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RESEARCH ARTICLE

Evidence of validity and reliability of the general self-efficacy scale in the Peruvian population

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ABSTRACT

Self-efficacy represents a fundamental construct within psychology, since it influences the way people face challenges, make decisions and persevere in the face of adverse situations. The evidence of validity and reliability of the general self-efficacy scale (GSE) in the Peruvian population was evaluated, and an instrumental design was used to evaluate the psychometric evidence. 2283 people participated; they were chosen intentionally, those selected formed population groups according to life stages (adolescents, young people, adults and older adults). Confirmatory factor analysis (CFA) was applied to evaluate the one-dimensional structure of the scale. Good adjustment indices were found (CFI and TLI with values above 0.95, RMSEA with a value < to 0.80 and SRMR < to 0.06). The results show that the data fit the one-dimensional structure of the instrument. The internal consistency presented values of 0.94, indicating high reliability. Therefore, it is concluded that the GSE presents adequate evidence of psychometric properties in samples of adolescents and young people, as well as being valid and reliable to be applied in Peruvian adults and older adults, offering a useful tool for the clinical, psychosocial and community work of this population.

Keywords: evidence of validity; reliability; psychometrics; general self-efficacy; confirmatory factor analysis; internal consistency

1. Introduction

Self-efficacy refers to the broad and stable conviction that people have about their ability to face different challenges and situations in daily life[1], this psychological concept has been linked to multiple dimensions of human development including academic performance, mental health, proactive behavior and resilience in the face of adversity[2,3]. Despite its importance, even in the Latin American and Peruvian context, it needs greater accumulation of empirical evidence in the entire population.

Likewise, self-efficacy represents a fundamental construct within psychology, since it influences the way people face challenges, make decisions, and persevere in the face of adverse situations[4]. The General Self-Efficacy Scale (GSE), designed by Schwarser and Jerusalem[5], has been internationally recognized as a

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useful instrument to assess this psychological dimension, however, its application in different cultural contexts can affect the accuracy of its results, making it necessary to validate its psychometric properties in each specific population[6].

Therefore, the analysis of self-efficacy is mainly based on social cognitive theory [7], this theory states that human behavior is the result of the dynamic interaction between personal factors (thoughts, beliefs and emotions), the social environment and observable behavior. In this framework, self-efficacy plays an essential role, referring to a person's perception of their ability to achieve goals in different contexts. From this perspective, self-efficacy is understood as a global and relatively stable belief about one's own ability to act effectively in a wide range of situations, without limitation to a specific field such as academic, work or personal[3].

In this sense, this approach is particularly useful for contexts such as Peru, where social, cultural and economic conditions can affect the way in which people develop and maintain their sense of self-efficacy, therefore, the theory proposed allows us to understand how these beliefs are formed, transformed and affect the adaptive behavior of human beings.

In relation to previous studies, research was found that studied psychometric properties in Peru, mainly in populations of adolescents and university students, considering the following: Corzo Flores[8], evaluated GSE in adolescent students, confirmatory factor analysis demonstrated adequate fit indices (X2/gl=3.1; CFI=0.96; RMSA= 0.05), the internal consistency, measured with Cronbach's alpha was 0.79, indicating good reliability. Similarly, Anicama Gomez et al.[9], evaluated the scale in university students during the pandemic context, obtaining results consistent with a one-dimensional structure and evidence of reliability greater than 0.70.

Sanchez Villegas[10] analyzed the GSE in basic education students, confirming its one-dimensional structure and obtaining good adjustment indices (CFI and TLI > 0.90), with reliability coefficients ranging from 0.78 to 0.79. Likewise, Atoche Farfan[11] validated the scale in a sample of university students, registering a high internal consistency (> 0.80) and adequate factor indicators (CFI= 0.975; TLI= 0.968; RMSEA= 0.08).

In addition, recent studies confirmed the structure of the instrument, Crisologo Reyes and Llempen Ramos[12], evaluated adolescent students, reporting moderate factor loads and an internal consistency of 0.85. On the other hand, Molina Lara[13], validated the scale in adolescents from Lima demonstrating that the one-dimensional model explains more than 33% of the variance, with a reliability of 0.81.

Similarly, Grimaldo Muchotrigo et al.[14], examined the invariance of the scale as a function of sex, confirming the one-dimensional structure and the internal consistency through the Omega was adequate. Luna Victora Levaggi[15] analyzed the GSE in university students, finding acceptable adjustment indices (CFI= 0.928; TLI= 0.880; RMSEA= 0.095) and a reliability of 0.83.

In this sense, in Peru, although self-efficacy has been the object of study in groups of adolescents and young people, research has not yet demonstrated rigor to demonstrate the validity and reliability of SAE in samples of the general population integrating adults and older adults. This lack of evidence in these groups limits certainty about aspects such as evidence of validity of the internal structure, internal consistency, and stability of the factor structure in the Peruvian cultural context.

Although there are psychometric studies on the subject, most of them have not been rigorously evaluated, because of the purpose of the research served for academic graduation (thesis), the review system, the pressure to comply with short deadlines, restrictions on economic resources and the frequent use of cross-

sectional designs with small samples in institutions (educational system). make it difficult to implement more robust procedures.

In addition, the cultural and linguistic diversity of the country could affect the interpretation of the items, thus compromising the accuracy of the results[16], as well as generating measurement biases, affecting the validity and reliability of the evaluations.

On the other hand, from the theoretical foundation, self-efficacy is developed from mastery experiences, model observation, verbal feedback, and physical and emotional states. Thus, a person with high self-efficacy will tend to face challenges with greater confidence and recover faster from failures. Likewise, this construction has been positively related to psychological adaptation, positive mental health, academic performance, coping with stress, and subjective well-being[1,5].

Therefore, it is pertinent to examine whether the self-efficacy scale retains its psychometric characteristics in the general Peruvian population, thus guaranteeing its usefulness as a valid and reliable tool in educational, clinical and research contexts.

Then, it was proposed to evaluate the evidence of validity and reliability of the general self-efficacy scale in the Peruvian population.

2. Methodology

An instrumental design was used to evaluate the psychometric properties of the instrument for the Peruvian population. The information was collected in the last half of 2024.

2.1. Participants

2283 people participated in the study, intentionally chosen, the following inclusion criteria were followed: older people from 12 years of age, of both sexes, reading and writing skills, and without serious sensory problems, those selected formed population groups according to life stages such as: adolescents, youth, adults and older adults; Children under 12 years of age, people with sensory problems and people who did not wish to participate voluntarily in the research were excluded.

2.2. Instrument

The General Self-Efficacy Scale (GSE), developed by Baessler and Schwarzer[17], was applied. The objective of the instrument is to assess the beliefs of personal competence to respond effectively to various stressful situations. The scale is structured in 10 items organized in a single dimension with answer alternatives of one to four points (incorrect, barely true, rather true and true). The instrument can be answered individually or collectively. The original version presents evidence of criterion validity, correlated with the depression, anxiety and optimism scales, finding a correlation between the construct self-efficacy and depression (r=0.42) and with anxiety (r=-0.43) and with the construct reliability (r=-0.57); likewise, the reliability evidence was carried out through Cronbach's Alpha coefficient, evidencing good reliability 0.81.

2.3. Procedure

The following aspects were considered for the application of the instrument: The adolescents were selected in the educational centers with the prior authorization of the directors, informing their families and students about the objectives of the study and agreeing to participate voluntarily. In the case of young people, a strategy was used to contact them in the places where they carry out their main activities (study, work, leisure and/or recreation) by locating them at the exit doors of universities, in sports and recreation centers; in the case of adults, they were contacted in the main shopping, food and recreation centers; and in the case of older adults, the main points to contact them were health centers and local community shelters. Likewise,

participation was confirmed through informed consent. The instrument was applied individually and with the presence of an applicator to resolve doubts in the event of any eventuality, in addition, the information collected is confidential, assuming the safeguarding of the data provided.

2.4. Ethical considerations

The study was carried out in accordance with the ethical standards of the Peruvian Ministry of Health, where the ethical guidelines for health studies with people were developed in accordance with resolution 233-2020, with the objective of promoting health research with ethical principles, in addition, this study is also governed by the ethical considerations of the Declaration of Helsinki.

2.5. Data Analysis

The data was digitized in a Microsoft Excel spreadsheet. For the analysis, the statistical software R and its RStudio programming environment were used. The data were imported from the openxlsx library[18]. For the cleaning and description of the data, the tidyverse[19] and psych[20] libraries were used. The descriptive analyses were carried out considering the nature of the variables, in the case of categorical variables, frequency tables were used, and in the case of numerical variables, descriptive statistics were used.

Aiken's V was used to evaluate content-based evidence (contextual adaptation of the instrument) according to three criteria: relevance, representativeness, and coherence, taking values above 0.70 as good validity. The treatment of the lost data was carried out by imputing categorical data with the Logistic Regression method, which is the recommended technique for items with a Likert scale response type.

Correlations were analyzed using polychoric correlation matrices due to the ordinal nature of the items of the instruments evaluated. Confirmatory factor analyses were applied for each instrument to evaluate the evidence based on the internal structure of the instruments. The analyses were carried out with the lavaan[21] and semPlot[22] libraries. For the evaluation of the adjustment indices, the following criteria were considered: values ≥ 0.90 and ≥ 0.95 in the CFI and TLI as adequate fit and good fit respectively, values ≤ 0.08 and ≤ 0.05 in the RMSEA as adequate fit and good fit respectively and for the SRMR, the values ≤ 0.08 and ≤ 0.06 were considered as good fit and ideal respectively[23].

Reliability was evaluated with Cronbach's alpha and McDonald's omega coefficients using the MBESS[24] and psych[20] packages, considering values greater than 0.70 as high internal consistency. Finally, a proposal for a scale is prepared with five categories according to percentile scores.

3. Results

The sample was made up of population groups (adolescents, youth, adults and older adults), with an average age range of 39.25 years and a standard deviation of ±18.05 years (range between 12 and 93 years); 39.9% were men and 60.1% women; 26.7% were married or in a common-law union, 65.8% were single, 3.3% were separated from their partner and 4.2% were widowed. As for schooling, 16.86% in incomplete basic education, 50.55% in complete basic education, and 32.59% in complete higher education. In relation to monthly income, 37.89% generated income below one thousand soles and 23.04% did not want to answer. The area of residence shows that 41% of the population lives in urban areas, 8.80% in residential areas, 6% in human settlements, 20.81% in associations, 7.45% in cooperatives, and 15.8% in young towns (**Table 1**).

Table 1. Description of the participants.

Variable	***f (M)***	***% (SD)***
Age	39.25	18.05
Sex		
Female	1373	60.14
Male	910	39.86
Age categorized		
From 12 to 17 years old	250	10.95
From 18 to 29 years old	542	23.74
Ages 30 to 59	1140	49.93
Over 60 years of age	351	15.37
Marital status		
Married	435	19.05
Cohabitant	173	7.58
Divorced	75	3.29
Bachelor	1502	65.79
Widower	98	4.29
Level of education		
Incomplete Basic	385	16.86
Complete Basic	1154	50.55
Complete Superior	744	32.59
Monthly Income		
Not applicable	526	23.04
Less than S/. 1,030	865	37.89
S/. 1,031 – S/. 2,000	429	18.79
S/. 2,001 – S/. 3,000	243	10.64
S/. 3,001 – S/. 4,000	122	5.34
S/. 4,001 and more	98	4.29
Residence		
Human settlement	137	6.00
Association	475	20.81
Cooperative	170	7.45
Slum	362	15.86
Residential	201	8.80
Urbanization	938	41.09

Note. *f = frequency; M = Average; %= percentage; SD = standard deviation.*

Table 2 presents the scores of the expert judges (were researchers from the disciplines of Psychology and Social Work, with experience in positive mental health issues and related to self-efficacy, contacted locally and nationally), on the content of the instrument, as well as the result with the Aiken V concordance index. The relevance, representativeness and coherence of the items were evaluated by four experts. The

results indicate values > to 0.92 in the three criteria used. These results suggest that the instrument has good evidence of content validity.

Table 2. Results of the analysis of the content evidence of the general self-efficacy scale.

AG	1st Judge			2nd Judge			3rd Judge			4th Judge			Results		
Item	**Rel.**	**Rep.**	**Coh.**	**Rel.**	**Rep.**	**Coh.**	**Rel.**	**Rep.**	**Coh.**	**Rel.**	**Rep.**	**Coh.**	**Rel.**	**Rep**	**Coh.**
AG1	3	3	3	4	4	4	4	4	4	4	4	3	0.92	0.92	0.83
AG2	4	4	4	4	4	4	4	4	4	4	4	4	1.00	1.00	1.00
AG3	4	4	4	4	4	4	4	4	4	4	4	4	1.00	1.00	1.00
AG4	3	3	3	4	4	4	4	4	4	4	4	4	0.92	0.92	0.92
AG5	4	4	4	4	4	4	4	4	3	4	4	4	1.00	1.00	0.92
AG6	3	3	3	4	4	4	4	4	4	4	4	4	0.92	0.92	0.92
AG7	3	3	3	3	4	4	4	4	4	4	4	4	0.83	0.92	0.92
AG8	4	4	4	4	4	4	4	4	4	4	4	4	1.00	1.00	1.00
AG9	4	4	4	3	3	4	4	4	4	4	4	4	0.92	0.92	1.00
AG10	4	4	4	3	3	4	4	4	4	4	4	4	0.92	0.92	1.00

Note: *Abbreviations = Rel.: Relevance, Rep.: Representativeness, Coh.: Coh.: Coherence*

Table 3 presents the descriptive statistics of the items, the number of records considered, the mean, the median, the standard deviation, the asymmetry and the kurtosis. The average value was 2.77 to 3.04 points. On the other hand, the values of asymmetry and kurtosis are within the range ± 2, indicating that the items follow approximate distributions to the normal distribution.

Table 3. Descriptive statistics of the items of the general self-efficacy scale.

Item	*M*	*Mdn*	*OF*	*Asim.*	*Curt.*
1	2.77	3	0.9	-0.26	-0.73
2	3.02	3	0.89	-0.56	-0.54
3	2.86	3	0.88	-0.31	-0.68
4	2.83	3	0.88	-0.29	-0.68
5	2.9	3	0.87	-0.4	-0.57
6	2.8	3	0.89	-0.22	-0.77
7	2.89	3	0.88	-0.38	-0.6
8	3.04	3	0.88	-0.56	-0.53
9	2.87	3	0.88	-0.34	-0.66
10	2.9	3	0.88	-0.39	-0.64

Note: *Abbreviations = M: Mean, Mdn: Median, SD: Standard Deviation, Asim: Asymmetry, Curt.: Kurtosis*

Table 4 shows the matrix of polychoric correlations between the items of the instrument analyzed. It is observed that the correlations range from 0.58 to 0.77, which suggests the adequacy of the application of a factor analysis in the dataset.

Table 4. Matrix of polychoric correlations of the items of the general self-efficacy scale.

Item	1	2	3	4	5	6	7	8	9	10
1	1									
2	.61	1								
3	.63	.7	1							
4	.62	.68	.65	1						
5	.62	.72	.67	.74	1					
6	.58	.65	.66	.7	.7	1				
7	.62	.7	.67	.72	.73	.72	1			
8	.62	.77	.66	.66	.71	.68	.73	1		
9	.63	.69	.66	.69	.7	.7	.71	.69	1	
10	.6	.69	.65	.68	.7	.67	.7	.7	.75	1

Confirmatory factor analysis (CFA) was applied to study the one-dimensional structure of the general self-efficacy scale. The results of the model are shown in **Table 5**. Good adjustment indices can be seen (*CFI* and *TLI* with values above 0.95, *RMSEA* with a value of less than 0.80 and the *SRMR* with a value of less than 0.06). These results indicate that the data fit the one-dimensional structure of the instrument.

Table 5. Goodness-of-fit indices of the one-dimensional model.

Model	X^2	*Gl*	*CFI*	*TLI*	*RMSEA*	*SRMR*
Unidimensional	418.55*	35	.99	.99	.069	.019

**p< .001.*

Figure 1 shows the one-dimensional model evaluated. It is observed that all factor loads were greater than 0.73, and that no covariant errors were found in the evaluated model. These results suggest the suitability of the model to assess overall self-efficacy.

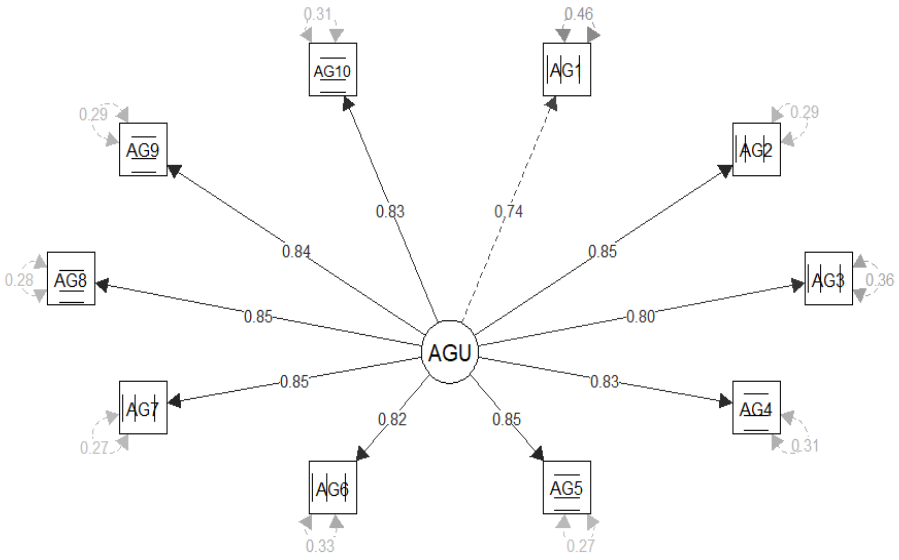

Figure 1. Factor loads of the one-dimensional model of the general self-efficacy scale.

Regarding reliability, internal consistency was evaluated with Cronbach's alpha and McDonald's Omega coefficients. Cronbach's alpha of .94 (95% CI: .93 - .94) and a McDonald's Omega of .94 (95% CI: .93 - .94) were obtained. These results indicate that the scale has high internal consistency, therefore, it has high reliability.

Table 6 presents the percentiles of the scores on the general self-efficacy scale. There are 5 categories ranging from very low to very high self-efficacy. For interpretation, it should be considered that a higher score represents a higher level of self-efficacy for the person being evaluated.

Table 6. Percentile rating for the general self-efficacy scale.

Percentiles	Direct Scoring	Levels
10	10 to 19	Very low
25	20 to 24	Casualty
50	25 to 30	Stocking
75	31 to 34	Loud
90	35 to 40	Very high

4. Discussion

The results found show adequate validity in the one-dimensional structure of the general self-efficacy (EAG) scale, supported by solid fit indices, the values found coincide with the international standards suggested by Hu and Bentler[25], to consider a model with good fit.

Likewise, the findings found are consistent with previous research carried out in the Peruvian context, but only in samples of adolescents and young people, such as those reported by Anicama Gómez et al.[9], did they find a one-dimensional structure in university students with CFI and RMSEA values like those of the present study.

Likewise, the scale confirms the one-dimensional structure with adequate fit indices within the expected ranges, ratifying the empirical evidence that the EAG maintains solid psychometric behavior in adolescents, young people, adults and older adults.

In addition, the consistency of these results contextually in the selected region of Peru suggests that the one-dimensional structure of the EAG is robust and generalizable considering the specific sociocultural aspect of each region in the country.

Overall, these results reaffirm that the GSE is a validated instrument to evaluate self-efficacy beliefs in the Peruvian population, presenting a factor structure consistent with the theoretical model originally proposed by Schwarzar and Jerusalem[5] and adapted by Scholz et al.[3]. Therefore, this psychometric strength strengthens its applicability in educational, community and clinical contexts.

Another relevant aspect to consider in the present study is the sample size > two thousand participants, offering an important contribution to the psychometric analysis of GSE in the adult and elderly population; The significant sample size not only gives greater statistical power, but also strengthens the stability and generalizability of the results, increasing the precision of the estimates of the parameters of the proposed model[26].

Therefore, the indicators obtained (CFI and TLI > 0.95, RMSEA < 0.80 and SRMR < 0.60), confirm a good fit for this population, considering that these findings are relevant if one considers that most previous studies focused on adolescents and young people[8-10], leaving a theoretical gap with respect to other stages of

the life cycle. In this sense, the present study expands the knowledge of evidence by including adults and older people (a group frequently underrepresented in validation studies), therefore, the evaluation of self-efficacy in this population is essential, due to its link with variables such as coping with stress, adaptation to aging and the perception of personal control[4,3].

In addition, the sample size allows greater stability to be obtained in confirmatory factor analyses (CFA), being significant in structural validation studies, in fact, some authors[27,28], highlight that samples of more than a thousand participants in validation studies allow a more robust evaluation of the dimensionality of the instruments in their internal structure.

In conclusion, the results obtained allow us to define that the GSE not only maintains its psychometric properties in samples of adolescents and young people but is also valid and reliable to be applied in Peruvian adults and older adults, offering a useful tool for the clinical, psychosocial and community work of this population.

Despite the significant contributions of the present study, it is important to recognize certain limitations that must be considered when interpreting the results: first, although we use a significant sample, non-probability sampling limits the representativeness of the general population, i.e., when intentional sampling is applied, the results could be influenced by selection biases, restricting the possibility of generalizing the findings to other geographical contexts or sociodemographic groups of the country. Likewise, not including children in the study prevents exploring the applicability of the instrument in early stages of development, considering that self-efficacy is a construct that begins to be formed from childhood, therefore, having empirical evidence in the population of children is important to understand their evolution throughout the life cycle.

Second, the study used a self-report instrument to evaluate effectiveness. This type of technique is useful for its efficiency and ease of application, however, it carries inherent risks, such as social desirability bias, participant subjectivity and possible problems understanding the items, especially in populations of older people or those with a lower level of education. These factors can affect the accuracy of the responses and consequently the validity of the results.

Finally, solid evidence was obtained at the psychometric level for a one-dimensional structure of the scale, but the generalization of the results should be done with caution, adults and older people who probably share certain contextual characteristics such as educational, occupational or cultural, which do not necessarily represent the entire Peruvian population. Therefore, it is advisable to carry out complementary studies that include other regions and contexts (rural, indigenous, Amazonian communities, etc.), as well as to apply the analysis of factor invariance between age or socioeconomic groups.

In addition, it is advisable to carry out studies with probabilistic and representative sample designs at the national level, which include participants from various regions of the country (coast, mountains and jungle), as well as rural and urban contexts, and in samples of children; This will make it possible to evaluate the validity and verify its applicability in a more heterogeneous population, respecting the cultural, linguistic and socioeconomic diversity of the country.

Likewise, it is suggested to explore the psychometric behavior of the scale through more robust models, such as the use of structural equations, which allow identifying the existence of different specific or residual dimensions not detected in traditional one-dimensional models.

On the other hand, it would be valuable to complement the quantitative approach with qualitative studies that investigate the understanding, interpretation and experiences related to self-efficacy in different

Peruvian contexts, this could enrich the operationalization of the construct and favor future cultural adaptations of the instrument.

Finally, longitudinal research could examine the behavior of self-efficacy and its relationship with other variables such as psychological well-being, mental health, work or academic performance, allowing not only to validate the scale, but also to expand its practical usefulness in intervention and prevention programs.

Conflict of interest

The authors declare that there is no conflict of interest.

References

1. Bandura, A. (2001). Social cognitive theory: AN agentic perspective. Annual Review of Psychology, 52: 1-26. doi:10.1146/annurev.psych.52.1.1
2. Schwarzer, R., and Ludzczynska, A. (2007). Delf-efficacy. In M. Gerrard and K. D. McCaul (Eds.), Handbook of Health Behavior Research, 3: 225-242. Springer.
3. Scholz, U., Dona, B. G., Sud, S., and Schwarzer, R. (2002). Is general sef-efficacy a universal construct? Psychometric findings from 25 countries. European Journal of Psychological Assessment, 18(3): 242-251. doi:10.1027//1015-5759.18.3.242
4. Bandura, A. (1997). Self-efficacy: The exercise of control. New York: W.H. Freeman.
5. Schwarzer, R., and Jerusalem, M (1995). Generalized Self-Efficacy Scale. In J. Weinman, S. Wright, & M. Johnston /Eds.), Measures in health psychology: A user´s portfolio. Causal and control beliefs (35-37). Windsor, UK: NFER-NELSON.
6. Luszczynska, A.; Scholz, U., and Schwarzer, R. (2005). The General Self-Efficacy Scale: Multicultural validation studies. The Journal of Psychology, 139(5): 439-457. doi:10.3200/JRLP.139.5.439-457
7. Bandura, A. (1986). Social Foundations of Thought and Action: A Social Cognitive Theory. Prentice-Hall.
8. Corzo Flores, A. (2020). Psychometric properties of the general self-efficacy scale in secondary school students in North Lima. [Bachelor's Thesis, Cesar Vallejo University]. UCV Repository. http://repositorio.ucv.edu.pe/handle/20.500.12692/43063
9. Anicama Gomez, E.R., Cevallos Davila, K.R., Delgado Saldaña, A.M., and Diaz Bendezu, A.A. (2023). Psychometric evidence of the general self-efficacy scale (GSES) in university students in the context of a health crisis. Psique Mag, 12(2): 81-96. https://revistasucv.edu.pe/index.php/psiquemag/article/view/2491
10. Sánchez Villegas, D.E. (2017). Psychometric properties of the general self-efficacy scale in secondary school students in the district of Nuevo Chimbote. [Bachelor's Thesis, Cesar Vallejo University]. UCV Repository. http://repositorio.ucv.edu.pe/handle/20.500.12692/10294
11. Atoche Farfan, C.A. (2024). Psychometric properties of the general self-efficacy scale in university students of Piura [Bachelor's Thesis, Cesar Vallejo University]. UCV Repository. http://repositorio.ucv.edu.pe/handle/20.500.12692/148379
12. Crisologo Reyes, L.H., And Llempen Ramos, A.A. (2024). General self-efficacy in secondary school students from an educational institution in Cajabamba. [Bachelor's Thesis, Universidad Señor de Sipan]. USS Repository. http://repositorio.uss.edu.pe/handle/20.500.12802/12829
13. Molina Lara, K.R. (2022). Psychometric properties of the general self-efficacy scale in adolescents from South Lima. [Bachelor's Thesis, Universidad Autónoma del Perú]. Autonomous Repository. http://repositorio.autonoma.edu.pe/handle/20.500.13067/1977
14. Grimaldo Muchotrigo, A., Correa Rojas, D. and Calderón-De la Cruz, G.A. (2021). Evidence of structural validity and measurement investment of the general self-efficacy scale in university students of Metropolitan Lima. Anxiety and Stress, 27(1): 30-36. http://ansiedadyestrés.es/es/art/2021/anyes2021a18
15. Luna Victoria Levaggi, D. (2018). Psychometric properties of the general self-efficacy scale in university students at a private university in Santa. [Bachelor's Thesis, Cesar Vallejo University]. UCV Repository. http://repositorio.ucv.edu.pe/handle/20.500.12692/26302
16. Hambleton, R. K., Merenda, P. F., & Spielberger, C. D. (2005). Adapting educational and psychological tests for cross-cultural assessment. Lawrence Erlbaum Associates. https://api.pageplace.de/preview/DT0400.9781135676575_A25024494/preview-9781135676575_A25024494.pdf
17. Baessler, J. & Schwarcer, R. (1996). Self-efficacy assessment: Spanish adaptation of the General Self-efficacy scale. Anxiety and Stress, 2, 1-8.
18. Schauberger, P., Walker, A., Braglia, L., & Sturm, J. (2020). openxlsx: Read, Write and Edit xlsx Files (4.2.3) [Software]. https://CRAN.R-project.org/package=openxlsx

19. Wickham, H., Averick, M., Bryan, … Yutani, H. (2019). Welcome to the Tidyverse. Journal of Open Source Software, 4(43): 1686. https://doi.org/10.21105/joss.01686
20. Revelle, W. (2024). psych: Procedures for Psychological, Psychometric, and Personality Research (2.4.6.26) [Software]. https://cran.r-project.org/web/packages/psych/index.html
21. Rosseel, Y. (2012). lavaan: An R Package for Structural Equation Modeling. Journal of Statistical Software, 48(1): 1. https://doi.org/10.18637/jss.v048.i02
22. Epskamp, S., Stuber, S., Nak, J., Veenman, M., & Jorgensen, T. D. (2019). semPlot: Path Diagrams and Visual Analysis of Various SEM Packages' Output (1.1.2) [Software]. https://CRAN.R-project.org/package=semPlot
23. Keith, T. Z. (2015). Multiple Regression and Beyond: An Introduction to Multiple Regression and Structural Equation Modeling (2da ed.). Routledge/Taylor & Francis Group. https://www.routledge.com/Multiple-Regression-and-Beyond-An-Introduction-to-Multiple-Regression-and/Keith/p/book/9781138061446
24. Kelley, K. (2020). MBESS: The MBESS R Package (4.8.0) [Software]. https://CRAN.R-project.org/package=MBESS
25. Hu and Bentler, P.M. (1999). Cut-off criteria for adjustment indices in the analysis of the covariance structure: Conventional criteria for new alternatives. Modeling of Structural Equations: A Multidisciplinary Journal, 6(1): 1-55. doi:10.1080/10705519909540118
26. Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2019). Multivariate data analysis (8.ª ed.). Cengage Learning.
27. Kyriazos T.A. (2018). Applied psychometrics: Considerations on sample size and power in factor analysis (AFE, AFC) and SEM in general. Psychology, 9(8): 2207-2230. doi:10.4236/psych.2018.98126
28. Kline, R.B. (2016). Principles and practice of structural equation modeling (4.ª ed.). The Guilford Press.