

## Resilience Scale (RS-14): Psychometric Study in a Population of Young People from Lima and Callao

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### Abstract

*The Resilience Scale (RS-14) instrument assesses an individual's level of resilience when facing adverse life situations. This study aimed to examine the psychometric properties of the RS-14 in a sample of young adults from Lima and Callao, aged 18 to 29 years old. Initially, a statistical analysis of the items was conducted, revealing satisfactory normality criteria and discriminative capacity. Subsequently, validity evidence was obtained through Confirmatory Factor Analysis (CFA), demonstrating a good fit ( $\chi^2/df = 1.47$ , CFI = .94, TLI = .92, SRMR = .04, and RMSEA = .04). Finally, reliability was assessed using both Alpha and Omega coefficients, yielding values of  $\alpha = .91$  and  $\omega = .92$ , respectively, considered acceptable. In conclusion, the RS-14 is considered a valid and reliable scale for future research endeavors in this domain.*

**Keywords:** Psychometrics, Resilience Scale, youth, Reliability, Validity

### INTRODUCTION

Over time, resilience plays a fundamental role in mental health and education, derived from stressors that lead to both beneficial and detrimental decisions, while the individual recognizes his or her potential and capacity to preserve his or her mental well-being (Ortunio and Guevara, 2016). Resilience, therefore, manifests as an individual's ability to recover from overwhelming situations, representing a transformative process of coping with stress and adversity (Foster et al., 2019). Similarly, people's abilities help to resist and overcome adversities, despite having faced triggering situations (Uriarte, 2005). In addition, an individual is considered resilient when he or she uses affirmative coping methods and positive reappraisal in the face of the events he or she faces (Benavente and Quevedo, 2018). Currently, the emotional landscape of the population is unstable due to the pandemic; in the educational field, COVID-19 has forced students around the world to adapt their study habits and routines, as highlighted by the United Nations Organization (UN, 2020), which reports that 94% of students in general have been affected by this reality. Likewise, resilience in the psychological field is perceived as a behavior adopted by students to achieve their goals in three areas: pedagogical, work and individual (Vergel et al., 2021).

From another perspective, the Pan American Health Organization (PAHO, 2020) points out that the main objective of human security in relation to mental health is to increase resilience, especially in those populations in situations of vulnerability. However, psychiatrist Haris Shetty suggests that the population has focused on COVID-19 and death, losing interest in mental health (Natu, 2021). Moreover, according to the United Nations

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Children's Fund (UNICEF, 2021), living with COVID-19 has left a mark on people's mental state and psychosocial well-being, from childhood to adulthood.

From another point of view, in the field of philosophy, Richardson et al. (1990) propose a model called "reintegration after adversity", suggesting that an individual faced with adversity can handle it in different ways, since there is no single path; thus, the person has four reintegration alternatives. The first is dysfunctional reintegration, where the individual, when faced with adversity, resorts to the consumption of harmful substances. The second is reintegration with loss; after the breakup, the person has the desire and motivation to move forward, but the path may be difficult, with the risk of psychological imbalance. As for the third, homeostatic reintegration determines that, despite having lived through an adverse situation, the individual can return to his or her previous lifestyle, maintaining emotional stability. Finally, reintegration with resilience occurs when the individual, after the rupture, learns and experiences growth.

There is a great deal of research on resilience, such as that of Artuch et al. (2017), who conducted a study in Spain that led to a restructuring of the social and health studies model. Currently, the definition, procedures, and implementation plan for resilience intervention lack clarity, making it difficult to determine the effectiveness of the intervention accurately. Challenges include conceptualization of the construct, lack of adequate assessment tools, and appropriate research (Chmitorz et al., 2018). Supervised and verified instruments best suited for the variable were used. The Spanish version of the Resilience Scale (RS) with 14 items by Wagnild (2009) adapted by Sánchez and Robles (2014) was used, meeting the research development criteria.

The Resilience Scale (RS-14) is a construct available in several languages, including the study by Chen et al. (2020), who conducted the first assessment of psychometric characteristics in young adults in mainland China, demonstrating adequate structural and correlational validity. In addition, Sutherland et al. (2020) sought to validate the RS14 instrument to measure psychological resilience in the Kenyan OSAY population, demonstrating its validity and accuracy. Similarly, Surzykiewicz et al. (2019) examined and evaluated psychometric properties in Polish translation, concluding that RS-14 is a valid and useful tool for estimating resilience in different groups of Polish adolescents, including those with special needs and young adults. In summary, resilience represents a positive aspect of human psychology aimed at avoiding dropout and effectively handling situations. The social context of the research aims to guide individuals and entities on how to respond assertively to various situations in order to prevent threats that may affect their physical and psychological well-being. Similarly, in the field of health, it will allow a better diagnosis, requiring an instrument that accurately assesses and measures the construct. Ultimately, the study will be beneficial for young people, providing a valid and reliable scale for future studies related to resilience. Therefore, the following objective is formulated for the present study: To identify the psychometric properties of the RS-14 instrument in a population of young people in Lima and Callao.

## **METHOD**

### ***Design***

The present study adopts an instrumental approach, focused on analyzing the psychometric properties of psychological tests, as indicated by Ato et al. (2013). Likewise, it was conducted psychometrically, since its main objective was to accurately determine construct validity and reliability, as indicated by Alarcón (2008).

### ***Participants***

The sample was composed of 246 young people from Lima and Callao, being considered appropriate to validate the instrument, given that Argibay (2009) suggests that the minimum number of participants per item is 5. In addition, the sample included individuals aged between 18 and 29 years, of whom 69 were male and 177 female. Among them, 182 were enrolled in some academic level and 64 were not studying in Lima and Callao. The sampling method used was non-probabilistic by convenience, as participants were selected based on their proximity, accessibility and availability to complete the research instruments.

## ***Instrument***

### **Psychometric properties of the Sanchez and Robles 14-item Resilience Scale (RS-14) (Adapted to Spanish).**

The research was conducted using the scale (RS-14) developed by Sánchez and Robles (2014), whose Spanish version was applied in Spain. The purpose of the instrument was to examine the psychometric properties of the tool and adapt it to Spanish. This scale consists of 14 items, distributed in two dimensions: a) Personal competence, with 11 items, and b) Acceptance of oneself and life, with 3 items. An ordinal Likert-type scale with 7 response options was used, which made it possible to obtain a reliability of .79 by means of the alpha coefficient. The corrected correlations between the items were greater than .30 and all were significant. In addition, the results of the Barlett's Test ( $\chi^2(3) = 435.465$ ;  $p < 0.001$ ), the Kaiser-Meyer-Olkin (0.76) and the determinant of the correlation matrix (0.009) indicated an optimal correlation between the items. Validity was demonstrated through correlations with other variables, achieving concurrent validity with the CD-RISC scale (.87) and divergent validity with the BDI (-.79) and STAI (-.64) scales.

## ***Procedures***

In the first instance, authorization was obtained from the original author of the instrument, obtaining the necessary permission for its use, and the questionnaire was applied virtually through the Google Forms platform. Priority was given to the voluntary participation of the subjects, ensuring their consent to maintain anonymity. The questionnaire consisted of 14 questions, each with 7 response options. Subsequently, the link was disseminated through social networks. A pilot test was conducted with the participation of 100 young people, thus fulfilling the objectives proposed in the study. After obtaining the results of the pilot test, we proceeded to work with the final sample, composed of 246 young people who participated voluntarily. Finally, the information collected was downloaded into an Excel spreadsheet, and the corresponding analysis was carried out using the Jamovi and RStudio programs.

## ***Data Analysis***

The results derived from the analysis of the virtual construct were imported into JAMOVI and RStudio software (Sanchez, 2019). First, a statistical analysis of the items was carried out in order to obtain descriptive measures such as mean (M), standard deviation (SD), skewness (g1) and kurtosis (g2), aspects that provide information on the normality of the scores and their discriminative capacity. It is considered that these values should be within the range of +/-1.5 to be considered acceptable (Perez and Medrano, 2010). In addition, an item homogeneity index (IHC) higher than .30 was observed, which is considered adequate (Kline, 1998). On the other hand, the communalities were satisfactory, being greater than .40, which indicates an adequate relationship between the items and the factors (Lozano et al., 2013). Finally, multicollinearity was evaluated, which is considered acceptable when it does not exceed .90 (Guerrero and Melo, 2017).

Second, to assess validity, a Confirmatory Factor Analysis (CFA) was performed using the unweighted least square weighted estimator (WLSMV), which provided acceptable fit indices, such as ( $\chi^2/df < 3.00$ ; RMSEA < .08; CFI > .90; TLI > .90), as suggested by Escobedo et al. (2016), in addition to an SRMR < .08 (Abad et al., 2011).

Finally, reliability was evaluated by means of the Alpha and Omega coefficient, whose importance, according to Campo and Oviedo (2008), lies in determining the degree of relationship between the items and confirming the validity of the construct. Acceptable values are considered to be between .70 and .90.

## **RESULTS**

### **Statistical Analysis of The Instrument Items (RS-14)**

Table 1 presents the results of the statistical analyses of the RS-14 Resilience Scale items. It is observed that the mean (M) varies between 4.54 and 5.93, while the standard deviation (SD) ranges between 1.27 and 1.46, indicating a diversity in the responses provided. Likewise, the skewness (g1) and kurtosis (g2) values are within

the acceptable range of  $-/+1.5$ , with the exception of items 9, 12 and 13, which show a significant deviation (Pérez and Medrano, 2010).

In addition, favorable values are observed in the item homogeneity index (IHC), which exceed .30, indicating a correlation between the items (Kline, 2005). Similarly, the communalities show adequate values, as they are greater than .40 (Lozano et al., 2013), although items 11 and 14 exhibit values below the established threshold.

**Table 1 Statistical analysis of the items of (RS-14)**

RS-14	<i>M</i>	<i>DE</i>	<i>g<sup>1</sup></i>	<i>g<sup>2</sup></i>	<i>IHC</i>	<i>h<sup>2</sup></i>
Item 1	5.60	1.34	-1.16	1.31	.58	.63
Item 2	5.89	1.27	-1.23	1.25	.65	.53
Item 5	4.54	1.44	-0.66	0.12	.56	.66
Item 6	4.80	1.32	-0.70	0.39	.66	.53
Item 7	4.85	1.46	-0.61	-0.06	.52	.70
Item 9	5.61	1.33	-1.42	2.44	.69	.48
Item 10	5.51	1.33	-1.01	1.10	.59	.62
Item 11	5.43	1.42	-1.11	1.08	.76	.36
Item 12	5.83	1.28	-1.40	2.13	.62	.58
Item 13	5.93	1.35	-1.46	1.87	.72	.43
Item 14	5.57	1.35	-1.15	1.33	.80	.29
Item 3	4.74	1.36	-0.26	0.06	.52	.71
Item 4	5.24	1.39	-0.89	0.55	.61	.59
Item 8	5.14	1.39	-0.65	0.22	.48	.75

*Note. M: mean; SD: standard deviation; g<sup>1</sup>: skewness; g<sup>2</sup>: kurtosis; IHC: corrected item-test correlation; h<sup>2</sup>: commonality.*

**Evidence of Validity Based on Internal Structure Using The Instrument's CFA (RS-14).**

Table 2 presents the results of the Confirmatory Factor Analysis (CFA) applied to the Resilience Scale (RS-14), which reveals favorable fit indices. The value of  $\chi^2/df = 1.47$  indicates a good fit, as it is below the established threshold of  $\leq 3.00$ . In addition, a CFI of .94 is observed, suggesting an adequate comparative fit, and a TLI of .92, considered acceptable according to Escobedo et al. (2016).

Likewise, the SRMR index shows a score of .04, below the threshold of .08, which is considered acceptable according to the criteria of Abad et al. (2011). Finally, the RMSEA obtained a value of .04, which is favorable since it does not exceed the .08 threshold (Ruiz et al., 2010).

**Table 2 Evidence of validity based on internal structure using the CFA of (RS-14)**

MODEL	Absolute adjustment			Comparative adjustment	
	$\chi^2/df$	SRMR	RMSEA	TLI	IFC
Original 14-item model	1.47	.04	.04	.92	.94
optimal rates	$\leq 3.00$	$\leq .08$	$< .08$	$> .90$	$> .90$

*Note:  $\chi^2/df$ = Chi-Square between degrees of freedom; SRMR= Standardized Root Mean Square Residual; RMSEA= Root Mean Square Error of Approximation; TLI= Tucker-Lewis Index; CFI= Comparative Goodness of Fit Index.*

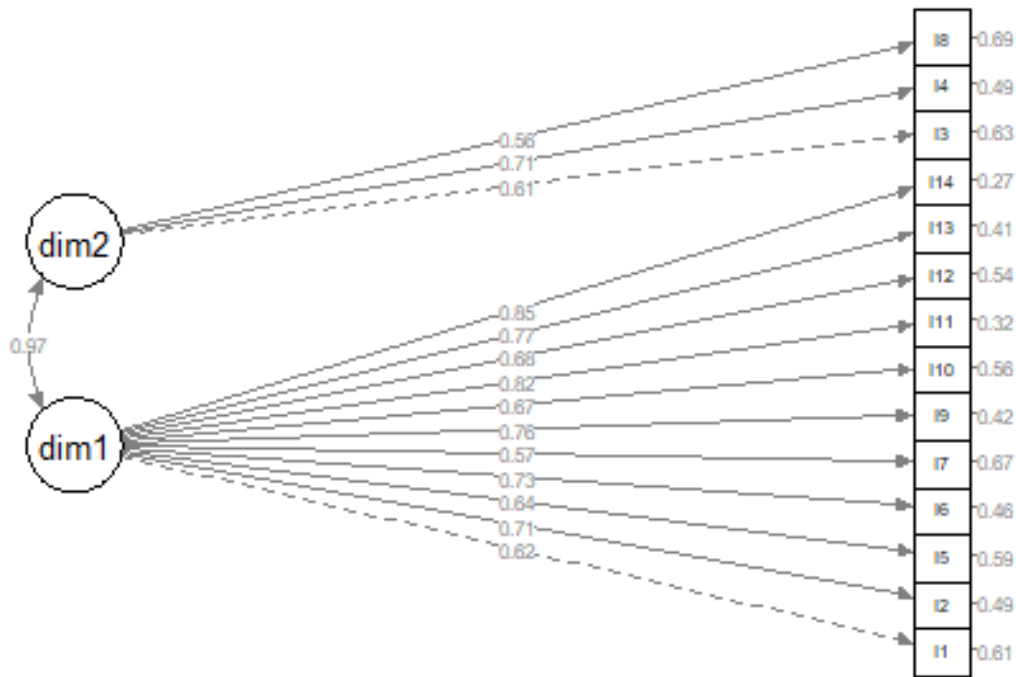


Figure 1 Path diagram of the RS-14 confirmatory factor analysis.

### Reliability by Internal Consistency Through the Alpha And Omega Coefficients of the RS-14.

The reliability coefficients were calculated using Alpha and Omega. A value of .91 was obtained for the Alpha, exceeding the threshold of .90, indicating acceptable reliability according to the established criteria (Ruíz-Bolívar, 2013). Similarly, a score of .92 was achieved for the Omega, placing it within the range considered adequate according to Campo and Oviedo (2008).

### DISCUSSION

Currently, resilience plays a fundamental role in the human capacity to face adverse situations, highlighting the positive skills that are developed in the face of them. According to MINSA (2020), resilience refers to the qualities that a person exhibits in the face of unfavorable circumstances, focusing on the search for solutions instead of focusing on the problem. Therefore, it is crucial to have an instrument that meets the standards established in the statistical analysis of the items, structural validity and reliability. In this study, Wagnild's Resilience Scale (RS-14), adapted to Spanish by Sánchez and Robles (2014), was used with the main objective of identifying the psychometric properties of the instrument.

After an exhaustive review, including studies such as those by Sutherland et al. (2020), Surzykiewicz et al. (2019), Cénat et al. (2018) and Pascoe et al. (2018), evidence was obtained to support the validity and reliability of the instrument to measure resilience in young people in Lima and Callao.

First, regarding the statistical analysis of the 14 RS-14 items, an adequate distribution was observed, in line with the findings of Chen et al. (2020), with the exception of items 9, 12 and 13 in terms of kurtosis. However, the communalities were greater than .40, comparable to previous studies such as Surzykiewicz, Konaszewski & Wagnild (2019), except for items 11, 13 and 14, which were below the expected.

Second, the results of the Confirmatory Factor Analysis (CFA) of the Resilience Scale (RS-14) showed acceptable fit indices, with a  $\chi^2/gf = 1.47$ , a CFI of .94 and a TLI of .92, similar to the data reported by Chen et al. (2020) with a CFI and TLI of .95. In addition, the SRMR index and RMSEA reached a score of .04,

comparable to the results obtained by Sutherland et al. (2020) with a score of  $<.05$ , and in the case of the RMSEA, similar to the study by Pascoe et al. (2018) with a value of  $.06$ .

Finally, reliability was evaluated through the coefficients  $\alpha = .91$  and  $\omega = .92$ , values that resemble those found by Sutherland et al. (2020) and Chen et al. (2020), with  $.90$  and  $.91$ , respectively. It should be noted that the RS-14 Alpha in the original model of Wagnild (2009) ranges between  $.91$  and  $.94$ , while in the model adapted by Sanchez and Robles (2014) it was  $.79$ . In conclusion, the results indicate that the RS-14 is a valid and reliable scale, supported by consistency with previous studies.

As with all research, this study also had limitations related to the access of the population, taking into account that the permits to access the schools took longer than expected, and the time provided was limited, which could have biased the results.

## CONCLUSIONS

In conclusion, the results obtained indicate that the RS-14 has solid evidence of validity and reliability for the accurate assessment of resilience in the youth population of Lima and Callao. These conclusions support previous findings from various studies, corroborating the efficacy and usefulness of the instrument as a valid tool in the field of mental health for measuring resilience.

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