

Research Article

Psychometric Properties of the Family and Friends Social Support Scale (AFA-R) in Peruvian University Students

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Abstract

This research aims to analyze the validity, reliability and invariance of the AFA-R in university students. A total of 442 university students participated, ranging in age from 18 to 57 years ($M = 23,9$, $SD = 6,29$); 280 women (63,3%) y 162 men (36,7%), who responded to the Family and Friends Social Support Scale (AFA-R) and the Multidimensional Scale of Perceived Social Support (MSPSS). A Confirmatory Factor Analysis (CFA), factorial invariance according to the sex and the validity based on the relationship with other variables were conducted, along with a Structural Equation Model (SEM). The results indicated that the original two-factor model of the AFA-R demonstrated adequate fit indices ($\chi^2 = 211.97$; $gl = 74$; $CFI = .96$; $TLI = .95$; $RMSEA = .074$ [IC90% .063 - .086]; $SRMR = .039$). Furthermore, the scale's dimensions showed adequate reliability indices. Additionally, the factorial structure of the scale provided evidence of strict invariance according to participants' sex. Similarly, the AFA-R scale demonstrated validity evidence based on its relationship with other constructs through its association with the MSPSS. In conclusion, the findings revealed an adequate internal structure of the AFA-R in the student population, which is invariant when considering two factors, with good internal consistency. Therefore, the AFA-R scale is a promising instrument for measuring family and peer support in the Peruvian context.

Keywords: Social Support; University Students; Structural Equation Model.

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Social support is conceptualized as the perception of support, appreciation, acceptance and integration that an individual has in a group or social network where interactions between its members exists (Gutiérrez et al., 2021). This support comes from significant people, mainly from the circle of friends or family, from whom the availability of resources (e.g. help, companionship, solidarity, etc.) is searched. This resources can satisfy certain needs, such as help to solve problems, or to have someone listen and provide feedback (González & Landero, 2014), which is relevant since it is a factor involved in people's well-being by functioning as a protector against various psychological issues (Guzmán & Galaz, 2020; Otzen et al., 2020).

In the university context, data reported by various studies indicate that students report a low level of perceived social support, as around 35.6% have felt moderately or very lonely (Diehl et al., 2018). Other reports indicated that about 25% of students feel a lack of company and support very frequently (Hysing et al., 2020; Zahedi et al., 2022). A meta-analysis carried out in 113 countries indicated that between 5.9% and 9.4% of student-age people showed relevant levels of loneliness (Surkalim et al., 2022), which denotes lack of social support (Wang et al., 2018). In this context, social support from family and friends has a significant value in overcoming obstacles typical of this stage (Guzmán & Galaz, 2020).

In fact, multiple studies have indicated that social support is linked to a lower dropout rate (López-Angulo et al., 2021), higher achievement and academic self-efficacy (Al-Tameemi et al., 2023; González-Cantero et al., 2020), and better academic achievement (Mishra, 2020). It has also been shown that students have less fatigue with studies when they perceive support from their friends and peers, as well as greater self-regulation skills (Räisänen et al.,

2021). Also, there is evidence of the relationship between social support and better psychological well-being and reduced levels of depression, anxiety, and life satisfaction (Cobo-Rendón et al., 2020; Sheldon et al., 2021; Shi, 2021; Ye et al., 2020; Yildirim & Tanrıverdi, 2021).

Given the importance of social support from family and friends, measurement instruments have been developed. One of the most widely used instruments is the Multidimensional Scale of Perceived Social Support (Zimet et al., 1990), whose validity and reliability were demonstrated through exploratory factor analysis, internal consistency, and test-retest. The results indicate that it is a three-dimensional instrument consisting of 12 items. The MOS survey of social support is also another of the most frequent instruments to measure this variable. Its original version has 20 items grouped into 4 factors, with adequate reliability (Sherbourne & Stewart, 1991). Also, the scale of social support (Palomar et al., 2013), with its 21 items, also form three factors whose internal structure and consistency were determined with exploratory factor analysis and Cronbach's alpha. Likewise, the EPAS social support perception scale has 23 items that make up 3 factors with good reliability (Vaux et al., 1986). Among these instruments, the Family and Friends Social Support Scale (AFA-R) stands out, because it specifies the most relevant sources of social support, is shorter than the previous ones and, therefore, is easier to administer (González & Landero, 2014).

The initial psychometric studies of the AFA-R demonstrated, through exploratory factor analysis, that it is an instrument with two dimensions called *family* and *friends*. This structure was examined with 15 and 14 items, the latter version being the one that showed the best explained variance (González & Landero, 2014). Subsequent research has replicated these results through exploratory and confirmatory factor analysis in samples from pregnant women (Reyna-Martínez et al., 2020). Finally, a study found a three-dimensional structure in postpartum women (Torres-Lagunas et al., 2015). However, aside from the original report, no studies have been found in the university student population that analyze the psychometric properties of the AFA-R, highlighting a lack of instruments measuring social support within this group.

In this sense, this research aims to analyze the validity, reliability and invariance of the AFA-R in university students. This study is justified because it allows us to have an appropriate tool for university environments that guarantee a more accurate measurement of social support, which is crucial for adequate emotional well-being (Cobo-Rendón et al., 2020; Sheldon et al., 2021; Shi, 2021; Ye et al., 2020; Yildirim & Tanrıverdi, 2021), even more so when the figures indicate a low level of social support in this group (Surkalim et al., 2022;

Wang et al., 2018). This will allow researchers, educators and mental health professionals to have a valid and reliable instrument to study this variable so that it can be better understood. Also, explanatory models can be created to benefit the university community through the creation of interventions aimed at improving effectiveness, autonomy and academic achievement (Al-Tameemi et al., 2023; González-Cantero et al., 2020; Mishra, 2020)

Method

Participants

The present instrumental study (Ato et al., 2013) was conducted between May 06 and July 30, 2024. An online survey was conducted. Participants were constructed and invited to respond via social networks (e.g., Facebook, Instagram) and email. Snowball sampling was used (Hernández-Ávila & Escobar, 2019) where participants were encouraged to send the online survey to family, friends, or other contacts that met the characteristics indicated. Online snowball sampling allows collecting information from participants in different locations and achieving higher response rates compared to other sampling techniques (Baltar & Brunet, 2012). The target population was Peruvian university students over 18 years of age who suffered the death of a family member.

The final sample consisted of 442 university students aged between 18 and 57 years ($M = 23.9$, $SD = 6.29$); 280 women (63.3%) and 162 men (36.7%). The marital status of the participants in greater proportion were single 407 (92.1%), married 16 (3.6%), divorced 3 (0.7%) and cohabitant 15 (3.4%). In relation to the area where they residence, the participants said they are in rural area 49 (11.1%) and urban area 393 (88.9%) (Table 1).

Table 1.

Sociodemographic variables.

Variable	N	%	$M \pm SD$
Age			23.9 ± 6.29
Gender			
Female	280	63.3%	
Male	162	36.7 %	
Marital Status			
Single	407	92.1%	
Married	16	3,6%	
Divorced	3	0.7%	
Cohabitant	15	3.4%	
Place of Residence			
Urban	393	88.9%	
Rural	49	11.1%	

Instruments

Sociodemographic variables

An ad hoc survey was created to collect information on age, sex, place of residence, marital status, academic level, employment, among others.

Family and Friends Social Support Scale (AFA-R)

The family and friends social support scale (AFA-R), developed by [González and Landero \(2014\)](#), will be used to assess perceived social support. This scale uses a Likert-type format with 5 response options, ranging from “never” to “always”, giving values from 1 to 5 respectively. The scale consists of two dimensions: one aimed at measuring family support, composed of 8 items (1, 3, 5, 7, 9, 11, 13 and 14), and the other focused on support from friends, composed of 7 items (2, 4, 6, 8, 10, 12 and 15). In the final version of the instrument, item 9 was eliminated and in item 12: Someone of your friends supports you when you have problems at school, the word school was changed to university. The total score is obtained by adding the values of all the items, with a possible range of 14 to 70 points. A higher score indicates a higher level of perceived social support, and specific scores can also be calculated for each dimension.

As for the internal consistency analysis they used Cronbach's alpha coefficient (full scale $\alpha=.918$; family support dimension $\alpha=.923$; support friends dimension = $.895$), the factor structure of the AFA-R confirms a bifactor structure that explains 66.09% of the variance; and as criterion validity the relationship between social support and stress was evaluated, the correlation between stress and social support was negative and significant ($r_s = -.337$, $p = .001$) ([González & Landero, 2014](#)).

Multidimensional Scale of Perceived Social Support (MSPSS)

This scale was initially developed by [Zimet et al. \(1988\)](#) with 24 items. However, in an adaptation made by [Nicho-Almonacid, et al. \(2023\)](#), it was reduced to 12 items distributed in three factors: family (3,4,8,11), friends (6,7,9,12) and significant others (1,2,5,10). This adapted version was also translated into several languages, including Spanish, by [Arechabala Mantuliz and Miranda Castillo \(2002\)](#). The scale is self-administered and the items present four response levels on an ordinal scale: almost never (1), sometimes (2), frequently (3) and almost always or always (4). Regarding reliability, the results of the adapted version show acceptable values: $\alpha = .88$ for the total scale (12 ítems) and $\alpha = .87$ (4 ítems), $\alpha = .85$ (4 ítems) and $\alpha = .88$ (4 ítems) for the family, friends and significant others factors, respectively.

Ethics

The study protocol was approved by the Ethics Committee of the Universidad Peruana de Ciencias Aplicadas (FCS-SCEI/ 211-5-24). Participants received information on the purpose and procedure of the study. In addition, they were informed that the study guaranteed their anonymity and confidentiality of the information provided. After this, the participants gave their informed consent. Finally, they were informed of their right to withdraw from the study and to withdraw their data at any time.

Data analysis

First, a descriptive analysis of the items was performed, for which the mean, standard deviation, Skewness (g_1) and Kurtosis (g_2) of the items were estimated. Specifically, skewness and kurtosis were used to verify that the data did not deviate too far from a normal distribution, for which the following indices were used: $g_1 < \pm 2$ and $g_2 < \pm 7$ (Finney & DiStefano, 2006). A correlation matrix was also estimated to verify the relationship between the items.

First, a Confirmatory Factor Analysis (CFA) was performed using the Robust Maximum Likelihood (MLR; Yuan & Bentler, 2000) estimator, since the items had five response categories (Rhemtulla et al., 2012). The fit criteria used to assess model fit were as follows: RMSEA ($< .08$), SRMR ($< .08$), CFI ($> .95$), and TLI ($> .95$) (Kline, 2016; Schumacker & Lomax, 2015). The internal consistency of the scale was assessed through Cronbach's alpha coefficient (Cronbach, 1951) and omega coefficient (McDonald, 1999). A value greater than $.70$ was considered adequate (Viladrich et al., 2017).

Third, we studied the factorial invariance of the scale according to the sex of the participants. For this purpose, a sequence of hierarchical variance models was estimated: configural invariance, metric invariance, scalar invariance and strict invariance. To compare differences in the sequence of models, the chi-square difference ($\Delta\chi^2$) was employed where nonsignificant values ($p > .05$) suggest invariance between groups. Differences in RMSEA (Δ RMSEA) and CFI (Δ CFI) were also taken into account, where differences greater than $\geq .015$ and $\geq -.010$, respectively, show lack of model invariance (Chen, 2007).

Finally, the validity based on the relationship with other variables, a Structural Equation Model (SEM) was proposed and the same estimator and adjustment indexes used in the CFA.

For the statistical analysis, the RStudio environment (RStudio Team, 2018) for R (R Core Team, 2019) was used. Specifically, the package "lavaan" (Rosseel, 2012) was used to

perform CFA and the package “semTools” (Jorgensen et al., 2018) was used to perform factorial invariance.

Results

Descriptive analysis of items

Table 2 shows that item 5 presents the highest mean score in the sample ($M = 3.73$). This means that most of the participants indicated that sometimes their parents show affection and affection. In contrast, item 10 presents the lowest mean score ($M = 2.78$). This result suggests that most of the participants have very rarely received help from their friends to perform academic tasks at the university. It is also observed that all items present scores that depart moderately from a normal distribution ($g1 < \pm 2$; $g2 < \pm 7$). On the other hand, Figure 1 shows that the items present moderate and low relationships with each other.

Table 2.

Descriptive analysis of the items of the BRUMS scale

Items	<i>M</i>	<i>SD</i>	<i>g1</i>	<i>g2</i>	Min	Max
1. You have someone in your family to talk to when you need to.	3.24	1.2	-.06	-.83	1	5
2. You have a friend you can talk to when you need to.	3.37	1.2	-.19	-.85	1	5
3. You have someone in your family to help you solve a personal problem.	3.25	1.2	-.13	-1.02	1	5
4. You have a friend who can help you solve a personal problem.	3.17	1.1	-.08	-.79	1	5
5. Your parents show you love and/or affection.	3.73	1.1	-.54	-.70	1	5
6. You have a friend who shows you affection.	3.42	1.1	-.25	-.71	1	5
7. You trust your family to talk about things that concern you.	3.21	1.2	-.05	-.98	1	5
8. You confide in a friend to talk about your worries.	3.31	1.1	-.27	-.66	1	5
9. Someone in your family supports you when you have problems at school.	3.31	1.2	-.22	-.99	1	5
10. Someone among your friends helps you with school or work assignments.	2.78	1.2	.23	-.77	1	5
11. Someone among your friends supports you when you have problems in college.	2.97	1.2	.01	-.91	1	5
12. In my family we talk about everyone's problems and we all support each other (parents, children and siblings).	3.19	1.2	-.12	-1.00	1	5
13. You are satisfied with the support you receive from your family.	3.72	1.1	-.57	-.53	1	5
14. You are satisfied with the support you receive from your friends.	3.48	1.1	-.37	-.62	1	5

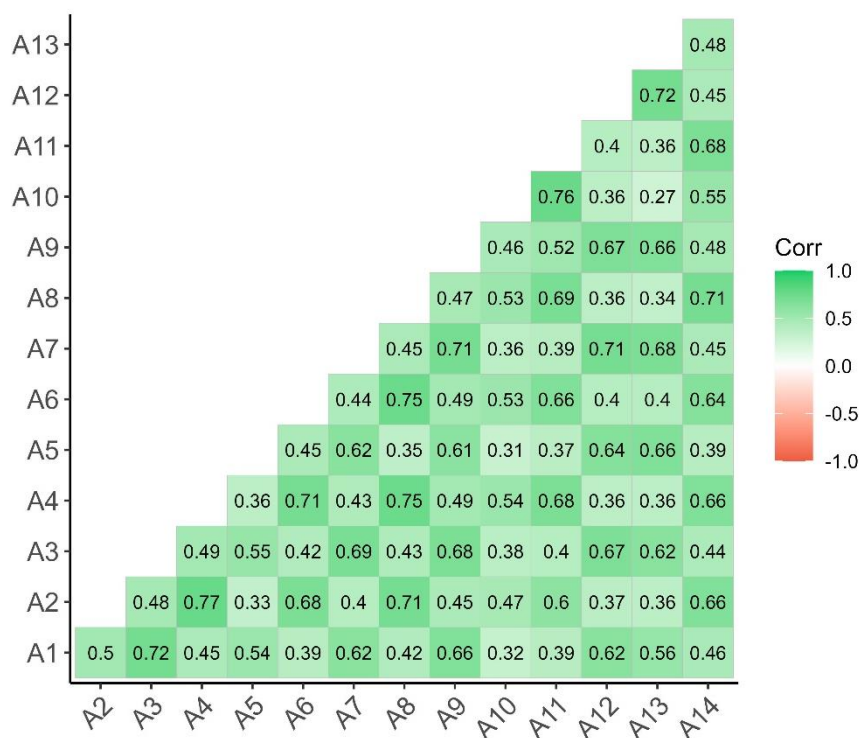


Figure 1. Correlation matrix of the BRUMS scale items

Validity based on internal structure

In the study, it was evident that the original model of two related dimensions evidenced adequate fit indices ($\chi^2 = 211.97$; $df = 74$; $CFI = .96$; $TLI = .95$; $RMSEA = .074$ [CI90% .063 - .086]; $SRMR = .039$). In Figure 2, it is observed that the factor weights of the items in each of the factors were moderate and high ($\lambda = .62 - .86$). Also, it can be seen that the relationship between the dimensions was moderate (.62).

On the other hand, the relevance of the modification indexes (MI) was evaluated following the method of Saris, Satorra and van der Veld (2009) and together with the analysis of the content of the items, it was decided to add a correlation between the errors of items 1 and 3 and items 10 and 11.

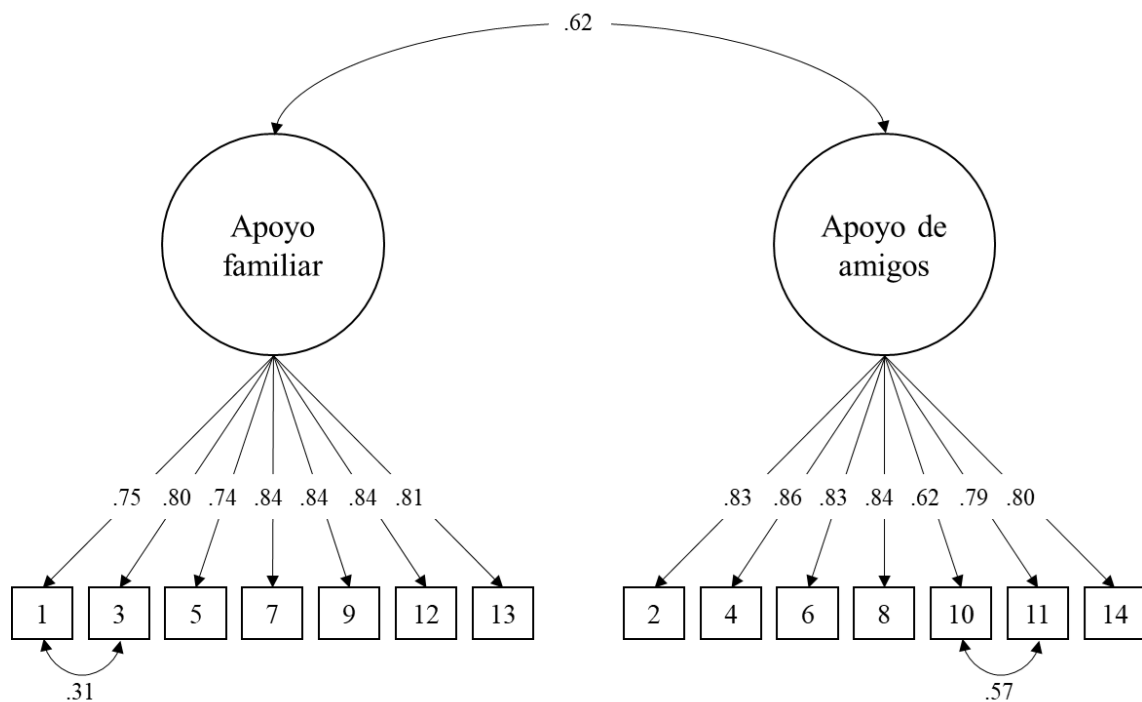


Figure. 2. Confirmatory Factor Analysis of the AFA-R Scale

Factor invariance by sex

Table 3 shows that the factor structure of the scale has shown evidence of being strictly invariant according to sex of the participants in the sequence of invariance models proposed: metric ($\Delta\text{CFI} = -.001$; $\Delta\text{RMSEA} = -.003$), scalar ($\Delta\text{CFI} = -.003$; $\Delta\text{RMSEA} = -.001$) and strict ($\Delta\text{CFI} = .000$; $\Delta\text{RMSEA} = -.004$) invariance.

Table 3.*Invariance indexes according to sex of the participants*

Invariance models	χ^2	df	<i>p</i>	SRMR	TLI	CFI	RMSEA [CI 90%]	$\Delta\chi^2$	Δ df	<i>p</i>	Δ CFI	Δ RMSEA
Configural	422.21	150	.000	.267	.913	.928	.102 [.066 – .080]	–	–	–	–	–
Metric	445.98	162	.000	.268	.918	.927	.099 [.065 – .080]	19.83	12	.070	-.001	-.003
Scalar	474.13	174	.000	.268	.920	.924	.098 [.065 – .079]	26.99	12	.007	-.003	-.001
Strict	481.20	188	.000	.268	.927	.924	.094 [.064 – .078]	12.45	14	.569	.000	-.004

Note: χ^2 = Chi square; df = degrees of freedom; SRMR: Standardized Root Mean Square Residual; TLI = Tucker-Lewis Index; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; $\Delta\chi^2$ = Differences in Chi square; Δ df = Differences in degrees of freedom; Δ CFI = Change in Comparative Fix Index; Δ RMSEA = Change in Root Mean Square Error of Approximation



Scale reliability

In the total study sample, the dimensions of the AFA-R scale showed adequate reliability indices: Family support ($\alpha = .93$; $\omega = .92$) and Support from friends ($\alpha = .93$; $\omega = .91$). In the male-specific sample, it also showed adequate adjustment indices: Family support ($\alpha = .93$; $\omega = .92$) and Support from friends ($\alpha = .93$; $\omega = .92$). Similarly, the following were found in the female sample: Family support ($\alpha = .93$; $\omega = .92$) and Support from friends ($\alpha = .93$; $\omega = .91$).

Validity based on the relationship with other variables

To evidence this type of validity, an SEM model was tested to evaluate the latent relationship between the dimensions of the AFA-R scale and the dimensions of the MSPSS scale. It was evidenced that the SEM model presents adequate fit indices ($\chi^2 = 715.04$; $df = 287$; $p = .000$; $RMSEA = .066$ [CI90% .060 - .072]; $CFI = .95$; $TLI = .95$) and the measurement models are adequately represented by their items. Figure 3 shows that the Family Support dimension is strongly related to the Family dimension (.97) and moderately related to the other dimensions of the MSPSS. The Support from Friends dimension is strongly related to the Friends dimension (.93) and moderately related to the other MSPSS dimensions. All of this is evidence that the AFA-R scale evidences validity based on that related to other constructs.

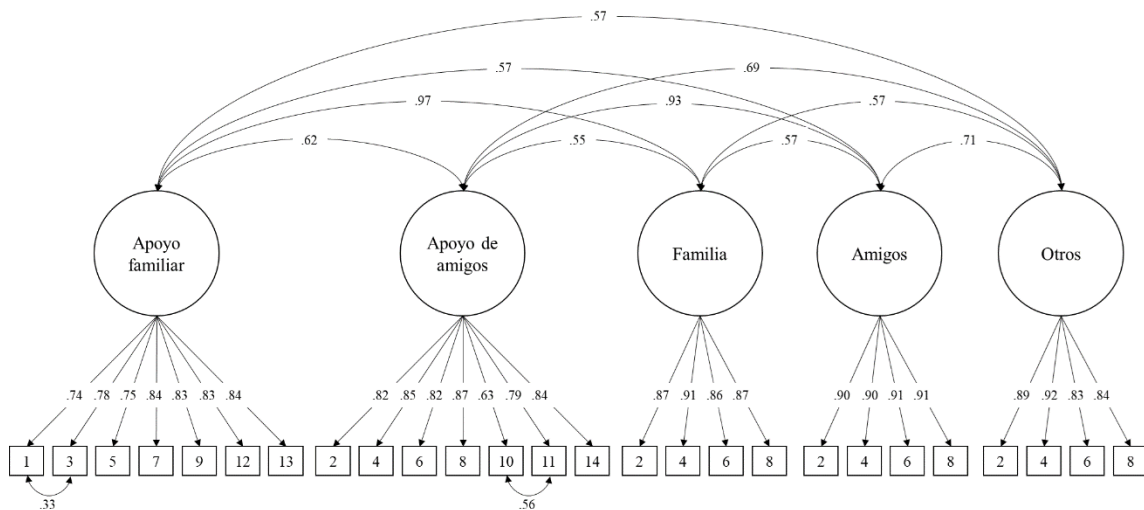


Figure 3. *Confirmatory Factor Analysis of the AFA-R Scale*

Discussion

Support from family and friends is a relevant protective factor against mental health problems, such as anxiety and stress. In fact, there are studies that have identified that social support decreases them (Cohen, 2004) and promotes students' academic performance (Pascarella & Terenzini, 2005). However, given the lack of instruments that measure family and friendship support, the aim of the present study was to examine the reliability and validity of the AFA-R scale in a university population.

The descriptive analyses reveal an inclination to mark response options with higher scoring alternatives, since the skewness, in most of the items, was negative. However, the distribution of the data did not exceed the suggested values, so univariate normality was shown for all items.

Regarding the internal structure of the AFA-R, it was determined by confirmatory factor analysis, the results of which indicate that the model is two-dimensional. This coincides with the original study (González & Landero, 2014) and with the one conducted with pregnant women (Reyna-Martínez et al., 2020). But, on the other hand, it differs from that reported by Pascarella and Terenzini (2005), who found three dimensions. In addition, a correlation was established between items 1-3 and 10-11; possibly this is due to the way in which the items are worded, since the first pair of items alludes to situations of family support in order to discuss and solve personal problems, while the second pair mentions circumstances of friendly support in the university and work context.

As for the gender difference, the model showed invariance at the configural, metric, scalar and strict levels, which implies that the structure is adequate for both men and women, reducing the bias in the responses when comparing both groups. This is the first study to demonstrate the measurement equivalence of the AFA-R, as antecedents have not reported it (Gonzales & Landero, 2014; Pascarella & Terenzin, 2005; Reyna-Martinez et al., 2020).

Reliability was estimated with the omega coefficient, the results of which indicated that the two-dimensional structure had adequate internal consistency, both for the family dimension and for the friendship dimension. At this point, it is important to note that previous studies have obtained reliability globally and not for each factor using Cronbach's alpha (González & Landero, 2014; Pascarella & Terenzin, 2005; Reyna-Martínez et al., 2020), despite the fact that the model does not allow the estimation of a coefficient globally; in addition, it is known that Cronbach's alpha is inadequate for this type of structures.

On the other hand, validity was tested based on the relationship with other variables; specifically, by means of structural regression, its link with the scores of the Multidimensional Scale of Perceived Social Support was tested (Arechabala & Miranda, 2002; Zimet et al., 1988). In the original study, this type of validity evidence was demonstrated by correlating the AFA-R scores with those of perceived stress, finding an inverse and statistically significant relationship (González & Landero, 2014). The results indicated moderate to high correlations, demonstrating concurrent validity, which shows that the AFA-R is an instrument that correctly measures family and friendship support.

The analysis of the psychometric properties of the AFA-R provides a practical tool to accurately measure and assess perceived social support in college students, which facilitates intervention and the development of strategies to strengthen family and friendship bonds. Therefore, it has practical implications, as it can be used by competent professionals in clinical and educational practice, as this type of support has been found to be a good protective factor against academic stress and promotes academic achievement and continuation of higher education (Cohen, 2004; Sosu & Pheunpha, 2019).

Limitations

Finally, during the analysis of the psychometric properties of the AFA-R, some methodological limitations were identified. First, the non-probabilistic sampling restricts the option of extrapolating the results to other populations, so it is advisable to implement probabilistic sampling in future studies. Second, the cross-sectional design did not allow the calculation of longitudinal invariance or the estimation of the stability of the scores by the test-retest method. This invites future longitudinal designs.

Conclusion

The findings revealed an adequate internal structure of the AFA-R in the student population, which is invariant when considering two factors, whose internal consistency is good. Therefore, the AFA-R scale is a promising instrument for measuring family and peer support in the Peruvian context.

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Competing Interests

The authors have declared that no competing interests exist.

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