RESEARCH ARTICLES

Evidence of Validity and Reliability of the Abbreviated Version of the De Jong-Gierveld Loneliness Scale in Argentinean University Students

Evidencias de validez y confiabilidad de la versión abreviada de la Escala de Soledad de De Jong-Gierveld en estudiantes universitarios de Argentina

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Summary

The aim of this study was to provide psychometric evidence of the functioning of the De Jong Gierveld's Loneliness Scale in university students from Argentina. An empirical instrumental research was conducted, in a sample of 307 university students, between 18 and 54 years old. The Spanish translation of the De Jong Gierveld's Loneliness Scale and the Spanish translation for Argentina of the Patient's Health Questionnaire were administered. The results of the Confirmatory Factor Analysis suggested that this instrument should be considered bidimensional, with an equitable distribution of elements in each factor representing social and emotional loneliness, respectively. The factor loadings of the items were very good, indicating that the indicators are properly related to their respective dimensions. The internal consistency was optimal. These results show that the scale is homogeneous and has a good connection between its elements. Scope and limitations of the instrument are discussed.

Keywords: Social loneliness; Emotional loneliness; Psychological evaluation; University students.

Resumen

El estudio tuvo como objetivo aportar evidencias psicométricas del funcionamiento de la Escala de Soledad de De Jong Gierveld (DJGLS) en estudiantes universitarios de Argentina. Para ello, se realizó una investigación empírica de tipo instrumental en una muestra de 307 estudiantes universitarios, de entre 18 y 54 años de edad. Se administró la traducción al español de la Escala de Soledad de De Jong Gierveld y la traducción al español argentino del *Patient Health Questionnaire.* Los resultados del análisis factorial confirmatorio sugieren que la escala debe considerarse como bidimensional con una distribución equitativa de ítems en ambos factores que representan a la soledad social y emocional, respectivamente. Las cargas factoriales de los ítems fueron muy buenas dando cuenta de que los indicadores se relacionan de manera apropiada con sus respectivas dimensiones. La consistencia interna fue óptima. Estos resultados demuestran que la escala es homogénea y posee una buena correlación entre sus ítems. Se discuten alcances y limitaciones del instrumento.

Palabras claves: Soledad social; Soledad emocional; Evaluación psicológica; Estudiantes universitarios.

INTRODUCTION

People's social lives can be a source of positive emotions and enjoyable experiences (Algoe, 2019). Likewise, bonds with other people can be of great use when facing stressful situations; and they even promote thriving (Feeney & Collins, 2019). In that regard, it is considered that healthy social relationships can be a protective resource for people.

However, the outlook is not always encouraging since social life can sometimes become a source of discomfort, anxiety or conflict, giving rise to loneliness, which is one of the problems that deteriorate people's social life. From a cognitive perspective, loneliness is considered to be a universal phenomenon that arises as a result of an evaluation resulting from a perceived mismatch between quality and quantity of relationships and the standards of these relationships (Perlman & Peplau,1998).

In this regard, the author emphasizes that there are two central elements to this concept: the negative quality of the feeling and the perception of a discrepancy between real and desired links.

Moreover, from the perspective of social needs, loneliness is understood as the presence of one or more deficient social provisions or unsatisfied social needs. In this regard, Weiss (1973) distinguishes two types of loneliness: emotional loneliness, understood as the feeling of emptiness, desolation and abandonment, resulting from the absence of significant relationships; and social loneliness, which arises from the perceived lack of close relationships such as friends, siblings, etc. This author's perspective has been widely used in the study of loneliness and is current in current studies on loneliness (Calati et al., 2019).

Loneliness can be considered a phenomenon of great importance for psychological health, since it is a normal experience shared by all mankind, but at the same time it can be considered a clinical problem. For example, a review of 35 articles including a total of 77,220 participants evidenced that loneliness is associated with increased mortality (Rico-Uribe et al., 2018). In this regard, loneliness is a phenomenon that is associated with emotional maladjustments such as depression, as well as being linked to suicide (McClelland et al., 2020), recently the prevention of loneliness was associated with active aging and a higher quality of life (Buz et al., 2014). These evidences suggest that loneliness may be a relevant problem for Psychology, Clinical Health and Public Health in the Nations.

The relationship of loneliness with depression is well established by scientific research; a recent meta-analysis of 88 studies, involving 40,068 participants showed that the relationships between loneliness and depression are direct and their effect size is moderate (Erzen & Çikrikci, 2018). The association between both problems, loneliness plus depression, has been shown to be harmful especially for elderly men, who see their life expectancy reduced, increasing their mortality as a result of suicidality, cardiovascular diseases (Holwerda et al., 2016; Hoogendijk et al., 2020) and/or mental illness (Schutter et al., 2021).

These findings indicate how serious loneliness can be for individuals, and have led some researchers to become interested in studying the economic cost of this problem. In this regard, it is necessary to study in depth the dynamics of this variable in young people and adults in order to build preventive and/or therapeutic strategies before the onset of old age (Mihalopoulos et al., 2020).

In Argentina, the most widely used scales to assess loneliness in adults with adequate psychometric properties are 2: the University of California Los Angeles Loneliness Scale (UCLA-SL) adapted in 1997 by Sacchi and Richaud de Minzi;and the Buenos Aires Loneliness Scale (ESBA) constructed by Auné et al. in 2019. The first has 20 items with four Likert-type response options, the scale is constructed according to the cognitive model of loneliness (Peplau & Caldwell, 1978) and has been widely used. There are revised versions of this scale through which researchers have tried to resolve some of its weaknesses (Russell et al., 1980; Russell, 1996), abbreviated versions with different numbers of items and translations into different languages (Alsubheen et al., 2021). The factorial structure of the scale is not clear, some studies and versions of the scale present one, two and even three factors or dimensions; there is still no agreement on the subject among researchers despite the appropriate psychometric characteristics that the national version of the scale boasts (Kuznier et al., 2016). Few recent studies were found that analyzed the instrument (Auné et al., 2019a).

The Buenos Aires Loneliness Scale has 7 items with a four-option Likert-type response mode. Despite being a scale with good discriminative capacity between items and adequate internal consistency (Cronbach's alpha=.80), the measurement error of the scale increases as the level of perceived loneliness decreases, it does not allow for an accurate assessment of people with low levels of loneliness. However, has a high level of accuracy for measuring high and medium levels (Auné et al., 2019).

The De Jong Gierveld Loneliness Scale (DJGLS) has 11 items to operationalize emotional and social loneliness (De Jong Gierveld & Van Tilburg, 2010), the DJGLS was adapted and/or validated for use in several countries, including Spain (Buz & Prieto, 2013; Buz et al., 2014), Peru (Ventura-León & Caycho-Rodríguez, 2017a), Iran (Hosseinabadi et al., 2021), Israel (Iecovich, 2013), Turkey (Çavdar et al., 2015) and the Netherlands (Uysal-Bozkir et al., 2015). Recently, a paper was found that reports the first advances in the study of this instrument in Argentina (Auné et al., 2021), but there are still few articles that report in detail its psychometric performance in this country. The results of these adaptations showed that the DJGLS has adequate psychometric properties to assess the variable loneliness in a one-dimensional manner and/or the social and emotional dimensions in an adult population. Its abbreviated six-item version proved to be adequate, especially for cases where extensive surveys are used. In this version, the α coefficient for the complete 6-item scale proved to be quite reliable (α= .70 and .76) to evaluate it in the adult population, as well as the 2 dimensions: social (α= .70 y .73) and emotional (α= .67 and .74) with three items each. (De Jong Gierveld & Van Tilburg, 2006). Studies indicating very good performance of this abridged version were found in older adults in Spain (Ayala et al., 2012); in adults in Norway (Bonsaksen et al., 2019) and in adults in Brazil (De Holanda et al., 2018), among others.

The brief review presented allows us to conclude that the available loneliness scales, with validation in Argentina, assess loneliness from a one-dimensional perspective. Taking into account this methodological limitation and with the purpose of providing a psychometrically robust instrument to distinguish between social and emotional loneliness, the objective of this study is to validate the DJGLS in a population of Argentinian adults.

METHOD

Type of Study

An empirical study of instrumental type was carried out. In this type of research, the psychometric properties of psychological assessment measures are analyzed. This study evaluated an existing scale with a Spanish translation carried out in Spain to provide evidence of its effectiveness in a population of Argentinian university students (Ato et al., 2013).

Participants

A non-probability convenience sample of 307 university students from Argentina was used. The selection of the type of sampling was determined by the restrictions established in Argentina due to the COVID-19 pandemic, where universities did not have face-to-face activities; therefore, it was decided to contact students through social networks.

Participants' ages ranged from 18 to 54 years, with a mean of 23.53 ($DS = 5.41$). Of these, 73.6% of the participants were women, 63.2% of the participants reported living with their family of origin, 20.8% reported living alone, and the remaining percentage was made up of participants living with their own family or living with people of the same age without family ties.

Data Collection Instruments

Spanish translation of the De Jong Gierveld Loneliness Scale (Buz et al., 2014), in its abbreviated six-item version (De Jong-Gierveld & Van Tilburg, 2006). This instrument evaluates loneliness using sentences that do not include the term loneliness, the scale is constructed with a Likert format, where each statement has three response options. It has two subscales of three items each that operationalize Social and Emotional Loneliness. To calculate the scores, the scale is dichotomized by assigning a value of 0 for negative answers and 1 for "more or less" and "yes" answers. The minimum score in each subscale is 0, while the maximum is 3. In addition, the maximum value for the entire scale is 6. Regarding reliability, Cronbach's alpha values were α =.91; .87 and .89 for the full scale and the social and emotional subdimensions, respectively (Buz et al., 2014). In the abbreviated scale, Cronbach's alpha values were α = .77; .87 and .58 for the full scale, and the social and emotional dimensions, respectively (Ayala et al., 2012).

Translation into Argentinian Spanish of the Patient Health Questionnaire (PHQ9) (Bonicatto et al., 1999; Kroenke & Spitzer, 2002), this instrument is used worldwide as a screening test for depression. It has nine items in Likert format, with four response options that evaluate the frequency of depressive symptoms (never, several days, more than half of the days, almost every day). The instrument has shown good performance and internal consistency in Argentina (α=.87) (Urtasun et al., 2019). In this study, Cronbach's alpha was .87.

Procedure

The information was digitally collected using the Google® Forms application, the protocols were elaborated in said software and shared virtually through social networks, inviting university students in Argentina to participate and requesting collaboration to socialize the link. Data collection was carried out in October and November 2021. An informed consent form was included at the beginning of the questionnaire indicating the objectives of the research and detailing the anonymous and confidential treatment of the data. the form was configured in such a way that participants could accept or not the consent, but only those who accepted had access to complete the Scale.

Information Analysis

The data were loaded into SPSS v.20.0 software. In the first step, a descriptive and statistical analysis of the items was performed and the assumption of univariate normality was tested from the values of skewness and kurtosis. To assess multivariate normality, Mardia's coefficient was calculated. Then, in the second step, the corrected item-total correlations were analyzed to evaluate their discriminative power. In the third step, a Confirmatory Factor Analysis was performed in LISREL 9.3 software (student version) to assess the validity based on the internal structure of the scale. For this step, the diagonally weighted least squares (DWLS) estimation method recommended for ordinal scales was used, since it does not require compliance with the normality assumption and is invariant with respect to the measurement scale (Asún et al., 2016; Rodríguez & Ruíz, 2008). Following the literature review of articles reporting DJGLS analysis (cf. studies mentioned in the introduction), two models were tested: In the first model, all items loaded on a single factor representing loneliness as the underlying construct. In the second model, the items were equally divided to give rise to the factors of social loneliness and emotional loneliness. To evaluate the fit of the models and decide the most appropriate one, the following criteria were used: values of $x2/gl \leq 5.00$ were considered acceptable (West et al., 2012). As for CFI, TLI and GFI $\geq .95$ were considered excellent (Brown, 2006; values of RMSEA $\leq .08$, with lower and upper values of the confidence interval close to 0 and .08 respectively, were considered appropriate. SRMR values $\leq .08$ were considered acceptable (Hooper et al., 2008). In the fourth step, the factor loadings of each of the items were checked to ensure that they exceeded .30 and the McDonald Omega coefficient was calculated to assess reliability based on internal consistency. This coefficient is preferable to Cronbach's alpha in cases where the scales have few items and few response options (Ventura-León & Caycho-Rodríguez, 2017a). In the fifth step, a

correlation analysis (Spearman's rho) was carried out between the values of the loneliness scale and a question in which the participants answered how often they feel lonely based on a single-item Likert scale with four response options (1: Never - 4: Always). Thus, the criterion validity of the scale was evaluated. In the last step, a bivariate correlation analysis was performed using Pearson's r coefficient between the dimensions of loneliness and depression in order to provide evidence of nomological validity.

RESULTS

The asymmetry values obtained can be considered mostly excellent. As for kurtosis, the values indicate a platykurtic distribution although, following Tabachnick and Fidell (2013) they can be considered adequate for the analyses developed, not representing severe violations of normality. Mardia's coefficient was 4.16, which can also be considered acceptable (Rodriguez & Ruiz, 2008). As for the discriminative power of the items, in all cases the criterion of .30 (Loewenthal, 2001), which indicates an adequate level of discrimination, was exceeded. The results can be seen in detail in Table 1.

Table 1.
Mean, standard deviation, skewness, kurtosis and corrected r for each item.

	M	*SD*	*S.*	*Kurt.*	*r* item-total corrected
1. I feel a sense of emptiness around me.	.63	.48	-.54	-1.73	.55
2. There are enough people I can turn to in case of need.	.43	.50	.28	-1.93	.49
3. I have many people to rely on completely.	.76	.43	-1.24	-.47	.40
4. There are enough people with whom I have very close friendships.	.48	.50	.07	-2.01	.53
5. I miss having people around me.	.63	.48	-.54	-1.73	.35
6. I often feel abandoned.	.48	.50	.09	-2.01	.63

Source: Elaborated by the author.

The minimum, maximum, mean and standard deviations were also calculated for each of the instruments used in this study. The results are shown in Table 2.

The Confirmatory Factor Analysis yielded very good fit values for both models, although the one-dimensional model obtained error values (especially the RMSEA) that exceed the cut-off point suggested by the scientific literature. The comparison of both results indicates that the two-dimensional model was slightly superior; complete information on the fit of the compared models can be found in Table 3.

Table 2.
Descriptive statistics for the study variables.

	Loneliness (full scale)	Social loneliness	Emotional loneliness	Loneliness question	Depression
Min	0	0	0	1	0
Max	6	3	3	4	27
M	3.41	1.67	1.74	2.11	10.23
SD	1.93	01.08	1.13	.86	6.14

Note: Min: minimum; Max: maximum; M: mean; SD: standard deviation.
*Source*: Elaborated by the author.

Table 3.
Fit and error indices for each model.

	x2	*P*	*gl*	*x2/gl*	*CFI*	*AGFI*	*NFI*	*RMSEA*	*CI 90 RMSEA*	*SRMR*
MU	16.79	.052	9	1.86	.992	.985	.983	.185	.154 - .218	.0565
MB	3.45	.902	8	.43	1.00	.997	.997	.0764	.0398 - .115	.0252

Note: MU: One-Dimensional Model; MB: Two-Dimensional Model.
Source: Elaborated by the author.

As for the factor loadings in the two-dimensional model, they ranged between .62 and .87 in the social dimension, and between .53 and .97 in the emotional dimension. The correlation between both factors was .81. These data can be visualized in Figure 1.

Source: Elaborated by the author.
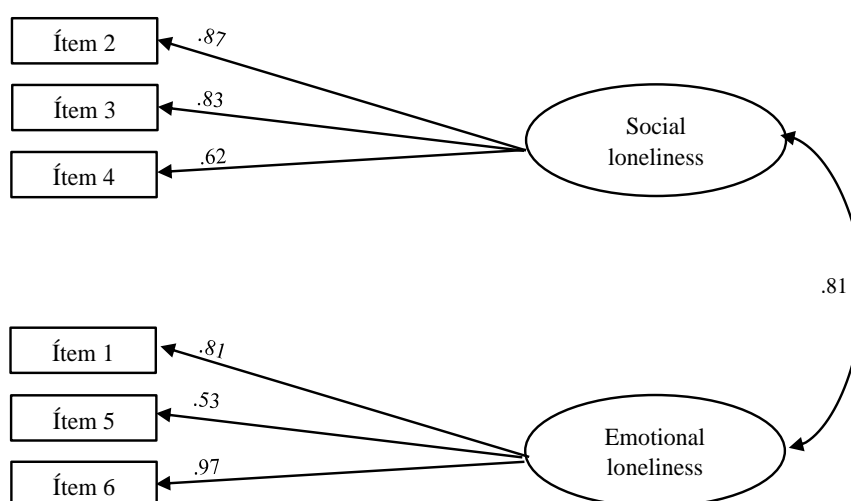
Figure 1.
Confirmatory Factor Analysis of the DJGLS, abbreviated as DJGLS.

Regarding the internal consistency of the scale, the McDonald's Omega values obtained were .83 for the social loneliness scale, .83 for the emotional dimension and .90 for the full scale. These values suggest that the internal consistency of the instrument, both for the subscales and for the full scale, is very good.

The correlation analysis of the DJGLS with the item proposed to evaluate this variable yielded a Spearman's rho value = .33 for the social dimension, .54 for the emotional dimension and .50 for the full scale; in all cases p < .001.

Finally, as evidence of nomological validity, the following Pearson's r values were obtained: .47 for Social loneliness, .57 for Emotional loneliness and .60 for the full scale. Here again, the p values were always < .001. Following Cohen's (1992) criteria, these values can be considered moderate to large.

The results of the internal consistency and correlation analyses are detailed in Table 4.

Table 4.
Correlations and internal consistency of loneliness and its dimensions.

	Social loneliness	Emotional loneliness	Loneliness (Full Scale)
Loneliness question (Spearman's *rho*)	.33	.54	.50
PHQ-9 (Pearson's *r*)	.47	.57	.60
McDonald's omega	.83	.83	.90

Source: Elaborated by the author.

DISCUSSION

The aim of this study was to provide psychometric evidence of DJGLS functioning in university students in Argentina. In general terms, the results obtained indicate that the instrument tested has an adequate performance, which suggests that it can be used in new research on the Argentinian adult population.

In order to meet the proposed objective, first of all, an analysis of the items of the scale was carried out, obtaining as a result good discrimination indexes: this translates into an adequate

ability of the items to differentiate between participants with high and low levels of feelings of loneliness. Future research should provide normative values to optimize the interpretation of scores and establish risk values.

The results of the confirmatory factor analysis suggest that the scale should be considered as two-dimensional, with an equal distribution of items in both factors representing social and emotional loneliness, respectively. These results coincide with validations in several countries (Ayala et al., 2012; Çavdar et al., 2015; De Holanda et al., 2018; Hosseinabadi et al., 2021; Ventura-León & Caycho-Rodríguez, 2017b). The two-dimensional structure of this scale offers a methodological innovation for Argentinian researchers, since the instruments found so far in Argentina did not operationalize the construct from this bifactorial perspective, and the complete version of the instrument being validated by Auné et al. (2021) showed a single-factor structure. Previously it was found that social and emotional loneliness, although associated, are differential constructs (Diehl et al., 2018) so it is relevant to study them separately.

In addition, the factor loadings of the items were above .50, showing that the indicators are appropriately related to their respective dimensions. Likewise, the internal consistency was optimal. In this aspect, values similar to those found by De Holanda et al. (2018) in the adaptation to the Brazilian population were obtained. These results show that the scale is homogeneous and has a good correlation between its items (Campo-Arias & Oviedo, 2008).

Correlation analysis with the loneliness question yielded results that provide evidence about the criterion validity of the DJGLS. In this regard, it can be inferred that the scale evaluated allows us to obtain an appropriate measure of people's experience of loneliness, but provides additional information to that obtained by asking a direct question about loneliness (Lamprea & Gómez-Restrepo, 2007). Precisely, one of the characteristics of the DJGLS is that the items do not use the word loneliness, but evaluate this phenomenon based on feelings such as emptiness and abandonment, and the perception of not having reliable ties, help and/or friendship. However, the correlation values were higher for the association of the loneliness question with the emotional dimension, probably because the participants responded according to their feelings of loneliness rather than the perceived lack of bonds.

Finally, the correlations obtained with depression assessed through the PHQ9 were in accordance with expectations, indicating that loneliness is associated with higher values of depression. These results are consistent with those obtained in the meta-analysis of Erzen and

Çikrikci (2018). Also, evidence was found for the association between both types of loneliness (social and emotional) and depression in German university students (Diehl et al., 2018). These results show the importance of studying loneliness in people's lives, since those who experience high levels of loneliness may be at greater risk of suffering from depression (Quintero et al., 2015). The relationship between loneliness and depression was also observed in university students (Díaz et al., 2021; García et al., 2021).

The results of this study should be considered in light of its limitations. Although it was appropriate for the analyses developed here, the sample size can be improved in future research; this will allow the development of new analyses with a higher level of confidence in the results obtained. Also, the study collected data on a single occasion, ignoring evidence of temporal stability that would be of great value in strengthening the study of the psychometric properties of the instrument tested. In terms of the sample, the proportion of males and females was not equal; this may lead to biases in the analyses that should be addressed in future studies of functional invariance of the DJGLS.

Moreover, when assessing criterion validity, an ad hoc question was used, so there was no alternative standardized instrument to provide further evidence of the concurrent validity of the DJGLS.

However, beyond these limitations, this work is relevant because it aims to provide evidence of the good performance of a scale that has already been used in other Spanish-speaking countries with very good results. It is expected that the analyses reviewed here will encourage the use of this tool in new studies. In this regard, beyond the development of research aimed at resolving the limitations of this work, studies on loneliness in university life are of practical and scientific importance given the relevance of loneliness for the general health of individuals.

In conclusion, the DJGLS is an instrument that can be used to measure loneliness in the Argentinian university population, since it demonstrated good internal consistency, with good discrimination indexes between its items and with a two-dimensional structure that allows the evaluation of social and emotional loneliness. In addition, this scale is easy to apply since it has 6 items and is self-administered. All these characteristics indicate the value of this instrument for the scientific research on loneliness.

REFERENCES

Algoe, S. B. (2019). Positive interpersonal processes. *Current Directions in Psychological Science, 28*(2), 183-188. https://doi.org/10.1177/0963721419827272

Alsubheen, S. A., Oliveira, A., Habash, R., Goldstein, R., & Brooks, D. (2021). Systematic review of psychometric properties and cross-cultural adaptation of the University of California and Los Angeles loneliness scale in adults. *Current Psychology,* 1-15. https://doi.org/10.1007/s12144-021-02494-w

Asún, R. A., Rdz-Navarro, K., & Alvarado, J. M. (2016). Developing multidimensional Likert scales using item factor analysis: The case of four-point items. *Sociological Methods & Research*, *45*(1), 109-133. https://doi.org/10.1177/0049124114566716

Ato, M., López-García, J. J., & Benavente, A. (2013). Un sistema de clasificación de los diseños de investigación en psicología. *Anales de Psicología/Annals of Psychology*, *29*(3), 1038-1059. https://doi.org/10.6018/analesps.29.3.178511

Auné, S. E., Lozzia, G. S., Galibert, M. S., & Attorresi, H. F. (2019a). Análisis de funcionamiento diferencial del ítem por grupo etario en una escala de soledad. En *Séptimo Congreso Internacional de Investigación en Psicología*. https://backend.congresos.unlp.edu.ar/index.php/7ciip/article/view/508

Auné, S. E., Abal, F. J. P., & Attorresi, H. F. (2019b). La estructura de la conducta prosocial. Su aproximación mediante el modelo bifactorial de la Teoría de la Respuesta al Ítem Multidimensional. *Liberabit*, *25*(1), 41-56. https://doi.org/10.24265/liberabit.2019.v25n1.04

Auné, S., Galibert, M. S., & Attorresi, H. F. (2021). Escala de Soledad de De Jong Gierveld en el contexto argentino: primeros pasos para su adaptación. En *XIII Congreso Internacional de Investigación y Práctica Profesional en Psicología. XXVIII Jornadas de Investigación. XVII Encuentro de Investigadores en Psicología del MERCOSUR. III Encuentro de Investigación de Terapia Ocupacional. III Encuentro de Musicoterapia*. Facultad de Psicología-Universidad de Buenos Aires. https://www.aacademica.org/000-012/132

Ayala, A., Rodríguez-Blázquez, C., Frades-Payoc, B., João Forjaza, M., Martínez-Martín, P., Fernández-Mayoralase, G. & Rojo-Pérez, F. (2012). Propiedades psicométricas del Cuestionario de Apoyo Social Funcional y de la Escala de Soledad en adultos mayores no institucionalizados en España. *Gaceta Sanitaria*, *26*(4), 317-324. https://doi.org/10.1016/j.gaceta.2011.08.009

Bonicatto S., Gargoloff, P., Tutor, C., Lucero, S., Güenaga, F. & Torino, D. (1999) Screening of mental disorders in primary care: linguistic adaptation procedure of a diagnostic instrument. *Acta psiquiátrica Psicológica de América Latina, 45*(3), 223–234.

Bonsaksen, T., Opseth, T. M., Misund, A. R., Geirdal, A., Fekete, O. R. & Nordli, H. (2019). The De Jong Gierveld Loneliness Scale used with Norwegian clubhouse members: Psychometric properties and associated factors. *International Journal of Psychosocial Rehabilitation*, *22*(2), 88-100. https://hdl.handle.net/11250/2603057

Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. Guildford Press.

Buz, J. & Prieto, G. (2013). Análisis de la Escala de Soledad de De Jong Gierveld mediante el modelo de Rasch. *Universitas Psychologica*. *12*(3), 971-981. https://doi.org/10.11144/Javeriana.upsy12-3.aesd

Buz, J., Urchaga, D. & Polo, M. E. (2014). Factor structure of the de Jong Gierveld loneliness scale in Spanish elderly adults. *Anales de Psicología*, *30*(2), 588-596. https://doi.org/10.6018/analesps.30.2.148371

Calati, R., Ferrari, C., Brittner, M., Oasi, O., Olié, E., Carvalho, A. F., & Courtet, P. (2019). Suicidal thoughts and behaviors and social isolation: A narrative review of the literature. *Journal of Affective Disorders*, *245*, 653-667. https://doi.org/10.1016/j.jad.2018.11.022

Campo-Arias, A. & Oviedo, H. (2008). Propiedades Psicométricas de una Escala: la Consistencia Interna. *Revista de salud pública*, *10*(5), 831-839. https://www.scielosp.org/article/rsap/2008.v10n5/831-839/

Çavdar, D., Bağcı, V., Çorbacı, E., Sarıtaş, S. & KübraTaşdelen-Yayvak, M. (2015). Adaptation of De Jong Gierveld Loneliness Scale into Turkish. *International Journal of Humanities and Social Science*, 5(9), 84-92. https://tr-scales.arabpsychology.com/wp-content/uploads/pdf/de-jong-gierveld-yalnizlik-olcegi-toad.pdf

Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112, 155-159. https://dx.doi.org/10.20982/tqmp.03.2.p079

De Holanda, G., Nunes, P., Veloso, V., Jarmo, L. & Vilar, R. (2018). De Jong Gierveld Loneliness Scale- Short Version: Validation for the Brazilian Context. *Paidéia*, 28. https://doi.org/10.1590/1982-4327e2805

De Jong, J. (1998). A review of loneliness: concept and definitions, determinants and consequences. *Reviews in clinical gerontology*, *8*(1), 73-80. https://doi.org/10.1017/S0959259898008090

De Jong, J. & van Tilburg, T. (2010). The De Jong Gierveld short scales for emotional and social loneliness: tested on data from 7 countries in the UN generations and gender surveys. *European Journal of Ageing*, *7*(4), 293-300. https://doi.org/10.1007/s10433-010-0144-6

De Jong, J. & van Tilburg, T. (2006). A 6-Item Scale for Overall, Emotional, and Social Loneliness: Confirmatory Tests on Survey Data. *Research on Aging*, *28*(5), 582-598. https://doi.org/10.1177/0164027506289723

Díaz, C. I. B., López, V. A. Q., & Sauceda, A. C. (2021). El sentimiento de soledad y su relación con la ideación suicida en estudiantes universitarios. *Revista Inclusiones*, *8*, 80-94. https://revistainclusiones.org/index.php/inclu/article/view/247

Diehl, K., Jansen, C., Ishchanova, K., & Hilger-Kolb, J. (2018). Loneliness at universities: determinants of emotional and social loneliness among students. *International Journal of Environmental Research and Public Health*, *15*(9), 1865. https://www.mdpi.com/1660-4601/15/9/1865

Erzen, E., & Çikrikci, Ö. (2018). The effect of loneliness on depression: A meta-analysis. *International Journal of Social Psychiatry*, *64*(5), 427-435. https://doi.org/10.1177/0020764018776349

Feeney, B. C., & Collins, N. L. (2019). The importance of relational support for attachment and exploration needs. *Current Opinion in Psychology*, *25*, 182-186. https://doi.org/10.1016/j.copsyc.2018.11.011

García, D., Susana, M., & Aybar, N. (2021). *Correlación entre soledad, depresión y autoestima en jóvenes dominicanos* (Doctoral dissertation, Santo Domingo: Universidad Iberoamericana (UNIBE)). https://repositorio.unibe.edu.do/jspui/bitstream/123456789/1068/4/19-0637_TF.pdf

Holwerda, T. J., van Tilburg, T. G., Deeg, D. J. H., Schutter, N., Van, R., Dekker, J., Stek, M. L., Beekman, A. T. F., & Schoevers, R. A. (2016). Impact of loneliness and depression on mortality: Results from the Longitudinal Ageing Study Amsterdam. *The British Journal of Psychiatry, 209*(2), 127–134. https://doi.org/10.1192/bjp.bp.115.168005

Hoogendijk, E. O., Smit, A. P., van Dam, C., Schuster, N. A., de Breij, S., Holwerda, T. J., Huisman, M., Dent, E. & Andrew, M. K. (2020). Frailty combined with loneliness or social isolation: an elevated risk for mortality in later life. *Journal of the American Geriatrics Society*, *68*(11), 2587-2593. https://doi.org/10.1111/jgs.16716

Hooper, D., Coughlan, J., & Mullen, M. R. (2008). Structural equation modelling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods*, *6*(1), 53-60. https://core.ac.uk/download/pdf/297019805.pdf

Hosseinabadi, R., Foroughan, M., Harouni, G., Lotfi, M. & Pournia, Y. (2021). Psychometric Properties of the Persian Version of the 11-Item de Jong Gierveld Loneliness Scale in Iranian Older Adults. *Evaluation & the Health Professions*, *20*(10), 1-7. https://doi.org/10.1177/01632787211015713

Hu, L. T. & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: a Multidisciplinary Journal*, *6*(1), 1-55. https://doi.org/10.1080/10705519909540118

Iecovich, E. (2013) Psychometric Properties of the Hebrew Version of the de Jong Gierveld Loneliness Scale. *Educational Gerontology*, *39*(1), 12-27. https://doi.org/10.1080/03601277.2012.660860

Kroenke, K. & Spitzer, R. (2002). The PHQ-9: a new depression diagnostic and severity measure. *Psychiatric Annals*, *32*(9), 509–15. https://doi.org/10.3928/0048-5713-20020901-06

Kuznier, T. P., de Souza, C. C., da Mata, L. R. F., & Chianca, T. C. M. (2016). Propriedades psicométricas da escala de solidão da UCLA: revisão integrativa. *Revista de Enfermagem do Centro-Oeste Mineiro*, *6*(2), 2271-2281. https://doi.org/10.19175/recom.v6i2.1399

Lamprea, J. A., & Gómez-Restrepo, C. (2007). Validez en la evaluación de escalas. *Revista Colombiana de psiquiatría*, *36*(2), 340-348. https://www.scielo.org.co/pdf/rcp/v36n2/v36n2a13.pdf

Loewenthal, K. M. (2001). *An introduction to psychological tests and scales* (2da Ed.). Psychology Press.

McClelland, H., Evans, J. J., Nowland, R., Ferguson, E., & O'Connor, R. C. (2020). Loneliness as a predictor of suicidal ideation and behaviour: a systematic review and meta-analysis of prospective studies. *Journal of affective disorders*, *274*, 880-896. https://doi.org/10.1016/j.jad.2020.05.004

Mihalopoulos, C., Le, L. K. D., Chatterton, M. L., Bucholc, J., Holt-Lunstad, J., Lim, M. H., & Engel, L. (2020). The economic costs of loneliness: a review of cost-of-illness and economic evaluation studies. S*ocial psychiatry and psychiatric epidemiology, 55*(7), 823-836. https://doi.org/10.1007/s00127-019-01733-7

Peplau, L. A. & Caldwell, M. A. (1978). Loneliness: A cognitive analysis. *Essence*, *2*(4), 207-220.

Perlman, D. & Peplau, L. A. (1998). Loneliness. En H. Friedman (Ed.). *Encyclopedia of mental health*. Academic Press, 2: 571–581.

Quintero, Á., Henao, M. E., Villamil, M. M., & León, J. (2015). Cambios en la depresión y el sentimiento de soledad después de la terapia de la risa en adultos mayores internados. *Biomédica*, *35*(1), 90-100. http://doi.org/10.7705/biomedica.v35i1.2316

Rico-Uribe, L. A., Caballero, F. F., Martín-María, N., Cabello, M., Ayuso-Mateos, J. L., & Miret, M. (2018). Association of loneliness with all-cause mortality: A meta-analysis. *PloS one, 13*(1), e0190033. https://doi.org/10.1371/journal.pone.0190033

Rodríguez, N. R., & Ruiz, M. Á. (2008). Atenuación de la asimetría y de la curtosis de las puntuaciones observadas mediante transformaciones de variables: Incidencia sobre la estructura factorial. *Psicológica, 29*(2), 205-227. https://www.uv.es/psicologica/articulos2.08/6RODRIGUEZ.pdf

Russell, D., Peplau, L. A., & Cutrona, C. E. (1980). The revised UCLA Loneliness Scale: concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology*, *39*(3), 472. https://doi.org/10.1037/0022-3514.39.3.472

Russell, D. W. (1996). UCLA Loneliness Scale (Version 3): Reliability, validity, and factor structure. *Journal of Personality Assessment*, *66*(1), 20-40. https://doi.org/10.1207/s15327752jpa6601_2

Schutter, N., Holwerda, T. J., Kuipers, H., Van, R. H., Stek, M. L., Comijs, H. C., Peen, J. & Dekker, J. J. M. (2021). The association between loneliness and psychiatric symptomatology in older psychiatric outpatients. *Journal of Geriatric Psychiatry and Neurology*. *35*(6), 778-788. https://doi.org/10.1177/08919887211060022

Tabachnick, B. G. & Fidell, L. S. (2013) *Using Multivariate Statistics* (6ta Ed). Pearson.

Urtasun, M., Daray, F. M., Teti, G. L., Coppolillo, F., Herlax, G., Saba, G., ... & Irazola, V. (2019). Validation and calibration of the patient health questionnaire (PHQ-9) in Argentina. *BMC Psychiatry*, *19*(1), 1-10. https://doi.org/10.1186/s12888-019-2262-9

Uysal-Bozkir, Ö., Fokkema, T., MacNeil-Vroomen, J. L., van Tilburg, T. G. & de Rooij, S. (2015). Translation and Validation of the De Jong Gierveld Loneliness Scale Among Older Migrants Living in the Netherlands. *The Journals of Gerontology, Series B. 72*(1) 109–119. https://dx.doi.org/10.1093/geronb/gbv044

Ventura-León, J. L., & Caycho-Rodríguez, T. (2017a). El coeficiente Omega: un método alternativo para la estimación de la confiabilidad. *Revista Latinoamericana de Ciencias Sociales, Niñez y Juventud, 15*(1), 625-627. https://www.redalyc.org/journal/773/77349627039/html/

Ventura-León, J. L., & Caycho-Rodríguez, T. (2017b). Validez y fiabilidad de la escala de soledad de Jong Gierveld en jóvenes y adultos peruanos. *PSIENCIA. Revista Latinoamericana de Ciencia Psicológica*, *9*(1). https://doi.org/10.5872/psiencia/9.1.41

Weiss, R. (1973). *Loneliness: The experience of emotional and social isolation*. MIT Press.

West, S. G., Taylor, A. B., & Wu, W. (2012). Model fit and model selection in structural equation modeling. En R. H. Hoyle (Ed). *Handbook of structural equation modeling* (pp. 209-231). The Guilford Press.