Social Support in Higher Education: Evidence of Validity and Reliability in the Peruvian Context*

Apoyo social en educación superior: evidencias de validez y confiabilidad en el contexto peruano

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ABSTRACT

Social support is a useful cornerstone concept that describes how positive human relationships and social networks allow people to overcome stressful events they face during their lives and to find themselves in a state of relative well-being. This study aims to assess the psychometric properties of the Social Support Appraisals Scale (SS-A) in a Peruvian sample. Participants were 417 undergraduate's students in Metropolitan Lima (M_{age} = 21.78, SD = 4.09). Cross-sectional data was collected after approval by the ethical committee and authorization of all parties involved. A theoretical three-factor model was tested using confirmatory factor analysis. Results showed good fit indexes and revealed that the SS-A's three-dimensional structure was invariant across gender and presented adequate reliability. Likewise, social support showed significant correlations to academic stress. Although the results' generalizability due to the non-random nature of the data presents a caveat, the current findings reveal preliminary evidence that the adapted version of the Social Support Appraisals Scale is a reliable and valid instrument for the assessment of perceived social support in this sample of Peruvian college students.

Keywords
Social Support; validation; reliability; Peru; university students.

RESUMEN

El apoyo social es un concepto fundamental que describe cómo las relaciones humanas positivas y las redes sociales permiten a las personas superar eventos estresantes y encontrarse en un estado de relativo bienestar. Este estudio tiene como objetivo evaluar las propiedades psicométricas de Social Support Appraisals Scale (SS-A) en una muestra peruana. Los participantes fueron 417 estudiantes universitarios de

Lima Metropolitana. (M_{edad} = 21.78, DE = 4.09). La recolección de los datos se llevaron a cabo después de la aprobación del comité de ética y autorización de todas las partes involucradas Se evaluó un modelo teórico de tres factores utilizando análisis factorial confirmatorio. Los resultados mostraron buenos índices de ajuste y revelaron que la estructura tridimensional del SS-A era invariable en función del género y presentaba una fiabilidad adecuada. Asimismo, el apoyo social mostró correlaciones significativas con el estrés académico. A pesar de que una de las limitaciones está relacionada a la naturaleza no aleatoria de los datos, los hallazgos revelan evidencia preliminar que el *Social Support Appraisals Scale* es un instrumento confiable y con evidencias de validez para la evaluación del apoyo social percibido en esta muestra de estudiantes universitarios peruanos.

Palabras clave
Apoyo social; validación; confiabilidad; Perú; estudiantes universitarios.

Social support is a continually studied construct, mainly for its implications on people's health and emotional well-being (Novoa & Barra, 2015). Although the concept of social support lacked boundaries leading in the 80s, to some extent, there currently is some consensus regarding its definition (Alonso-Fachado, 2008). The conceptual complexity of social support is a consequence of its multidimensionality. Social support is, in the words of Vaux, a "meta-construct" (Vaux et al., 1986, p. 196) that encompasses different elements such as network resources, supportive acts, and subjective appraisals. This last aspect is particularly relevant to defining social support as a concept. Several theorists (Vaux et al., 1986) have shed some light on the significant role of the "belief that he is cared for and loved, esteemed, and a member of a network" (Cobb, 1976, p. 300) as a definition of social support. This subjective perception point of view of support has been linked with physical well-being (Koetsenruijter et al., 2015) as well as emotional health-related variables such as anxiety (Jacobson et al., 2017; Razurel et al., 2017), depression (Anderson et al., 2017; Frison & Eggermont, 2015) and mood disorders (Lynch-Jordan et al., 2015; Studart et al., 2015) among others.

In the educational field, social support is known to provide students with the means to combat academic stress (Fernández-Lasarte et al., 2019; Li et al., 2018). The more support a student receives, the less the psychological and physical reactions to their stressors (Yildirim et al., 2017). In fact, social support has been found to have both direct and buffering effects on academic stress symptoms (Lee & Goldstein, 2016).

Academic stress is a form of stress commonly experienced in the educational field and can negatively impact the student's performance. Research studies on the subject have shown high-stress indexes within the university environment, reaching a higher incidence during the periods immediately before exams (Stojanovic et al., 2018). The student perception of social support is a coping strategy that enhances academic achievement preventing school disengagement (Gutiérrez et al., 2017).

The conceptual heterogeneity of social support has also led to the construction of several instruments intended to measure it, but without a clear definition of which dimension of its construct was being measured (Terol et al., 2004). Each one of them has been constructed for populations with specific characteristics: Family APGAR (Smilkstein, 1978), as its name indicates the only source of social support would come from family; Duke-UNC Functional Social Support Questionnaire (Broadhead et al., 1988), measures confidential and affective social support and does not consider the social network; and the MOS-SSS questionnaire (Sherbourne & Stewart, 1991) designed for people with chronic diseases; are some examples. Despite the significant contribution made by each of these instruments, they assess social support exclusively from a perceived point of view.

The Social Support Appraisals Scale (SS-A; Vaux et al., 1986) has been translated into different languages: German (Laireiter, 2005), Turkish (Gökler, 2007), Chinese (Xin et al., 2007), Persian-Farsi (Abdollahzade Rafi et al., 2012), Portuguese (Antunes & Fontaine, 2005) and others. It is a psychometrically sound tool that, together with its easy administration, makes

its use widely spread among social researchers. It has thus been deemed adequate across diverse cultures, consistently demonstrating good reliability and validity properties.

In Spanish-speaking countries, two instrumental studies analyzing the structure of SS-A were found. Cárdenas-Castro et al. (2015) adapted and validated a reduced version of 10 items distributed in two out of the three dimensions (perceived social support of friends and family) in a Chilean university student sample. The results confirmed the SS-A as a useful tool in the Chilean context. Likewise, Nava et al. (2015) adapted the instrument to the Mexican sample. Vaux et al. (1986) proposed a theoretical structure corroborated by using exploratory factor analysis, evidencing that SS-A is an appropriate instrument to be used in Mexico.

Although the Spanish versions of the SS-A provide an important methodological contribution in each of their contexts, one drawback is the lack of contrast with related variables, which increased the test's robustness. Likewise, another void in these investigations is the lack of measurement invariance tested across groups, which would have allowed asserting the meaning of the scale items across participants (Manrique-Millones et al., 2014; Milfont & Fischer, 2010).

Measurement invariance is a method that allows verifying the coherence of the underlying construct across groups. It is necessary to ensure that the perceived social support has the same meaning for men and women and that its dimensions are also similarly perceived across gender while using the SS-A. Therefore, measurement invariance is a requirement for the subscales' validity across specific groups (Pendergast et al., 2017).

In Peru, Caycho et al. (2014) validated the Duke-UNC Functional Social Support Questionnaire in a specific sample of Peruvian migrants living in Italy. For the rest, different social support measures have been applied using validations from neighboring countries such as Argentina (Rodríguez & Enrique, 2007). One misconception is to assume that if an instrument

has had good psychometric results in one cultural group, it will behave the same. However, this is not always the case (Milfont & Fischer, 2010).

The present study aims to examine some psychometric properties of the adapted version of the SS-A within a Peruvian university student sample. This was tackled using Confirmatory Factor Analysis (CFA), testing the three-factor model proposed by Vaux et al. (1986) in the original instrument and replicated in the study by Nava et al. (2015) for the Mexican context. Furthermore, a multi-group CFA across gender was conducted to test if the factor structure is consistent between females and males, and reliability was analyzed. Finally, associations between the SS-A and SISCO Inventory of Academic Stress (Barraza, 2006) were explored. We hypothesized a positive relationship between coping and the three subscales of Perceived Social Support: Family, friends, and others (Amaya-Ropero & Carrillo-González, 2015; García et al., 2016), as well as a negative relationship between symptoms, stressors subscales of academic stress and perceived social support subscales (Howard et al., 2017; Nabi et al., 2013).

Method

Participants

The study included 427 undergraduate students from two private universities in Metropolitan Lima. Prior to data analysis, we examined possible outliers: 10 participants were excluded because their ages (from 45 to 53 years old) were outside the intended range. The final sample included 417 students. Ages ranged from 17 to 31 years (M_{age} = 21.78, SD = 4.09, Mdn = 20). From the total sample, 110 (26.4 %) participants were male, and 307 (73.6 %) were female. Likewise, 167 (40.1%) students mentioned that they work at least two hours per week, and 250 (59.9%) were devoted exclusively to study.

Materials

Social Support Appraisals Scale (SS-A; Vaux et al., 1986). The SS-A is a self-report questionnaire that highlights the degree to which a person feels loved and part of a group such as family or friends. In its adapted version for the Mexican culture (Nava et al., 2015) encompassed 15 items distributed in three factors as the original instrument: *Family* (6 items), includes statements such as "My family cares for me very much"; *Friends* (6 items) "My friends respect me" and *Others* (3 items) "I am respected by other people". Subjects respond to statements on a four-point Likert scale ranging from "totally agree" to "totally disagree." The *Family* and *Friends* scores oscillated between 6 to 24 points, and *Others* scores ranged from 6 to 12 points.

Previous studies (Nava et al., 2015) have proven good reliability on all three scales, Family ($\alpha = 0.82$), Friends ($\alpha = 0.87$) and Others ($\alpha = 0.64$), as well as the theoretical structure proposed by Vaux et al. (1986) was corroborated using exploratory factor analysis.

The SISCO Inventory of Academic Stress (SISCO; Barraza, 2006). The SISCO Inventory assesses the degree of academic stress in students of upper education or postgraduates. It is composed of 31 items assigned to 3 subscales or factors: *Stressors* identify the frequency in which the environmental demands are valued as stressors, containing 9 items; *Symptoms* identify the frequency in which the symptoms are presented, consisting of 18 items; and *Coping* identifies the frequency of coping strategies through 8 items.

Students rate the frequency of each behavioral item on a 5-point Likert scale ranging from 'never' to 'always'. The validated Peruvian version was used, showing good internal consistency ($\rho = 0.69$ to 0.88) and validity (CFI = 0.95; RMSEA = 0.050, CI 90% = 0.046, 0.054). (Manrique-Millones et al., 2019).

Procedures

The present research was a cross-sectional study. Non-random data was collected in two private universities in Metropolitan Lima. An institutional review board in Perú (i.e., The Research Committee of the Universidad San Martín de Porres in Perú) provided ethical clearance for conducting the research. Likewise, authorization of the directory was obtained. The original author of the instrument was contacted, and the use of the scale was approved. Questionnaires were administered to the students in their respective classes, collectively, informing them about the study's purpose and the conditions of anonymity.

Undergraduates were informed of the voluntary nature of participation and the confidentiality of the information given. Likewise, they gave informed consent before proceeding. This activity took place during regular university hours, consisting of one session which lasted around 40 minutes. Participation was nearly unanimous, with only one student refusing to participate due to health issues.

Statistical Analysis

Descriptive analysis was conducted using SPSS v20. Missing data was at random and encompassing 1% of the total sample, which was handled by replacing median distribution. Factor scores were calculated by adding the scores of the items on each subscale.

The validity of the three-factor model was assessed with Confirmatory Factor Analysis, using LISREL 9.20. The chosen estimation method was Diagonally Weighted Least Squares DWLS (with asymptotic covariance and polychorical correlation matrices) because of the items' ordinal scale nature and related issues of multivariate non-normality (Jöreskog & Sörbom, 2015).

We used the Comparative Fix Index (CFI) and the Root Mean Square Error of Approximation (RMSEA) to evaluate model fit. Model fit is considered acceptable if CFI is close to 0.90,

but above 0.95 indicates a good fit. Concerning RMSEA, a value of 0.08 shows an acceptable fit and close to or below 0.06 indicates a good fit (Chen, 2007; Kline, 2011). Factor loadings above 0.50 were considered significant (Dominguez-Lara, 2018).

Measurement Invariance Analysis was performed to investigate whether the internal structure differs for female or male students. A stepwise Multi-Group Confirmatory Factor Analysis (MGCFA) was used to evaluate nested models with gradually increasing parameters constrained (Pendergast et al., 2017). The invariance of the measurement model was tested in terms of factorial structure (*configural invariance*). If the model is satisfied, it means that participants from different groups have the same conception of the construct under evaluation. We test this first or baseline model by constraining the factorial structure to be invariant across groups. In the following step, we evaluate item loadings in factors (*metric invariance*); in this case, the aim is to know whether participants in different groups respond to items in the same way. If the model is satisfied, ratings are comparable across groups. This model is assessed by constraining the factor loadings to be invariant across groups. Further, *scalar invariance* was evaluated in which the intercepts are set equal across groups. Finally *invariance of measurement errors* was tested, in which all error variances are constrained to be equal across groups.

Regarding metric invariance, a model fit should not be significantly worse than the configural level. Specific criteria need to be applied to assess the differences in fit criteria between successive levels of measurement invariance. Such differences should not exceed 0.010 for the CFI (ΔCFI < 0.010; Cheung & Rensvold, 2002), and 0.015 for the RMSEA (Chen, 2007).

Furthermore, associations between Social Support Appraisals Scale and SISCO Academic Stress Inventory were inspected by means of Pearson´s correlation. Reliability was evaluated with Jöreskog's Rho (ρ) (Schweizer, 2011).

Results

Confirmatory Factor Analysis. CFA was performed to analyze whether the scales' factorial structure could be retrieved in a Peruvian sample. The three-factor model showed a good fit of the data, with SB-χ^2 (87) = 184.22, CFI = 0.99, RMSEA = 0.05, 90% CI [0.04, 0.06].

The standardized factor loadings were, except only one item, above the conventional threshold, according to which a standardized loading greater than 0.50 is considered very significant (see Table 1).

Regarding factor correlations, inter-correlations were significant and high between the factors family and friends ($r = 0.61$; $t = 5.57$; $p < 0.001$) and family and others ($r = 0.75$; $t = 7.55$; $p < 0.001$); and moderate between others and friends ($´r = 0.48$; $t = 5.20$; $p < 0.001$).

Table 1
SS-A Primary Factor Loadings, Internal Consistency, Means and Standard Deviations for Three-factor model

Item	Three- Factor Model		
	Family	**Friends**	**Others**
FAM1	0.71		
FAM2	0.83		
FAM3	0.88		
FAM4	0.79		
FAM5	0.93		
FAM6	-0.47		
FRI1		0.64	
FRI2		0.71	
FRI3		0.82	
FRI4		0.87	
FRI5		0.69	
FRI6		0.71	
OTH1			0.67
OTH2			0.57
OTH3			0.80
Coefficients			
Jöreskog Rho	0.85	0.88	0.72
Mean	19.49	18.8	9.47
SD	2.3	2.94	1.27

MultiGroup Confirmatory Factor Analysis. To test whether the factor structure is comparable for female and male students, an MGCFA was conducted for the three-factor model.

The fit of the configural model was acceptable SB-χ^2 (174) = 272.82, CFI = 0.98, RMSEA = 0.05. In Step 2, the factor loadings (Λ) were constrained to be equal groups. This level of invariance was nested within the previous model (configural). The fit of this model was also acceptable SB-χ^2 (189) = 291.72, CFI = 0.98, RMSEA = 0.05. There is a tendency to look at the difference between CFI values, suggesting that difference values should not exceed .01. Relying on this criterion, factor loadings between girls' and boys' sample were considered invariant. Further, in step 3, the fit of the scalar model (intercepts constrained to be equal across groups) was again acceptable SB-χ^2 (192) = 294.23, CFI = 0.98, RMSEA = 0.05. Finally, in step 4 error invariance was constrained to be equal across groups with an acceptable fit SB-χ^2 (207) = 305.61, CFI = 0.98, RMSEA = 0.05. The Social Support Appraisals Scale therefore shows factorial invariance across females and males, which can be seen in table 2.

Table 2

Measurement invariance across gender

Model	RMSEA (90%CI)	ΔRMSEA	CFI	ΔCFI
Configural Model	0.05 (0.04 - 0.06)		0.982	
Λ invariant	0.05 (0.04 - 0.06)	0.001	0.981	0.001
ΛΦ invariant	0.05 (0.04 - 0.06)	0.001	0.981	0
ΛΦΘ$_\delta$ invariant	0.05 (0.04 - 0.06)	0.002	0.982	0.001

Note. Δ=LMetric Invariance Model; ΔΦ= Scalar Invariance Model; ΔΦΘ$_\delta$ = Invariance of Measurement Errors Model; RMSEA = Root Mean Square Error of Approximation; ΔRMSEA= difference in Root Mean Square Error of Approximation between nested models; CFI = Comparative Fit Index; ΔCFI = Difference in index between nested models.

Reliability. Table 1 shows Jöreskog's Rho's (ρ). All sub-scales present acceptable internal consistency above .50, ranging from .72 (others) to 0.85 (friends). Nevertheless, if removing item FAM6 from family sub-scale, reliability improves (ρ= 0.92).

Social Support- Academic Stress. The scale Coping was significantly associated with Family (r = 0.21), friends (r = 0.22) and others (r = 0.23). Furthermore, Symptoms showed a negative correlation with the three social support subscales. Likewise, the Stressors scale was negatively associated to Friends (r = -0.15) and Others (r = -0.14). Finally, the Stressors scale did not show significant associations to the Family subscale.

Discussion

Social Support Appraisals Scale is an instrument that provides valuable information about each person's help he or she believes in receiving. Its efficiency has been proven in diverse cultures: Mexican (Nava et al., 2015) and Brazilian (Leme, 2013). These examples of Latin-American context showed evidence of the multidimensionality of its structure.

Our goal was to test some psychometric properties in a Peruvian sample. To fulfill this aim, we first evaluated the factorial structure of the scale. Secondly, we tested the Measurement Invariance (MI) across gender. After that, we inspected the reliability of the subscales, and finally, we performed associations with one related variable (academic stress).

Concerning the factor structure, we were able to verify the scale's dimensionality, which is shown as an appropriate instrument, and the three-factor model based on literature (Vaux et al., 1986) could be confirmed in the Peruvian sample and replicated in diverse cultures. Multi-group Confirmatory Factor Analysis confirmed the latent structure's invariance across gender and the robustness of the 3-factor structure. Measurement invariances (MI) evaluated in this study involved examining a set of increasingly restrictive models: the configural invariance model, the metric invariance model, the scalar invariance model and the error variance invariance model. As pointed out before, MI has not been addressed in previous attempts to measure social support appraisals (SS-A), and it is important as it proves that the SS-A scores are unaffected by gender bias.

Some studies claim to have found gender differences (Soman et al., 2016), yet without analyzing gender measurement invariance, one cannot be certain of such results' the validity.

All three sub-scales Family, Friends, and Others had reliability above the specialized psychometric literature's cutoff. These results are similar to what is reported in several studies with the SS-A (Cárdenas-Castro et al., 2015; Squassoni & Matsukura, 2014).

The instrument also showed significant positive correlations with the subscale Coping of the Academic Stress Scale (Wenli et al., 2016), hence the higher the perceived social support of a student, the greater coping strategies he/she might use (Perera & Digiacomo, 2015). A negative association with the subscale Symptoms and Stressors was found, meaning that perceived social support and academic stress of college students are inversely proportional (Glozah & Pevalin, 2014).

Results confirmed the hypothesized relationships between perceived social support and academic stress (Khan et al., 2016). Academic stress can lead to a deficient performance in the university, in which students frequently experience a lack of concentration, having an impact on their productivity (Essel & Owusu, 2017). Nonetheless, the social support's protective role can encourage student motivation and commitment to learning activities (Dupont et al., 2015).

Perceived family support has been shown to improve student interest and academic achievement (Mattanah et al., 2011). Likewise, when students perceive the support of friends, they are stimulated, not only at the cognitive but also at the emotional aspect (Friedlander et al., 2007). One can conclude that perceived social support is crucial for preventing or reducing academic shortcomings.

Notwithstanding, some limitations have to be addressed. First, in this study, we used a non-random sample; consequently, this group only represents a population sector, with specific characteristics: university students from private institutions. Therefore, it is recommendable for future studies, expanding the research, and

carrying out studies with different samples, involving public institutions and other Peru regions to have a more representative sample at a macro level. Second, related to the nature of the data (cross-sectional). Collecting information at a single point in time can be disadvantageous due to susceptibility to errors (biases and confounding factors). For future research, we suggest longitudinal studies that can establish causal relationships between variables and thus provide more reliable inferences. Finally, although we have used an alternative measure of reliability (ρ) that seems adequate to the data features than Cronbach's alpha (Sijtsma, 2009), test-retest reliability could have given more stability across time.

Conclusions

To summarize, the present study results provide empirical support for the factorial structure of the Social Support Appraisals Scale. In this sense, the SS-A can be seen as a trustworthy measure for assessing social support in this particular sample and can be used for meaningful comparisons across gender. It can also be considered to assess the relationship between stressful events in the school setting and social support in education at home, guided by technology and social isolation. Results bode well for this tool's utility and its applicability to diverse groups, contexts, and regions in Latin America.

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Notes

*   Research article.