI: 0.64–1.00) and representativeness ($V = 1.00$; 95% CI: 0.70–1.00), demonstrating an adequate correspondence with the construct being assessed. In terms of clarity, items 1 and 12 had the highest values ($V = 1.00$; 95% CI: 0.70–1.00) and were considered the most comprehensible by the expert judges.

According to Table 3 (see Appendix), the 12 items in the questionnaire show a higher concentration of responses around the mid-range values of the Likert scale (2 and 3), suggesting a balanced distribution without extreme response biases. The mean for the items ranges from 2.07 (EA6) to 3.25 (EA1), with standard deviations ranging from 0.98 to 1.17. Regarding the corrected item–total correlation, scores ranged from 0.51 to 0.69, indicating adequate item–total discrimination and a substantial contribution of each item to the overall construct. The uniqueness coefficients were moderate ($\psi = 0.46$ to 0.71), indicating that a substantial proportion of the items' variance was attributable to the common latent factor. Skewness and

kurtosis remained between -1 and +1, suggesting no extreme deviations in the data distribution. Finally, the conditional reliability analysis indicates that removing any item does not substantially improve the instrument's internal consistency.

The polychoric correlation matrix for the instrument items shows moderate to high correlations, with values ranging from 0.21 to 0.73, most of which exceed the minimum threshold of 0.30 (Table 4). Furthermore, no excessively high correlations indicating redundancy between items were identified, as none exceeded 0.85. These results support the validity of examining a common factor model for the instrument.

The analysis of the internal structure showed that the unidimensional model fits the data reasonably well (Figure 1). The incremental fit indices were high (CFI = 0.982; TLI = 0.978), indicating good incremental fit. The SRMR (0.064) was below the conventional cutoff of 0.08, indicating an acceptable model fit. The RMSEA value (0.096) exceeded the conventional cutoff of 0.08, suggesting a limitation in absolute fit. However, this index should be interpreted with caution, as the RMSEA may overestimate the approximation error in models with few degrees of freedom or in relatively simple structures, especially when ordinal variables and WLSMV estimation are used (Kenny et al., 2015; Shi & Maydeu-Olivares, 2020). In this regard, the assessment of model fit should not be based on a single indicator, but on the convergence of multiple indices (Xia & Yang, 2019). In the present study, the consistency of the incremental indices, together with moderate to high factor loadings (0.59–0.80), suggests the presence of a common latent dimension underlying the instrument's items. However, the variability observed among the items may reflect heterogeneity in the construct being assessed; therefore, the model should be interpreted with caution.

Measurement invariance across gender was examined through multigroup confirmatory factor analysis (Table 5). The results supported configural, metric, scalar, and strict invariance, as changes in the comparative fit index ($\Delta\text{CFI} = 0.00$) and root mean square error of approximation ($\Delta\text{RMSEA} = 0.00\text{--}0.01$) remained within recommended thresholds across nested models. These findings indicate that the questionnaire functions equivalently among male and female students and provide additional evidence of the instrument's stability across gender groups.

Overall, the item analysis, confirmatory factor analysis, and reliability estimates indicated that all 12 items showed adequate psychometric performance. Therefore, all items were retained in the adapted version of the questionnaire, and no substantial revisions were considered necessary at this stage.

DISCUSSION

This study aimed to analyze the psychometric properties of the Academic Stressors Questionnaire among Peruvian university students, addressing the need for a psychometrically robust instrument to assess stress-related demands in the university context accurately. In a highly demanding academic environment (Allsopp et al., 2025), the findings of this study provide

initial empirical evidence for representing academic stressors as a global construct using a unidimensional model. However, this interpretation should be treated with caution.

Regarding content validity, the results provide evidence based on expert judgment, as assessed using Aiken's *V* coefficient. Overall, the items showed adequate point estimates for relevance, representativeness, and clarity. However, because the lower bounds of some 95% confidence intervals fell below the minimum acceptable criterion of 0.70, the evidence regarding the correspondence between the items and the construct of academic stressors should be interpreted with caution (Aiken, 1980). Furthermore, the assessment of clarity indicates that the items are comprehensible to the university population for whom the instrument is intended, in accordance with the methodological criteria proposed by Ventura-León (2022). These findings provide initial evidence that the questionnaire's content is relevant and conceptually consistent for assessing academic stressors in the Peruvian university context.

Regarding the internal structure of the questionnaire, the results provide favorable evidence for a unidimensional solution comprising 12 items. The observed polychoric correlations and standardized factor loadings, of moderate to high magnitude, suggest that the items are consistently related to the latent factor being assessed. Furthermore, the incremental fit indices (CFI and TLI) were high, while the SRMR was close to acceptable values. These findings suggest the presence of a common latent dimension underlying the instrument's items. However, this interpretation should be treated with caution, given the limitations in the model's absolute fit.

It is worth noting that some items showed lower factor loadings than others, particularly the item referring to relationships with classmates (EA6). This finding could reflect that interactions with peers are not consistently perceived as a source of academic stress. Unlike academic workload or examination demands, relationships with classmates may vary substantially among students and, in many cases, be experienced as a source of social support rather than as a source of distress. This likely explains why this item shared less variance with the general factor of academic stressors.

Although most indicators showed a favorable fit, the RMSEA exceeded the conventional cutoff. This result should be analyzed alongside the other fit indices, as the RMSEA value can be influenced by factors such as the WLSMV estimation method, the ordinal nature of the items, and the model's degrees of freedom. It may overestimate the error in simple models. In this context, the model provides favorable, though not conclusive, evidence for a unidimensional solution in the analyzed university population.

The observed unidimensional structure is consistent with theoretical approaches that view academic stressors as demands inherent to the university context, which students may perceive as difficult to cope with (Carlotto et al., 2005; Wang et al., 2023). This interpretation aligns with studies indicating that academic stress does not depend solely on specific situations, such as exams or periods of heavy academic workload, but also on conditions within the university environment that persist over time and which students perceive as difficult to control

(De la Fuente et al., 2020; Zhao, 2024). The results also show similarities to previous research reporting adequate functioning of the 12 items of the questionnaire for assessing academic stressors (Carlotto et al., 2006; Gonçalves & Carlotto, 2024), as reflected in the high levels of reliability observed across the items.

Consistent with these findings, the psychometric properties and item variability indicated that the instrument functioned appropriately. These results are consistent with the literature, indicating that academic stressors do not have a uniform effect on all students (Barbayannis et al., 2022) but rather depend on the intensity, frequency, and accumulation of demands, as well as on the perceived resources available to cope with them (Lazarus & Folkman, 1984). The dispersion of responses observed on the scale suggests that the instrument is sensitive to capturing individual differences in the perception of academic demands.

These results are relevant in the Peruvian context, where the questionnaire has been used in recent studies without a systematic psychometric evaluation of its properties (Estrada-Araoz et al., 2024a; Estrada-Araoz et al., 2024b). The present study provides evidence that enables a clearer description of the instrument's internal structure, reliability, and overall performance among Peruvian university students. This evidence supports a more robust interpretation of the previously reported relationships between academic stressors and a range of indicators of academic and psychological adjustment.

Measurement invariance across gender provided additional evidence of the questionnaire's stability. The results supported configural, metric, scalar, and strict invariance, indicating that the instrument operates equivalently among male and female students. This finding suggests that the factor structure, factor loadings, thresholds, and residual variances are comparable across groups, allowing meaningful comparisons of scores between genders (Vandenberg & Lance, 2000). To the best of our knowledge, previous psychometric studies of instruments designed to assess academic stressors have rarely reported measurement invariance analyses. Therefore, these findings extend the existing evidence and support the use of the questionnaire in studies comparing academic stressors among university students by gender.

From a theoretical perspective, the results provide preliminary evidence consistent with the view of academic stressors as a predominantly unidimensional construct, linked to demands of the university environment that students may perceive as difficult to cope with. This interpretation aligns with approaches that emphasize the role of subjective experience of academic stress, in which the assessment of contextual conditions takes precedence over individual responses considered in isolation. Furthermore, the findings are consistent with proposals that focus the analysis on the characteristics of the academic environment and its structural demands (Bakker & Demerouti, 2017), suggesting the questionnaire's potential as a brief, consistent measure of academic stressors in higher education.

Limitations and future research directions

Firstly, the study's cross-sectional design does not allow evaluation of the stability of questionnaire scores over time or their sensitivity to change. Secondly, the sample consisted of Peruvian university students and was obtained through non-probability sampling, which restricts the generalization of the findings to other academic contexts and populations. Thirdly, although appropriate procedures for ordinal data were employed, alternative factor models were not tested, so it is not possible to determine whether the unidimensional structure provides the best fit to the analyzed data. Furthermore, measurement invariance was examined only across gender. Future studies should evaluate the instrument's equivalence across other relevant groups, such as employment status, relationship status, and institutional characteristics. Fourthly, theoretically related external variables were not incorporated, so there is no evidence of convergent validity or relationships with other variables. Furthermore, the use of self-reports may introduce biases related to social desirability and subjective assessments of academic demands.

Given these limitations, future research could incorporate longitudinal designs to assess the instrument's test-retest reliability and provide evidence of its predictive validity for indicators of academic and psychological adjustment. It would also be advisable to replicate the psychometric evaluation among university students in other regions of the country and in other Spanish-speaking contexts to assess how the measurement model performs across diverse educational settings. Furthermore, the application of approaches based on Item Response Theory would allow for a more detailed analysis of discrimination parameters and the information provided by each item across the continuum of the trait being assessed. It is also recommended that future studies examine measurement invariance across additional groups and educational contexts to further assess the instrument's stability.

Similarly, future research should incorporate external variables theoretically related to academic stressors (e.g., anxiety, academic burnout, or sleep quality) to provide evidence of convergent validity and relationships with other variables. Along these lines, subsequent studies could integrate the questionnaire into broader explanatory models, thereby deepening understanding of the conditions linked to the university experience.

CONCLUSIONS

The results of the study indicate that the Academic Stressors Questionnaire, in its adapted 12-item version, shows initial evidence of content and construct validity, as well as satisfactory levels of internal consistency among Peruvian university students. The analyses provide favorable evidence for a unidimensional structure, with moderate-to-high factor loadings and adequate indices of internal consistency.

However, the model's absolute fit suggests this structure should be interpreted with caution; therefore, the findings should be regarded as preliminary evidence requiring corroboration in future studies through the evaluation of alternative models, the examination of measurement invariance across additional groups, and the incorporation of other sources of

validity evidence. The linguistic adaptation enhances the semantic and contextual appropriateness of the items for use in the Peruvian university setting, thereby increasing their relevance. In this regard, the instrument can be considered a preliminary tool for studying academic stressors, provided that its psychometric properties are continued to be examined across diverse populations and contexts.

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APPENDIX

Appendix A. Spanish Version of the Academic Stressors Questionnaire

Instrucciones: A continuación, se presentan una serie de situaciones relacionadas con la vida universitaria que pueden generar estrés. Indique el grado de estrés que le produce cada una de ellas utilizando la siguiente escala de respuesta.

Escala de respuesta: 1 = Nada de estrés; 2 = Poco estrés; 3 = Estrés moderado; 4 = Bastante estrés; 5 = Mucho estrés.

1. Llevar muchos cursos.
2. Rendir exámenes y presentar trabajos académicos.
3. Realizar trabajos académicos fuera del horario de clases.
4. Realizar trabajos en equipo.
5. Relacionarme con los docentes.
6. Relacionarme con los compañeros.
7. Conciliar el trabajo y los estudios.
8. Conciliar los estudios y la familia.
9. Conciliar los estudios y las relaciones afectivas.
10. Conciliar los estudios y el tiempo de ocio.
11. Conciliar los estudios y las actividades de formación profesional.
12. Asumir costos económicos relacionados con los estudios.

Table 1.

Items from the Academic Stressors Questionnaire in Portuguese and Spanish

Items	Portuguese (original)	Spanish (adapted version)
1	Muitas disciplinas para cursar	Llevar muchos cursos
2	Realizar provas e trabalhos de aula	Rendir exámenes y presentar trabajos académicos
3	Realizar trabalhos extraclasse	Realizar trabajos académicos fuera del horario de clases
4	Realizar trabalhos em grupo	Realizar trabajos en equipo
5	Relação com professores	Relacionarme con los docentes
6	Relação com colegas	Relacionarme con los compañeros
7	Conciliar trabalho e curso	Conciliar el trabajo y los estudios
8	Conciliar estudo e família	Conciliar los estudios y la familia
9	Conciliar estudo e relacionamento afetivo	Conciliar los estudios y las relaciones afectivas
10	Conciliar estudo e lazer	Conciliar los estudios y el tiempo de ocio
11	Conciliar estudos e estágio profissional	Conciliar los estudios y las actividades de formación profesional
12	Custos econômicos relacionados ao curso	Asumir costos económicos relacionados con los estudios

Table 2*Aiken's V coefficients for assessing the relevance, representativeness and clarity of items*

Items	Relevance				Representativeness				Clarity			
	M	SD	V	CI	M	SD	V	CI	M	SD	V	CI
Item 1	2.43	0.53	0.81	0.48-0.95	2.86	0.38	0.95	0.64-1.00	3.00	0.00	1.00	0.70-1.00
Item 2	2.86	0.38	0.95	0.64-1.00	2.71	0.49	0.90	0.58-0.98	2.86	0.38	0.95	0.64-1.00
Item 3	2.71	0.49	0.90	0.58-0.98	2.86	0.38	0.95	0.64-1.00	2.71	0.49	0.90	0.58-0.98
Item 4	2.86	0.38	0.95	0.64-1.00	2.86	0.38	0.95	0.64-1.00	2.57	0.53	0.86	0.53-0.97
Item 5	2.71	0.49	0.90	0.58-0.98	2.57	0.53	0.86	0.53-0.97	2.43	0.79	0.81	0.48-0.95
Item 6	2.71	0.49	0.90	0.58-0.98	2.86	0.38	0.95	0.64-1.00	2.71	0.49	0.90	0.58-0.98
Item 7	2.86	0.38	0.95	0.64-1.00	2.57	0.53	0.86	0.53-0.97	2.29	0.76	0.76	0.44-0.93
Item 8	2.71	0.49	0.90	0.58-0.98	2.57	0.53	0.86	0.53-0.97	2.71	0.49	0.90	0.58-0.98
Item 9	2.57	0.53	0.86	0.53-0.97	2.71	0.49	0.90	0.58-0.98	2.57	0.53	0.86	0.53-0.97
Item 10	2.86	0.38	0.95	0.64-1.00	3.00	0.00	1.00	0.70-1.00	2.71	0.49	0.90	0.58-0.98
Item 11	2.71	0.49	0.90	0.58-0.98	2.86	0.38	0.95	0.64-1.00	2.43	0.79	0.81	0.48-0.95
Item 12	2.71	0.49	0.90	0.58-0.98	2.57	0.53	0.86	0.53-0.97	3.00	0.00	1.00	0.70-1.00

Note: M= mean, SD= standard deviation, CI= confidence intervals, V= Aiken's V.

Table 3.*Descriptive analysis of the items*

Items	Frequency					M	SD	CHI	ψ	g^1	g^2	If removed	
	1	2	3	4	5							$\alpha_{Cronbach}$	$\omega_{McDonald}$
EA1	4.57	14.71	42.43	27.86	10.43	3.25	0.98	0.52	0.70	-0.14	-0.20	0.89	0.89
EA2	8.29	22.14	44.57	18.71	6.29	2.93	0.99	0.57	0.65	0.03	-0.20	0.89	0.89
EA3	15.00	35.43	29.57	15.14	4.86	2.59	1.07	0.54	0.68	0.36	-0.48	0.89	0.89
EA4	15.57	33.86	28.43	17.29	4.86	2.62	1.09	0.60	0.61	0.30	-0.63	0.89	0.89
EA5	35.14	33.29	22.43	6.00	3.14	2.09	1.05	0.58	0.63	0.81	0.13	0.89	0.89
EA6	34.86	36.14	19.43	6.43	3.14	2.07	1.04	0.51	0.71	0.88	0.29	0.89	0.89
EA7	16.00	25.14	30.71	20.00	8.14	2.79	1.17	0.64	0.54	0.12	-0.82	0.88	0.88
EA8	17.43	29.14	28.86	17.43	7.14	2.68	1.16	0.69	0.46	0.25	-0.75	0.88	0.88
EA9	20.29	31.29	29.43	13.43	5.57	2.53	1.12	0.68	0.47	0.38	-0.56	0.88	0.88
EA10	20.57	32.86	26.57	14.57	5.43	2.51	1.13	0.68	0.47	0.40	-0.61	0.88	0.88
EA11	15.29	34.29	31.57	14.86	4.00	2.58	1.04	0.66	0.51	0.31	-0.47	0.88	0.88
EA12	13.00	26.29	30.86	20.71	9.14	2.87	1.16	0.59	0.61	0.11	-0.78	0.89	0.89

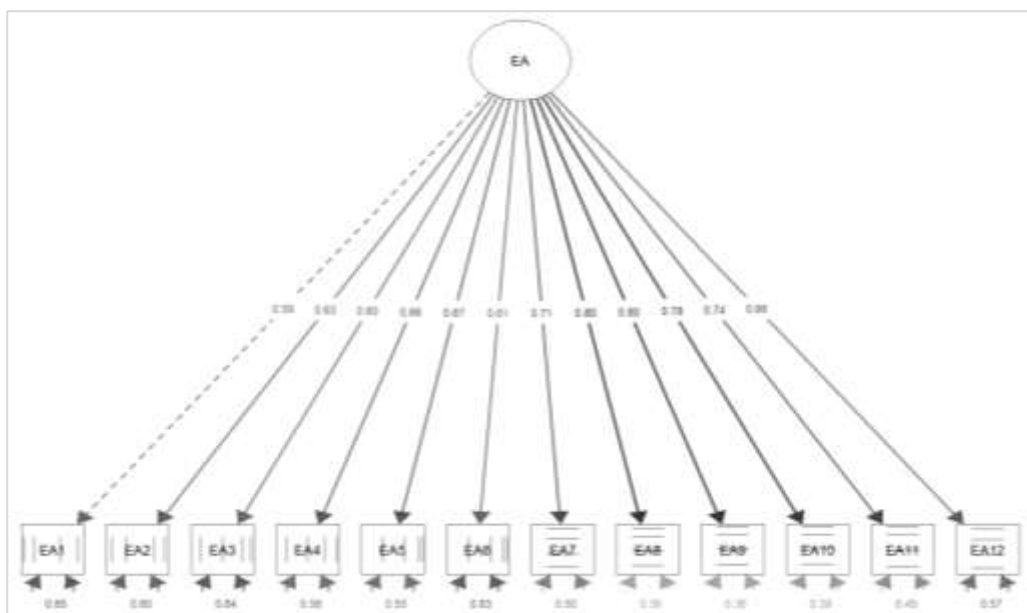
Note: CHI= corrected homogeneity index, ψ = uniqueness, g^1 = skewness, g^2 = kurtosis.**Table 4.***Correlations between items in the Academic Stressors Questionnaire*

Items	EA1	EA2	EA3	EA4	EA5	EA6	EA7	EA8	EA9	EA10	EA11	EA12
EA1	-	-	-	-	-	-	-	-	-	-	-	-
EA2	0.58	-	-	-	-	-	-	-	-	-	-	-
EA3	0.36	0.39	-	-	-	-	-	-	-	-	-	-

EA4	0.42	0.45	0.52	-	-	-	-	-	-	-	-	-
EA5	0.32	0.48	0.42	0.48	-	-	-	-	-	-	-	-
EA6	0.21	0.35	0.40	0.55	0.61	-	-	-	-	-	-	-
EA7	0.45	0.41	0.42	0.44	0.45	0.35	-	-	-	-	-	-
EA8	0.40	0.44	0.40	0.46	0.46	0.41	0.62	-	-	-	-	-
EA9	0.41	0.42	0.41	0.43	0.44	0.40	0.56	0.73	-	-	-	-
EA10	0.43	0.47	0.43	0.46	0.54	0.43	0.51	0.60	0.69	-	-	-
EA11	0.40	0.39	0.42	0.43	0.45	0.39	0.55	0.63	0.61	0.65	-	-
EA12	0.46	0.43	0.44	0.43	0.39	0.33	0.52	0.53	0.49	0.45	0.50	-

Figure 1.

Model path diagram, goodness-of-fit indices and reliability.



Note: $\chi^2 = 403.521$, $df=54$, $SRMR = 0.064$, $RMSEA=0.096$, $TLI=0.978$, $CFI = 0.982$, $\alpha_{ordinal}= 0.91$, $\omega_{Ordinal} = 0.91$.

Table 5.

Measurement invariance of the Academic Stressors Questionnaire across gender

Models	$\chi^2(df)$	p	RMSEA (90% CI)	SRMR	TLI	CFI	ΔCFI	$\Delta RMSEA$
M1	455.428(108)	0.000	0.096 (0.087-0.105)	0.07	0.98	0.98		
M2	543.241(154)	0.000	0.085 (0.077-0.093)	0.07	0.98	0.98	0.00	0.01
M3	543.241(154)	0.000	0.085 (0.077-0.093)	0.07	0.98	0.98	0.00	0.00
M4	543.241(154)	0.000	0.085 (0.077-0.093)	0.07	0.98	0.98	0.00	0.00

Note. M1 = configural invariance; M2 = metric invariance; M3 = scalar (strong) invariance; M4 = strict invariance.