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Adaptation, validation, and reliability of the online learning readiness scale for undergraduate EFL students in Peru

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Abstract

The need to assess students' readiness for virtual environments has been highlighted by the rapid digital transformation of higher education. Therefore, this study aimed to translate, culturally adapt, and validate the Spanish version of the Online Learning Readiness Scale (OLRS) to assess undergraduate English as a Foreign Language (EFL) students' readiness for online learning. The TRAPD method was used to translate and culturally adapt the scale without significantly altering it, thereby ensuring semantic, conceptual, and cultural equivalence through forward translation and expert review. A total of 1,159 undergraduate English as a Foreign Language (EFL) students enrolled at Peruvian Union University participated in the study. Confirmatory factor analysis supported a five-dimensional model (CIS: Computer/Internet self-efficacy; SDL: Self-directed learning; LC: Learner control; MFL: Motivation for learning; OCS: Online communication self-efficacy) with 18 adequate items and confirmed factorial invariance across gender, demonstrating that the scale is structurally equivalent for male and female students. The results of exploratory factor analysis also supported the Spanish version of the OLRS, showing acceptable understandability, internal consistency, and reliability across all dimensions for measuring undergraduate English as a Foreign Language (EFL) students' readiness for online learning. Therefore, this research presents a new scale for the Spanish-speaking population in South America that evaluates readiness for online learning in English courses.

Keywords: Adaptation, Factorial invariance, OLRS, Online learning readiness, Reliability, Scale, Validation.

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Contribution of this paper to the literature

This study provides a culturally adapted, psychometrically validated, and reliable Spanish version of the Online Learning Readiness Scale (OLRS) for undergraduate EFL Students in South America. Confirming its five-factor structure and its gender invariance, and offering a trustworthy instrument for evaluating readiness for online learning in Spanish-speaking higher education contexts.

1. Introduction

The rapid integration of digital technologies into higher education has drawn attention to the increasing need for measuring the level of readiness of students for online learning. And, during COVID-19 pandemic, online learning has become the only possible way of conducting in-person instruction in many educational institutions to ensure educational continuity (Turnbull, Chugh, & Luck, 2021). In turn, information and communication technology (ICT) development has transformed the processes of education on a global scale and provided an opportunity for people to engage in online education, thus influencing education and training (Timotheou et al., 2023). Therefore, online learning has become especially important in the educational process, maintaining its value and significance in the future due to the ability to communicate and interact in a virtual space between students and instructors (Aristovnik, Karampelas, Umek, & Ravšelj, 2023).

However, its successful sustainability depends on instructors' expertise, students' readiness, as well as supportive conditions that facilitate engagement and teaching continuity (Yang & Xu, 2023). Above all, students' readiness has become a central component in successful online education (Reyes-Millán et al., 2023). Thus, the Online Learning Readiness Scale (OLRS) has proven to have acceptable psychometric properties in Asia and other non-Spanish-speaking contexts (Hung, Chou, Chen, & Own, 2010), with important components such as computer and Internet self-efficacy, self-directed learning, learner control, motivation for learning, and online communication self-efficacy. Yet, the validity and cultural adaptation of OLRS among Spanish-speaking undergraduates remains underexplored, especially among those who study English as a Foreign Language (EFL) in South America. Therefore, it is essential to address this gap validating and translating the Spanish version of the OLRS, with its possible linguistic, cultural, and educational differences on the perception and response of students to the items of the readiness assessment scale.

In light of this, the present study aimed to translate, culturally adapt and validate the Spanish version of the Online Learning Readiness Scale (OLRS), its content and construct validity, measurement invariance across gender, and the internal consistency reliability, contributing both theoretically and practically to the sustainable implementation of EFL online learning in higher education.

2. Literature Review

Online learning readiness has different concepts across the literature because of differences in various settings, groups, and the aspects considered to define and operationalize the construct. These differences are evident in earlier research, which can be outlined as follows:

Watkins, Leigh, and Triner (2004) developed a self-evaluation criterion for personnel in the U.S. Coast Guard to assess how much they thought online learning could help them reach their own goals. They figured readiness had to do with how well people could use technology and their skills, their ability to connect with others online, their motivation, how much they engaged with digital content, and whether they participated in talks and group work. Similarly, Hung et al. (2010); Pillay, Irving, and Tones (2007); Smith, Murphy, and Mahoney (2003) and Yurdugül and Demir (2017) working with undergraduate students in Australia, the United States and Australia, Taiwan, and Turkey, respectively, highlighted complex aspects of readiness. They involved factors like technical competence, computer and Internet self-efficacy, learner autonomy, self-management, learner control, online communication efficacy, motivational dispositions, preferences, and attitudes toward technology.

Each of these studies recognizes the multidimensionality of the construct and acknowledges considerable variance between the specified dimensions. While later constructs have gradually included the aspects of self-regulation and motivational elements (Hung et al., 2010; Yurdugül & Demir, 2017), the earlier ones focus mainly on issues related to technology availability and technical competencies (Watkins et al., 2004). Differences in the conceptualization of the discussed construct imply that the concept of online learning readiness is not a clearly defined one and thus can be assessed differently depending on the context.

Furthermore, online learning readiness could be redefined by integrating the aspects discussed in research as a complex concept of a multidimensional construct linked to learners' technological competencies and their capacity to learn independently (Reyes-Millán et al., 2023), which emphasizes the role of readiness in reinforcing student success in online settings. Consequently, current empirical studies have shown that instruments for assessing readiness for online learning can maintain high levels of validity and reliability when adapted to different educational settings (Hernández-Gutiérrez, García-Minjares, & Sánchez-Mendiola, 2025; Vo, Nguyen, & Power, 2024).

Thus, online learning has become an integral part of higher education structures in the world, particularly since the time of the COVID-19 pandemic, which made the transition towards digitalization of learning processes and enhanced the reliance on online learning environments (Aristovnik et al., 2023; Timotheou et al., 2023). In this regard, the education of English as a foreign language (EFL) has increasingly become online or blended, requiring learners to participate in digital communication, self-directed study, and technology-based interactions (Yang & Xu, 2023).

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The issues related to readiness for online learning include computer/internet self-efficacy, self-directed learning, learner control, motivation, and online communication self-efficacy. It is necessary to stress that the above-listed aspects become especially significant in the case of online English learning due to the importance of such aspects as interaction, collaboration, and self-directed learning (Hung et al., 2010). The inability of students to be ready to participate in online learning may lead to poor engagement, decreased self-confidence in online communication, as well as negative outcomes in the language learning process (Watkins et al., 2004; Yang & Xu, 2023). Therefore, in this case, it becomes vital to adapt and validate an instrument measuring the readiness for online learning in the context of Peruvian undergraduate students in terms of EFL, particularly those who participate in online English courses. Development of the reliable and validated scale will help the educational institutions to assess the readiness of the students to learn the language via digital methods and implement certain strategies to improve their technical and self-management skills (Reyes-Millán et al., 2023; Timotheou et al., 2023).

Operationalizing online learning readiness into multiple dimensions reflects learners' capacity to be successful in online learning environments. The computer/internet self-efficacy measures the level of confidence learners have in using important technological tools in online learning. These include proficiency in essential Microsoft Office applications, using digital tools to organize their learning process and the capability to retrieve information from the Internet (Kuo, Tseng, & Kuo, 2020). Self-directed learning relates to the ability of learners to plan, manage and continue with their learning through planning, help-seeking, time-management, goal-setting and maintaining high academic standards (Shao, Hong, & Zhao, 2022). Learner control refers to the capacity to monitor one's progress in an online environment, reducing distractions and revisiting learning materials when necessary, which is an aspect of self-regulated learning (Xu, Zhao, Liew, Zhou, & Kogut, 2023). Motivation for learning refers to the intrinsic trait that keeps individuals active in online spaces. This is characterized by openness to new ideas, being willing to learn, resilience to failures and the desire to exchange ideas with others (Elshareif & Mohamed, 2021). Finally, online communication self-efficacy refers to the ability of students to communicate effectively through the Internet. This comprises using email and asking or making queries in appropriate online forums or tasks. It also includes the ability to express emotions and humour through text. Previous research confirms the significance of this dimension for online readiness and engagement (Yasin, Ong, & Aziz, 2020).

In general, research proves that online learning readiness is a multidimensional construct involving technological self-efficacy, self-regulated learning, motivation, control, and online communication skills. Research agrees that online learning readiness is a multidimensional construct covering technological self-efficacy, self-directed learning, motivational disposition, learner control, and online communication competence (Reyes-Millán et al., 2023; Zou, Kuek, Feng, & Cheng, 2025). Research evidence shows that these factors play a significant role in predicting engagement, satisfaction, and academic achievement when learning online in higher education environments (Sharif Nia et al., 2023; Xu et al., 2023). This is of great importance in online English courses because successful participation involves consistent motivation and regulation in an online environment (Yang & Xu, 2023).

Despite the many validation studies carried out in the past that show that the tests contain appropriate psychometric qualities, there is no question about the significant methodological variation existing among the various studies. There could be an influence on the factor structures and item performance resulting from the various cultural contexts, educational levels, academic fields, and testing methods used in the various studies. This implies that there should be no assumption that results from one set of circumstances will be relevant to another or generalized. This issue becomes extremely crucial when dealing with EFL education and online learning.

Therefore, psychometric validation in certain cultural and academic settings becomes necessary in order to validate the instrument with respect to construct validity and reliability (Reyes-Millán et al., 2023). In the Peruvian higher education setting, especially in the case of online English language programs, there is limited availability of empirical literature on psychometrically valid scales that have been designed specifically for measuring online learning readiness among undergraduate students who learn English as a foreign language (EFL), making it difficult to carry out research and assessment related to their online learning readiness. In light of the above, the current research attempts to validate the Online Learning Readiness Scale among EFL undergraduate students in Peru.

3. Methodology

3.1. Research Design

The research employed a quantitative research design focused on the adaptation, validation, and reliability testing of the Online Learning Readiness Scale (OLRS) for undergraduate English as a Foreign Language (EFL) students in Peru. Starting with a qualitative phase to adapt the instrument using the TRAPD method (Translation, Review, Adjudication, Pretesting, and Documentation) as outlined by Harkness, Pennell, and Schoua-Glusberg (2004). This method has been considered more robust than traditional back-translation methods because of its specific design to translate surveys and scales in cross-cultural studies. Therefore, this qualitative phase ensured the scale's cultural and linguistic relevance. Then, a quantitative phase followed to assess the construct validity and reliability of the adapted scale using exploratory and confirmatory factor analysis with its internal consistency measures (e.g., Cronbach's alpha) and factorial invariance across gender (DeVellis, 2017; Nunnally & Bernstein, 1994). These phases are essential to establish the instrument's psychometric properties and to confirm its effectiveness in measuring online learning readiness for undergraduate EFL students in the Peruvian context.

Hence, content validity evidence was established through a cross-cultural adaptation process consistent with the TRAPD method by Harkness et al. (2004) where first, the initial Spanish translation of the instrument was carried out by the researcher, a lecturer with a specialization in Linguistics and English. Second, the translated version was reviewed by another specialist in English and a native speaker of Spanish, who examined its semantic, idiomatic, and conceptual equivalence and introduced lexical and terminological updates where needed. Third, the revised version was subjected to a final cross-cultural linguistic review and adjudication by a linguist specialized in Spanish semantics in order to ensure semantic equivalence, lexical adequacy, and clarity. Then, the consensus version was then administered for pretesting with five undergraduate EFL students over 18 years of age to assess the comprehensibility and linguistic adequacy of the adapted items. All participants stated that the items were clear and understandable, and no further modifications were required. Finally, all decisions made at each stage were documented as shown in the annexes 2, 3 and 4 to guarantee transparency and replicability of the process in future

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research; all of this procedure was done to ensure that the Spanish version of the instrument retains its semantic, conceptual, and functional validity within the Spanish-speaking educational context.

In addition, the translation and cultural adaptation of the Online Learning Readiness Scale followed international guidelines (Beaton, Bombardier, Guillemin, & Ferraz, 2000), where the process also included forward translation, expert panel review, back-translation, and pilot testing with undergraduate EFL students to ensure semantic, conceptual, and cultural equivalence.

In the validation phase, an Exploratory Factor Analysis (EFA) was conducted, followed by a Confirmatory Factor Analysis (CFA) to test the validity and reliability characteristics of the scores obtained from the OLRS. This included content and construct validity as well as internal consistency reliability, as described by DeVellis (2017).

3.2. Sampling Design

The strategy for the quantitative sampling is non-probabilistic: purposive sampling (Creswell, 2012), where the sample consists of 1159 Peruvian undergraduate EFL students from the Language Center of the Peruvian Union University across its three campuses: Lima, Juliaca, and Tarapoto. These students were enrolled in courses with a virtual learning component. The inclusion criteria included students over 18 years old and being officially enrolled during the academic term (summer 2025) in which the study was conducted, having experience with at least one month of online or virtual learning course, and voluntarily agreeing to participate by providing informed consent. Whereas, the exclusion criteria involved students under 18 years of age, failing to complete the questionnaire in its entirety, providing inconsistent or patterned responses that could compromise data quality, and lacking experience in online learning environments (in-person classes), as this condition would prevent an adequate assessment of the study variables. Subsequently, the distribution of the sample was as shown in the following Table 1.

Table 1. Distribution of the Research Sample.

Campus	Number of students
Lima	316
Juliaca	429
Tarapoto	414

To determine a sample size with a 95% confidence level and a 5% margin of error, the following formula was used (Arifin, 2013).

Where:

- z = 1.96 is the Z-value corresponding to a 95% confidence level.
- $\hat{p}$ = 0.5 is the expected proportion of the population (0.5 is used when no prior information is available).
- ε = 0.05 is the desired margin of error (5%).

Substituting the values into the formula:

$$n = \frac{z^2 \times \hat{p}(1-\hat{p})}{\varepsilon^2}$$

$$n = \frac{1.96^2 \times 0.5(1-0.5)}{0.05^2} = 384.16$$

Therefore, the required sample size is 384 individuals.

Since a sample of 1159 individuals is available, this sample is sufficient to ensure that the results are accurate within a 5% margin of error and with a 95% confidence level.

3.3. Data Collection Techniques

The data collection process was carried out in different stages virtually as follows:

First, permission was obtained from the director of the Language Center at Peruvian Union University to survey the students through a letter explaining the purpose of the research. After approval was obtained, the scale was developed on the Google Forms platform. Subsequently, data were collected between February 18 and February 27, 2025. During this period, the researcher personally entered the students' virtual classrooms, with prior authorization from the institutional authorities, to explain the purpose of the study and invite participants to complete the data collection form. The instrument was shared online via a link in WhatsApp groups. The data were collected using an online questionnaire administered through Google Forms. The questionnaire consisted of two sections. The first section presented the informed consent information, including the study objectives, relevant ethical considerations, and a statement regarding the confidentiality of the information provided. Participants were required to indicate their informed consent electronically before proceeding to the second section, which contained the Online Learning Readiness Scale. Furthermore, participants who had questions about any item were provided with an email address where they could seek clarification. After completing the forms, all students were thanked for their participation.

3.4. Statistical Techniques for Data Processing

This research employed descriptive and inferential statistical techniques. First, normality was assessed to understand the distribution of the data. Then, the Statistical Package for the Social Sciences (SPSS) was used to conduct the exploratory factor analysis (EFA), whereas the R Project for Statistical Computing was used to conduct the confirmatory factor analysis (CFA). Both analyses tested the validity and reliability of the scores obtained from the Online Learning Readiness Scale (OLRS). Regarding the sample size for each factor analysis, Hambleton (2005) recommended retaining the full sample (N = 1,159) for both factor analyses in cross-cultural instrument adaptation. Because the study aimed to examine the validity of a factorial structure previously established and validated in English, cross-validation through sample splitting was not considered necessary. This procedure supported the stability of the model fit indices (CFI, TLI, and RMSEA) in the local context by maximizing statistical power and enabling more accurate parameter estimates (Brown, 2015).

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3.5. Ethical Considerations

Approval from the Ethics Committee of the Peruvian Union University N° 2025-CEUPeU-005, within the Graduate School of Education, was obtained, along with informed consent from the participants involved in the study. Once their approval was registered, the questionnaires were administered at the Language Centre of the Peruvian Union University. Subsequently, the responses were analysed for evaluation. All procedures were carried out in agreement with the ethical principles established in the Declaration of Helsinki, where confidentiality and anonymity of the data were ensured throughout the research process.

4. Results

Reliability and validity: To determine the reliability and validity of this research, first, Standard Deviation, Skewness, and Kurtosis Tests were conducted. Then, to test the Reliability of this research, Cronbach´s Alpha was checked. Finally, Exploratory Factor Analysis with Varimax Rotation was tested using the Likert scale variables to verify the dimensions of this study.

First, Standard deviation (Variation of dispersion), Skewness (Measure of symmetry), and Kurtosis (Normal distribution) were analysed for each one of the dimensions of the scale as follows:

Table 2. Descriptive Statistics.

Descriptive Statistics									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
AUCI1	1159	1	5	3.96	1.023	-1.116	0.072	1.086	0.144
AUCI2	1159	1	5	4.03	0.966	-1.256	0.072	1.756	0.144
AUCI3	1159	1	5	3.73	1.033	-0.734	0.072	0.235	0.144
AA1	1159	1	5	3.77	0.961	-0.921	0.072	0.915	0.144
AA2	1159	1	5	3.82	0.990	-0.930	0.072	0.753	0.144
AA3	1159	1	5	3.67	0.963	-0.660	0.072	0.357	0.144
AA4	1159	1	5	3.83	0.947	-1.003	0.072	1.226	0.144
AA5	1159	1	5	3.82	0.986	-1.017	0.072	1.025	0.144
CA1	1159	1	5	3.68	0.940	-0.820	0.072	0.842	0.144
CA2	1159	1	5	3.37	1.015	-0.402	0.072	-0.109	0.144
CA3	1159	1	5	3.68	0.969	-0.865	0.072	0.736	0.144
MPA1	1159	1	5	3.97	0.954	-1.243	0.072	1.811	0.144
MPA2	1159	1	5	3.94	0.958	-1.153	0.072	1.510	0.144
MPA3	1159	1	5	4.01	0.933	-1.236	0.072	1.888	0.144
MPA4	1159	1	5	3.92	0.964	-1.054	0.072	1.257	0.144
ACL1	1159	1	5	3.82	1.003	-0.883	0.072	0.643	0.144
ACL2	1159	1	5	3.73	0.990	-0.764	0.072	0.528	0.144
ACL3	1159	1	5	3.70	1.015	-0.775	0.072	0.463	0.144
Valid N (Listwise)	1159								

Table 2 shows that the values have a normal distribution, as accepted within ±2, as stated by Brown (1982). The SD implies Gaussian data, so 99% of the values fall within ± 2.58 SDs of the mean. The values of skewness and kurtosis fall within the acceptable range of ±1.5 and the tolerable range of ±2, as proposed by George and Mallery (2024) indicating a normal distribution of the data.

Secondly, the reliability statistics of the instrument were tested as follows:

Table 3. Reliability.

Reliability Statistics		
Dimension	**Cronbach´s Alpha**	**No. of Items**
AUCI	0.861	3
AA	0.928	5
CA	0.868	3
MPA	0.944	4
ACL	0.925	3
Scale	0.967	18

As exposed on Table 3 Cronbach´s Alpha ranges between 0.861 and 0.944 in the dimensions and the full scale reaches 0.967, all of which are acceptable according to Cronbach (1951) who alleged as excellent values of $\alpha \geq 0.9$.

Thirdly, Exploratory Factor Analysis with Varimax Rotation was tested to verify the scale as follows:

Table 4. KMO and Bartlett´s Test.

KMO and Bartlett´s Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.966
Bartlett´s Test of Sphericity	Approx. Chi-Square	20364.001
	df	153
	Sig.	0.000

On Table 4 of KMO and Bartlett´s test the result is higher than 0.5 which indicates that there is a proportional variance and is valid; hence it is possible to say that this sample is adequate for further analysis. Besides, as the Sig. is 0.000 and is less than 0.5, it means that this test is significant.

In Table 5, the communalities test shows that the extractions are above 0.5, which means that the variables are better explained by the factors. So, as all the items are strongly associated with their component, no elimination or

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redistribution was made. Regarding uniqueness, values ranged from 0.159 to .503, indicating that most items were adequately represented by the extracted factors. Hair, Babin, Anderson, and Black (2019) suggested a communality criterion of approximately 0.50 or higher as an adequate item representation; therefore, uniqueness values of approximately 0.50 or lower are considered acceptable. This suggests that these items fit well with the factor model and are strongly related to the underlying constructs represented by the factors.

Table 5. Communalities and Uniqueness EFA.

Communalities			**Uniqueness**
	Initial	**Extraction**	
AUCI1	0.674	0.748	0.252
AUCI2	0.715	0.830	0.170
AUCI3	0.459	0.497	0.503
AA1	0.727	0.779	0.221
AA2	0.619	0.642	0.358
AA3	0.688	0.719	0.281
AA4	0.770	0.825	0.175
AA5	0.705	0.716	0.284
CA1	0.697	0.714	0.286
CA2	0.579	0.761	0.239
CA3	0.694	0.741	0.259
MPA1	0.792	0.817	0.183
MPA2	0.793	0.840	0.160
MPA3	0.791	0.841	0.159
MPA4	0.755	0.768	0.232
ACL1	0.765	0.817	0.183
ACL2	0.723	0.789	0.211
ACL3	0.752	0.831	0.169
Extraction Method: Principal Component Analysis.			

The exploratory factor analysis (EFA) was conducted using Principal Axis Factoring with Direct Oblimin rotation and Kaiser normalization. A five-factor solution was forced according to the theoretical structure of the instrument. The rotated pattern matrix revealed that the items were generally grouped according to their corresponding theoretical dimensions.

Table 6. Pattern Matrix for EFA (Principal Axis Factoring with Oblimin Rotation).

Pattern Matrix[a]					
	Factor				
	1	**2**	**3**	**4**	**5**
AUCI1	0.052	0.821	0.011	-0.020	-0.003
AUCI2	-0.018	0.887	0.046	-0.058	0.061
AUCI3	-0.006	0.705	-0.058	0.033	-0.027
AA1	0.866	0.037	-0.026	-0.015	-0.065
AA2	0.688	0.073	-0.106	-0.027	-0.070
AA3	0.775	0.024	-0.048	0.113	0.150
AA4	0.838	-0.023	0.072	-0.135	0.044
AA5	0.523	0.039	-0.066	-0.187	0.118
CA1	0.222	0.202	-0.077	-0.155	0.344
CA2	-0.001	0.046	-0.076	0.010	0.811
CA3	0.198	-0.006	-0.015	-0.270	0.503
MPA1	0.065	0.129	-0.012	-0.739	0.009
MPA2	0.002	-0.017	-0.083	-0.822	0.070
MPA3	0.019	0.068	0.005	-0.859	-0.006
MPA4	0.103	-0.010	-0.192	-0.624	0.031
ACL1	0.020	0.066	-0.754	-0.142	-0.042
ACL2	-0.016	-0.007	-0.857	-0.038	0.032
ACL3	0.054	0.013	-0.872	0.054	0.050

Note: a. Rotation converged in 11 iterations.

Table 6 shows in the pattern matrix that the items loaded mainly on their expected factors: AA (0.523–0.866), AUCI (0.705–0.887), ACL (-0.754– -0.872), MPA (-0.624– -0.859), and CA (0.344–0.811). Although ACL and MPA had negative loadings, this does not affect the interpretation because, in oblique rotations, the sign of the loading is arbitrary and only the magnitude is considered. And even though CA1 had the lowest loading (0.344), it was retained because it exceeded the minimum acceptable criterion of 0.30, and the CA dimension showed good reliability (α = 0.868). According to Hair et al. (2019) factor loadings of 0.30 or higher may be considered acceptable in EFA depending on the context and sample size.

Overall, these findings support the five-dimensional structure and internal consistency of the instrument, indicating that the instrument possesses adequate psychometric properties in terms of construct validity and reliability.

4.1. Confirmatory Factor Analysis

Based on the five-factor structure identified in the EFA, a Confirmatory Factor Analysis (CFA) was conducted, which showed a good fit of the model.

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Table 7. CFA: Fit Index Values.

Fit measure	Acceptable fit	Obtained value	Goodness of fit
χ^2/df	≤ 3.00	3.84	Acceptable fit
CFI	≥ 0.95	0.999	Excellent fit
TLI	≥ 0.95	0.999	Excellent fit
RMSEA	≤ 0.08	0.050	Good fit
SRMR	≤ 0.08	0.026	Excellent fit

Confirmatory factor analysis (CFA) indicated that the proposed model demonstrated an acceptable to excellent fit to the data (χ^2/df = 3.84, CFI (Comparative Fit Index) = 0.999, TLI (Tucker-Lewis Index) = 0.999, RMSEA (Root Mean Square Error of Approximation) = 0.050, SRMR (Standardized Root Mean Square Residual) = 0.026 as shown in Table 7, reflecting superior accuracy in the model's predictions. These fit indices, especially the TLI and CFI, are widely validated by Bentler (1990) who highlights their robustness in assessing model fit quality in structural equation models, as they are less sensitive to sample size and provide a more accurate representation of the model's fit.

Furthermore, Figure 1 represents a structural equation model (SEM) that examines the relationships between five latent factors (Fc1, Fc2, Fc3, Fc4, Fc5) and their corresponding observed variables (e.g., OCS 1, MFL 1, CIS 1). The factor loadings, which range from 0.71 to 0.95, indicate strong relationships between the latent factors and their indicators, suggesting that the latent variables are effectively capturing the variance in the observed data. Besides, the model's robust fit is further justified by the low measurement error values (Close to 0.00), showing that the variance in the measured variables is very minimal. Another point worth mentioning here is that the validity and reliability of the latent constructs tested in this model are highly justified by the structure of this model, since it is a very clear measurement model. Internal consistency of the construct and the structure of the construct as theorized were justified by all factor loadings, which were above 0.50 and by all factor correlations, which were above 0.60. According to these results, the observed data are adequately and theoretically coherently represented by the model.

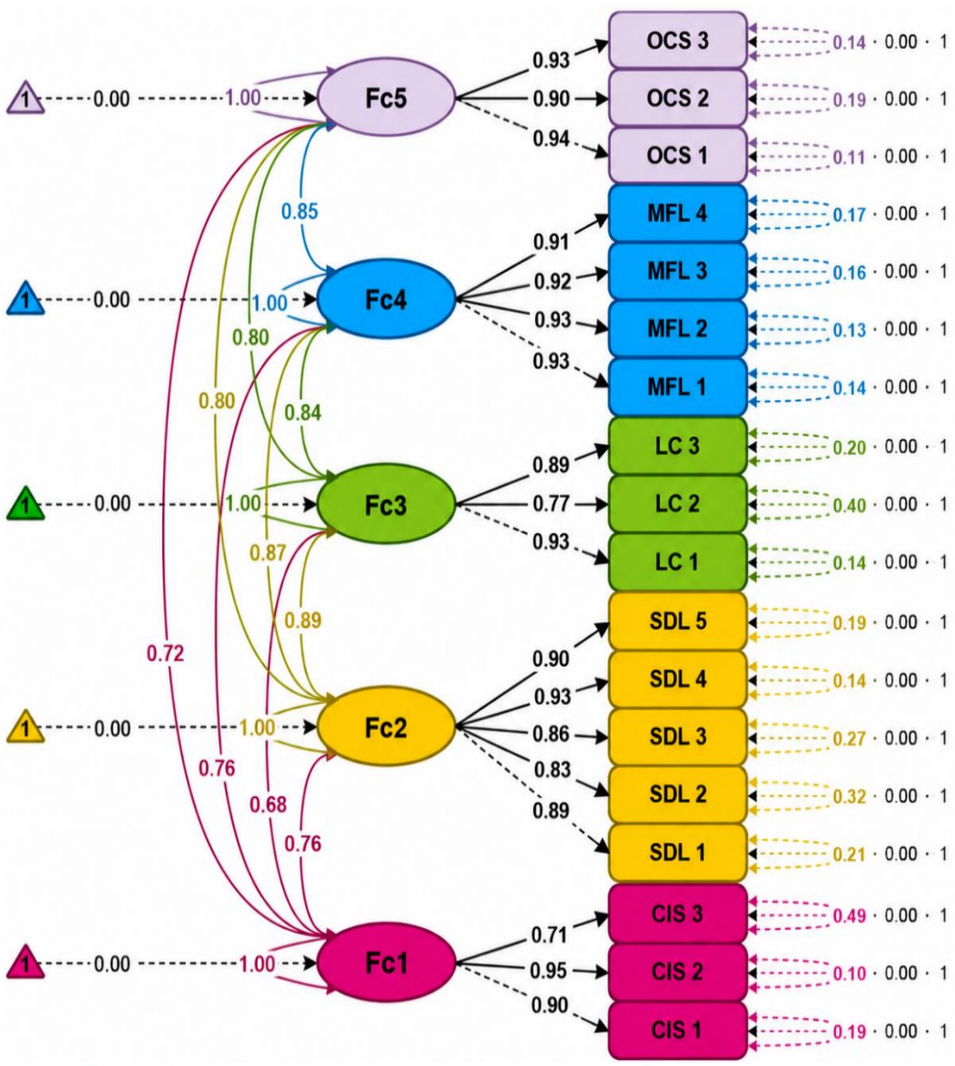


Figure 1. Internal structure of the online learning readiness scale for English language students.

Table 8 presents the results of the factorial invariance analysis by gender, where configural, metric, and scalar invariance were supported across gender groups. The configural model showed acceptable fit (CFI = 0.967, TLI = 0.959, RMSEA = 0.067, SRMR = 0.030). Metric and scalar invariance were supported because changes in approximate fit indices remained below the recommended threshold (ΔCFI = 0.000 < 0.01). Although the chi-square difference test for strict invariance was significant, χ^2diff (18) = 117.751, $p < 0.001$, changes in approximate fit indices (ΔCFI = −0.005 < 0.01; ΔRMSEA = 0.002; ΔSRMR = 0.000) suggested acceptable support for strict invariance. Therefore, the scale demonstrated measurement invariance across gender groups.

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Table 8. Factorial Invariance Analysis by gender (Men = 452, Women = 707).

Nested Model Comparison									
Chi-Squared Difference Test									
Model	**Df**	**AIC**	**BIC**	**Chi.sq.**		**Chi. sq. diff.**	**RMSEA**	**Df diff.**	**Pr(>Chi.sq.)**
fit.config	250	38490	39137	928.34					
fit.metric	263	38483	39065	947.97		19.625	0.030	13	0.10496
fit.scalar	276	38477	38993	967.97		20.008	0.031	13	0.08499
fit.strict	294	38559	38984	1085.73		117.751	0.098	18	< 2e-16 ***
Model Fit Indices									
Model	Chi.sq.	Df	p-value	RMSEA	CFI	TLI	SRMR	AIC	BIC
fit.config	928.34	250	0.068	0.067	0.967	0.959	0.030	38489.553	39136.633
fit.metric	947.97	263	0.000	0.067	0.966	0.961	0.034	38483.179	39064.540
fit.scalar	967.97	276	0.000	0.066	0.966	0.962	0.034	38477.187	38992.829
fit.strict	1085.73	294	0.000	0.068	0.961	0.960	0.035	38558.939	38983.585
Differences in Fit Indices									
Model Comparison	Df	RMSEA	CFI	TLI	SRMR	AIC Diff.	BIC Diff.	Df	
fit.metric - fit.config	13	-0.001	0.000	0.002	0.004	-6.375	-72.094	13	
fit.scalar - fit.metric	13	-0.001	0.000	0.001	0.000	-5.991	-71.710	13	
fit.strict - fit.scalar	18	0.002	-0.005	-0.003	0.000	61.751	-9.244	18	

Note: *** = p < 0.001.

5. Discussion

This study aimed to develop the adaptation of the Online Learning Readiness Scale for undergraduate English as a Foreign Language (EFL) students enrolled in English language programs in Peru, its content and construct validity, as well as the internal consistency reliability in a sample of young Peruvians. This validation addresses the need for culturally adapted, valid and reliable instruments to assess online learning readiness components in Spanish-speaking contexts.

The analyses conducted supported the five-factor structure of the scale, composed of the following dimensions: Computer/internet self-efficacy, Self-directed learning, Learner control (in an online context), Motivation for learning (in an online context), Online communication self-efficacy. This configuration aligns with previous findings (Fearnley & Malay, 2021; Hung et al., 2010) and provides additional evidence regarding the multidimensionality of the construct of online learning readiness.

Regarding reliability, the internal consistency coefficients were adequate across all dimensions, as consistently validated in previous studies (Hung et al., 2010).

Finally, the factorial invariance analysis by gender demonstrated that the scale is structurally equivalent for both males and females, allowing for comparative use between the two groups without measurement bias, an essential aspect for future differential research.

The findings from this validation study support the adaptation, validity and reliability of the Online Learning Readiness Scale (OLRS) in a sample of young undergraduate English as a Foreign Language (EFL) students from Peru, which is consistent with previous research conducted in English-speaking, European, Asian, and other contexts. First, Hung et al. (2010) developed and validated the 18-item scale of the Online Learning Readiness Scale (OLRS) in English, using an international sample of 1,051 college students with different majors, all of whom were in five online courses in three universities in Taiwan. Their confirmatory factor analysis demonstrated adequate fit indices and high internal consistency after removing 8 of the 26 items, concluding that the scale was valid for use with this sample. Similarly, in the current study, the exploratory factor analysis results confirmed the five-factor structure of the OLRS, with significant loadings across all dimensions, demonstrating the reliable strength of this version in a young Spanish-speaking population.

In the same vein, Hernández-Gutiérrez et al. (2025) validated the original Spanish translation of the Student Readiness for Online Learning Scale developed by Martin, Stamper, and Flowers (2020), proposing the SROLS as a valid, reliable, and culturally adapted instrument. However, their study employed a somewhat different scale with four dimensions and focused on the level of readiness, whereas the present analysis examines readiness itself. In addition, their participants were enrolled in different online programs, while this study focuses solely on undergraduate English as a foreign language (EFL) students enrolled in online programs. This distinction is significant because it contributes to research on foreign language learning in Peru and Latin America, a context that remains underexplored in the literature.

Taken together, these findings confirm the utility of reliable, culturally adapted, and validated scales for assessing online learning readiness among undergraduate students of English as a Foreign Language (EFL). They also reinforce the need to continue validating instruments across different regions, age groups, and languages, thereby providing robust empirical evidence and supporting the use of the OLRS as a reliable, adapted, validated, and sound tool applicable to Spanish-speaking students learning English as a foreign language. Its cross-cultural validity should be further strengthened by applying it to other Latin American populations and using it in longitudinal studies.

5.1. Implications of the Study

The findings of this study have significant theoretical and practical implications for teaching and learning English in online environments. First, they provide empirical support for the multidimensional nature of learning readiness for online education among undergraduate English students. In addition, the following dimensions are particularly relevant: technological self-efficacy, self-directed learning, motivation, learner control, and online communication. These dimensions can inform teaching approaches, strategies, and institutional actions aimed at improving students' performance in online English courses. Second, the instrument's demonstrated validity and reliability confirm its effectiveness as a diagnostic tool for assessing students' readiness for online English learning.

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5.2. Limitations and Future Research

The limitation of the study is that only English language students enrolled in an online format were considered as the research sample and this would possibly narrow down the generalizability of the results and its potential use in further research on different samples, areas of knowledge, or learning formats. Besides, the use of a cross-sectional study design and self-reports cannot provide causal interpretation of the results and can be biased due to social desirability or individual perceptions. Future research needs to enlarge the sample and consider other types of educational settings, take a longitudinal approach, and test the instrument in different cultural and academic contexts. It would also be useful to test the temporal stability of the instrument and its predictive ability with regard to academic performance in online English classes. Finally, there were only five participants involved in the pre-test of the instrument whereas, according to Beaton et al. (2000), at least 30–40 participants need to be involved in order to do adequate pilot testing, so future adaptations should consider a larger pretesting sample.

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ANNEXES:

Annex 1 displays the Online Readiness Scale Dimensions and Items – Original: English

Annex 2 presents the Spanish validated and adapted version of the Online Learning Readiness Scale.

Annex 3 describes the traceability of item-level modifications across the three review stages.

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Annex 4 reports the results of the pretest of the adapted instrument.
Annex 5 provides information about the participants involved in the adaptation process.

Annex 1. Online Readiness Scale Dimensions and Items – Original: English.

Item no.	Dimension/items
Computer/Internet self-efficacy	
CIS1	I feel confident in performing the basic functions of Microsoft Office programs (MS Word, MS Excel, and MS PowerPoint).
CIS2	I feel confident in my knowledge and skills of how to manage software for online learning.
CIS3	I feel confident in using the Internet (Google, Yahoo) to find or gather information for online learning.
Self-directed learning	
SDL1	I carry out my own study plan.
SDL2	I seek assistance when facing learning problems.
SDL3	I manage time well.
SDL4	I set up my learning goals
SDL5	I have higher expectations for my learning performance.
Learner control (in an online context)	
LC1	I can direct my own learning progress.
LC2	I am not distracted by other online activities when learning online (instant messages, Internet surfing).
LC3	I repeated the online instructional materials on the basis of my needs.
Motivation for learning (in an online context)	
MFL1	I am open to new ideas.
MFL2	I have motivation to learn.
MFL3	I improve from my mistakes.
MFL4	I like to share my ideas with others.
Online communication self-efficacy	
OCS1	I feel confident in using online tools (email, discussion) to effectively communicate with others.
OCS2	I feel confident in expressing myself (Emotions and humor) through text.
OCS3	I feel confident in posting questions in online discussions.

Source: Hung et al. (2010).

Annex 2. presents the Spanish validated and adapted version of the Online Learning Readiness Scale.
(ESCALA DE PREPARACIÓN PARA EL APRENDIZAJE EN LÍNEA)

Item no.	Dimension/Items	Totalmente en desacuerdo	En desacuerdo	Neutral (Ni de acuerdo ni en desacuerdo)	De acuerdo	Totalmente de acuerdo
Autoeficacia en el uso de computadoras e Internet		1	2	3	4	5
AUCI1	Tengo confianza al usar funciones básicas en Word, Excel, Canva u otro editor multimedia.					
AUCI2	Confío en mis conocimientos y habilidades para manejar Zoom, Canvas, B-learning, Moodle, u otros sistemas para el aprendizaje en línea.					
AUCI3	Tengo confianza en usar Google, Chat GPT, Gemini, Claude, etc. para buscar o recopilar información para el aprendizaje en línea.					
Aprendizaje autodirigido		1	2	3	4	5
AA1	Elaboro mi propio plan de estudio.					
AA2	Busco ayuda cuando tengo dificultades al aprender en línea.					
AA3	Administro bien mi tiempo.					
AA4	Establezco mis propios objetivos de aprendizaje.					
AA5	Tengo grandes expectativas sobre mi desempeño en el aprendizaje en línea.					
Control del aprendizaje (en un contexto en línea)		1	2	3	4	5
CA1	Puedo dirigir mi propio progreso de aprendizaje en línea.					
CA2	No me distraigo con redes sociales, WhatsApp, u otras aplicaciones de mensajería mientras aprendo en línea.					
CA3	Repaso los materiales de estudio en línea según lo que necesito aprender.					
Motivación para el aprendizaje (en un contexto en línea)		1	2	3	4	5
MPA1	Estoy abierto a nuevas ideas.					
MPA2	Tengo motivación para aprender.					
MPA3	Aprendo de mis errores.					
MPA4	Me gusta compartir mis ideas con otros.					
Autoeficacia en la comunicación en línea		1	2	3	4	5
ACL1	Tengo confianza para comunicarme eficazmente con otros a través de videollamadas, grupos de WhatsApp, foros de discusión, etc.					
ACL2	Expreso mis emociones y mi sentido del humor por escrito con confianza.					
ACL3	Tengo confianza al hacer preguntas en foros de discusión en línea.					

Notes: 1 = Totalmente en desacuerdo
2 = En desacuerdo
3 = Neutral (Ni de acuerdo ni en desacuerdo)
4 = De acuerdo
5 = Totalmente de acuerdo

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Annex 3. Traceability of item-level changes across the three review stages.

Item	Initial Translation and Adaptation: Mg. Brígida Calsin Quinto	Review of Semantic, Idiomatic, and Conceptual Equivalence of the Initial Translation: Dr. Abel Apaza Romero	Cross-Cultural Linguistic Review of the Translation: Mg. Néstor Roger Apaza Apaza	Type of Adjustment
AUCI1	I am confident in performing basic functions in Microsoft Office programs (Word, Excel, and PowerPoint).	"Performing" was replaced with "using"; the technological reference was updated: "Word, Excel, Canva, etc."	Specified as "Canva or another multimedia editor."	Terminological and contextual update
AUCI2	I am confident in my knowledge and skills to use computer programs for online learning.	General terms were replaced with concrete examples: "Zoom, Canvas, Moodle, etc."	Expanded to "Zoom, Canvas, B-learning, Moodle, or other systems."	Greater technological specificity
AUCI3	I am confident in using the Internet (Google, Yahoo, Artificial Intelligence) to search for or collect information for online learning.	Examples were updated: "Google, ChatGPT, Gemini, Claude, etc."	Remained unchanged.	Lexical and contextual update
AA1	I develop my own study plan.	No changes.	No changes.	Content preservation
AA2	I seek help when I face learning difficulties.	Rephrased as "when I have difficulties learning online."	Remained unchanged.	Contextual precision
AA3	I manage my time well.	No changes.	No changes.	Content preservation
AA4	I establish my learning objectives.	"Own" was added: "I establish my own learning objectives."	Remained unchanged.	Semantic precision
AA5	I have high expectations about my performance in learning.	Changed to "I have high expectations about my performance in online learning."	Remained unchanged.	Contextual appropriateness
CA1	I can direct my own learning progress.	"Online" was added.	Remained unchanged.	Contextual precision
CA2	I do not get distracted by other digital activities while learning online (instant messages, Internet browsing).	Made more specific as "social networks, WhatsApp, or other messaging applications."	Remained unchanged.	Contextual update
CA3	I review online instructional materials according to my needs.	Rephrased as "I review online study materials according to what I need to learn."	Remained unchanged.	Linguistic naturalness and clarity
MPA1	I am open to new ideas.	No changes	No changes.	Content preservation
MPA2	I am motivated to learn.	No changes	No changes.	Content preservation
MPA3	I learn from my mistakes.	No changes	No changes.	Content preservation
MPA4	I like sharing my ideas with others.	No changes	No changes.	Content preservation
ACL1	I am confident in using online tools (Email, discussion forums) to communicate effectively with others.	Means were updated: "video calls, WhatsApp groups, discussion forums, etc."	Remained unchanged.	Technological and usage update
ACL2	I am confident in expressing myself (Emotions and humor) through text.	Rephrased as "I express my emotions and my sense of humor in writing with confidence."	Remained unchanged.	Greater semantic naturalness
ACL3	I am confident when formulating questions in online discussion forums.	Rephrased as "I am confident when asking questions…"	Remained unchanged.	Linguistic simplification

Table 1A. Initial Translation and Adaptation: (Mg. Brígida Calsin).

Online learning readiness scale: Dimensions and items – Translated from Hung et al. (2010).	
Item No.	**Dimension/Items**
Computer and Internet Self-Efficacy	
AUCI1	I am confident in performing basic functions in Microsoft Office programs (Word, Excel, and PowerPoint).
AUCI2	I am confident in my knowledge and skills to use computer programs for online learning.
AUCI3	I am confident in using the Internet (Google, Yahoo, Artificial Intelligence) to search for or collect information for online learning.
Self-Directed Learning	
AA1	I develop my own study plan.
AA2	I seek help when I face learning difficulties.
AA3	I manage my time well.
AA4	I establish my learning objectives.
AA5	I have high expectations about my performance in learning.
Learning Control (in an Online Context)	
CA1	I can direct my own learning progress.

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CA2	I do not get distracted by other digital activities while learning online (instant messages, Internet browsing).
CA3	I review online instructional materials according to my needs.
Motivation for Learning (in an Online Context)	
MPA1	I am open to new ideas.
MPA2	I have motivation to learn.
MPA3	I learn from my mistakes.
MPA4	I like sharing my ideas with others.
Online Communication Self-Efficacy	
ACL1	I am confident in using online tools (Email, discussion forums) to communicate effectively with others.
ACL2	I am confident in expressing myself (Emotions and humor) through text.
ACL3	I am confident when formulating questions in online discussion forums.

Table 1A illustrates the initial translation and adaptation of the Scale.

Table 2A. Review of the semantic, idiomatic, and conceptual equivalence of the translation: (Dr. Abel Apaza)

Online learning readiness scale: Dimensions and items – Translated from Hung et al. (2010).	
Item No.	**Dimension/Items**
Computer and Internet Self-Efficacy	
AUCI1	I am confident in using basic functions in Word, Excel, Canva, etc.
AUCI2	I trust my knowledge and skills to use Zoom, Canvas, Moodle, etc., for online learning.
AUCI3	I am confident in using Google, ChatGPT, Gemini, Claude, etc., to search for or collect information for online learning.
Self-Directed Learning	
AA1	I develop my own study plan.
AA2	I seek help when I have difficulties learning online.
AA3	I manage my time well.
AA4	I establish my own learning objectives.
AA5	I have high expectations regarding my performance in online learning.
Learning Control (in an Online Context)	
CA1	I can direct my own online learning progress.
CA2	I do not get distracted by social networks, WhatsApp, or other messaging applications while learning online.
CA3	I review online study materials according to what I need to learn.
Motivation for Learning (in an Online Context)	
MPA1	I am open to new ideas.
MPA2	I am motivated to learn.
MPA3	I learn from my mistakes.
MPA4	I like sharing my ideas with others.
Online Communication Self-Efficacy	
ACL1	I am confident in communicating effectively with others through video calls, WhatsApp groups, discussion forums, etc.
ACL2	I express my emotions and my sense of humor in writing with confidence.
ACL3	I am confident when asking questions in online discussion forums.

Table 2A presents the review of the Semantic, Idiomatic, and Conceptual Equivalence of the Initial Translation.

Table 3A. Cross-Cultural Linguistic Review Of The Translation: (Mg. Néstor Apaza).

Online Learning Readiness Scale: Dimensions and Items – Translated from Hung et al. (2010).	
Item No.	**Dimension/Items**
Computer and Internet Self-Efficacy	
AUCI1	I am confident in using basic functions in Word, Excel, Canva, or another multimedia editor.
AUCI2	I trust my knowledge and skills to use Zoom, Canvas, B-learning, Moodle, or other systems for online learning.
AUCI3	I am confident in using Google, ChatGPT, Gemini, Claude, etc., to search for or collect information for online learning.
Self-Directed Learning	
AA1	I develop my own study plan.
AA2	I seek help when I have difficulties learning online.
AA3	I manage my time well.
AA4	I establish my own learning objectives.
AA5	I have high expectations regarding my performance in online learning.
Learning Control (in an Online Context)	
CA1	I can direct my own online learning progress.
CA2	I do not get distracted by social networks, WhatsApp, or other messaging applications while learning online.
CA3	I review online study materials according to what I need to learn.
Motivation for Learning (in an Online Context)	
MPA1	I am open to new ideas.
MPA2	I am motivated to learn.
MPA3	I learn from my mistakes.
MPA4	I like sharing my ideas with others.
Online Communication Self-Efficacy	
ACL1	I am confident in communicating effectively with others through video calls, WhatsApp groups, discussion forums, etc.
ACL2	I express my emotions and my sense of humor in writing with confidence.
ACL3	I am confident when asking questions in online discussion forums.

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Table 3A demonstrates the Cross-Cultural Linguistic Review of the Translation.

Annex 4. Results of the pre-test of the adapted version of the instrument

Evaluated Aspect	**Result**
Number of volunteers	5
Participant characteristics	Undergraduate English as a Foreign language (EFL) students from Universidad Peruana Unión, all over 18 years of age
Response time	Between 3 and 5 minutes
Objective of the pre-test	To assess the clarity, comprehensibility, and linguistic adequacy of the items
Comprehension of the items	All participants indicated that the items were understandable
Participants' observations	No doubts, ambiguities, or comprehension difficulties were reported
Suggested corrections	No corrections were proposed
Final decision	The wording of the adapted version was retained without additional modifications

Annex 5. Participants in the adaptation process

Stage	**Participant**	**Profile**	**Role**
Initial translation	Researcher Mg. Brígida Calsin Quinto	Professor specialized in Linguistics and English	Initial translation and adaptation of the instrument from English into Spanish
Review of the semantic, idiomatic, and conceptual equivalence of the first translation	Advisor Dr. Abel Apaza Romero	Lecturer specialized in English and native speaker of Spanish	Interpretive and terminological review, lexical updating, and verification of semantic and conceptual equivalence
Cross-cultural linguistic review of the second version	Linguist Mg. Néstor Roger Apaza Apaza	Professor and Lecturer specialized in Spanish linguistics and literature	Final cross-cultural linguistic review: semantic equivalence, lexical adequacy, and clarity of the Spanish version
Pre-test	Anonymous volunteers	Participants with characteristics similar to those of the target population	Assessment of clarity and comprehensibility

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