

Psychometric properties of the state-trait anger expression inventory - STAXI-2 in students of a public university of Lambayeque

Propiedades psicométricas del inventario de expresión de ira estado-rasgo-STAXI-2 en estudiantes de una universidad pública de Lambayeque

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Abstract

This study analyzes the psychometric properties of the 49-item State-Trait Anger Expression Inventory - STAXI-2 in its Spanish version authored by Miguel-Tobal, Casado, Cano-Vindel and Spielberger. It was administered to students from a public university in Lambayeque which study's population was made up of 2,205 male and female university students, enrolled in the 2018-II academic semester. Content validity was carried out with 10 expert judges and the reliability was carried out with a pilot sample of 30 students. The factor analysis (FA) was analyzed with a sample of 285 students selected through non random sampling; with a significance level of 0.05 and a confidence level of 95% (0.95). The validity and reliability of the instrument was reported, according to Aiken's V and Cronbach's Alpha Coefficient, finding good internal consistency. Likewise, the CFA using the least squares estimation method turned out to be good, resulting in three factor model: state anger, trait anger, and anger expression and control. It was concluded that the STAXI-2 is a valid and reliable instrument to assess state anger, trait anger, and anger expression and control in students of a public university in Lambayeque.

Keywords: State-Trait Anger Expression Inventory-STAXI-2, validity, reliability, college students, psychometric properties

Resumen

Este estudio analiza las propiedades psicométricas de validez y fiabilidad del Inventario de Expresión de Ira Estado-Rasgo-STAXI-2 de 49 ítems de la versión española de Miguel-Tobal, Casado, Cano-Vindel y Spielberger (2009). Se aplicó a estudiantes de una universidad pública de Lambayeque, cuya población de estudio se conformó de 2,205 universitarios hombres y mujeres, matriculados en el periodo 2018-II. La validez de contenido se realizó con 10 jueces expertos y la confiabilidad se realizó con una muestra piloto de 30 estudiantes. El análisis factorial (AF) se trabajó con una muestra de 285 estudiantes seleccionados mediante muestreo no probabilístico simple; con un nivel de significancia de 0.05 y un nivel de confianza de 95% (0.95). Se reportó la validez y confiabilidad del instrumento, según V de Aiken y Coeficiente de Alpha de Cronbach, encontrándose evidencias de validez de contenido, así como una buena consistencia interna. El AFC, por medio del método de estimación de los mínimos cuadrados resultó bueno, arrojando un modelo de tres factores: estado de ira, rasgo de ira y expresión y control de la ira. Se concluyó que el STAXI-2 es un instrumento válido y confiable para medir la expresión de la ira estado-rasgo en estudiantes de una universidad pública de Lambayeque.

Palabras clave: nventario de ira estado-rasgo-STAXI 2, validez, confiabilidad, universitarios, propiedades psicométricas.

INTRODUCTION

In the field of psychology, several constructs are intended to be studied, and this presents the challenge of measuring them from a quantitative and objective perspective. However, for years, several investigations tended to rely on instruments that, although valid and reliable for a given sample in other contexts, presented different properties for subsequent studies. This is because the selected instruments were not validated in their context (Bolarinwa, 2015; Carretero-Dios & Pérez, 2007), suggesting a deficit in their methodological rigor, whose negative impact would be reflected in the results, conclusions, and recommendations.

The study of the psychometric properties of an instrument is an issue that merits rigorousness since the instruments are not the only tool to identify a problem or need. However, there are also other techniques, such as observation interviews, among others, whose information collected is integrated with that obtained from the instruments (Delgado et al., 2006) in order to give it meaning prior to the professional analysis of the same. For this reason, respecting the diversity and socio-cultural context of each place, it is necessary to have valid and reliable psychometric instruments for the study of constructs related to human behavior (APA, 2020; Hunsley & Allan, 2019; Kaplan & Sacuzzo, 2006). Both its construction and its validation and reliability present serious implications (Kyriazos & Stalikas, 2018) because if the instrument presents deficiencies in its properties, the recommended interventions could not be valid either. Therefore, considering these theoretical contributions, we aimed to evaluate the psychometric properties of the 49-item STAXI-2 of the Spanish version in a sample of students from a public university in Lambayeque in order to measure anger.

It has been identified that anger, in addition to playing an adaptive role, is also one of those emotions that, depending on its intensity and frequency, can become a risk factor due to its negative impact at the psychophysiological level. Beyond the psychological and behavioral consequences it produces (Company et al., 2012; Martinez & Sanchez, 2014), it also contributes to the development of cardiovascular diseases, stomach and digestive tract problems, and

intestinal problems, among other unpleasant organic experiences (Mayer, 2018; Mostofsky et al., 2014; Titova et al., 2022).

It is an emotion that has been studied extensively in male aggressors (Quan et al., 2020; Santandreu & Ferrer, 2014). Thus, there are also studies on violence in intimate partner relationships that report a relationship between high levels of anger and intimate violence, as well as anger dyscontrol (Chereji, Pintea, & David, 2012; O'Hair, Grocott, McNulty, Stuart, & Shorey, 2023;). It has also been commented that anger is an emotion that could result from "social injustice, discrimination, physical discomfort, personal relationship issues, disempowerment, social and economic inequality, psychosocial stress, or even when people's needs have not been met" (Lown, 2007, p. 35; Lickley & Sebastian, 2018).

For Spielberger, anger is a psycho-biological emotional state involving muscle tension and arousal of the endocrine and autonomic nervous systems. Its intensity can vary, which is why Spielberger divided it into two components: the state of anger and the trait of anger. The former refers to the psycho-biological emotional situation characterized by subjective feelings that can vary from moderate anger or annoyance to intense fury or rage due to the circumstances that would justify such an emotional reaction. On the other hand, trait anger is the tendency to experience anger frequently and intensely in situations that cause it, no matter how minimal they may seem (Deffenbacher et al., 1996; Miguel-Tobal et al., 2009).

Anger is a universal emotion that needs to be studied urgently in order to understand it, explain it, and identify the factors that predict it. For this reason, studies of the psychometric properties of the STAXI 2, Spanish version, have been carried out at international and national levels. For example, in a large sample, Schamborg, Tully, and Browne (2016) studied the validity and reliability of the STAXI-II. Its properties proved satisfactory with forensic populations, although there needs to be more research and issues to be discussed. The instrument provides a comprehensive measure of anger but only captures some aspects of the construct.

It also does not present an inherent validity scale, suggesting the need to control for social desirability at the time the instrument is administered.

In the Dominican Republic, García-Batista et al. (2018) studied the psychometric properties of the Spanish version of the STAXI-2. They worked with a sample of 1034 subjects from the general (N = 792) and hospital population (N = 242). The CFA allowed verification of the fit of the original models for all the anger scales (*i.e., the three-factor model for the anger-state scale, the two-factor model for the anger-anger scale, and the four-factor model for the anger control and expression scale*). It was concluded that the Spanish version of the STAXI-2 was valid and reliable for measuring state-trait anger and control-expression of anger because it achieved acceptable reliability indices.

In Bucaramanga, Colombia, García-Padilla, Lara-Vargas, and Albarracín-Rodríguez (2016) also obtained evidence of reliability and validity by studying the psychometric properties of the STAXI-2 in a sample of 200 subjects between the ages of 18 and 50 years. It was compared by gender, evidencing significant differences for the External and Internal Anger Control subscales. The internal consistency analysis, according to Cronbach's Alpha, yielded indices between 0.67 and 0.86, which is considered adequate. The AFE presented an eight-factor structure in accordance with the original.

Likewise, Monteza and Pacheco (2020), having analyzed the validity and reliability of the STAXI 2 in a sample of 500 police officers in the city of Trujillo, concluded that with respect to content validity through judges' criteria, the instrument was valid, being placed in the acceptable category. In relation to the internal structure through the AFC, acceptable values were also obtained, according to the goodness of fit index (GFI= 0.90) and the mean residual of approximation (SRMR= 0.062), for the comparative fit through the normed fit index (NFI= 0.91), and the parsimonious fit through the normed parsimony index (PNFI= 0.84). For reliability, the Omega Coefficient yielded acceptable values of 0.96, 0.89, and 0.67 for the state, trait, and expression and control scales, respectively.

Similarly, Anastacio (2020) studied the properties of the STAXI-2 in a sample of 592 students from various universities in Piura. The instrument was found to be valid by the criterion of expert judges. Construct validity was determined by means of the AFC, obtaining a KMO value = 0.834 and a significance value of 0.000 in Bartlett's test of sphericity, which were considered

acceptable values. Composite reliability was determined through the McDonald's omega coefficient method, by which adequate reliability was observed in each factor. In the state-anger dimension, 0.930 was obtained; in the trait-anger dimension, 0.918 was obtained; and in the expression and control of anger dimension, 0.773 was obtained. It was evidenced that the values obtained are very significant and belong to adequate ranges.

Based on the research taken as references, the psychometric properties of the STAXI-2 were investigated in a sample of students from a public university in Lambayeque with the purpose of having valid, reliable, and, above all, contextualized tools to measure the anger construct. This end justifies its investigation with the hope that, by having a valid and reliable instrument, it will also be possible to make objective recommendations from which intervention programs for the regulation of anger can be developed for the study population. To this end, the question was posed: *What are the psychometric properties of the instrument for the expression of state-trait anger in students of a public university in Lambayeque?*

METHOD

Design

It is an instrumental type study that, as the term suggests, has to do with the development of instruments, either in their design or in their adaptation, as well as the study of their psychometric properties (Montero & León, 2005); cited in (Carretero-Dios & Pérez, 2007). In terms of its temporal function, its design was cross-sectional because it deals with data that were taken at a single point in time (Hernández-Sampieri & Mendoza, 2018; Neuman, 2007), by means of the survey (Yuni & Urbano, 2014).

Participants

The population consisted of male and female students from five humanities courses in cycles II, VI, VIII, IX, and X. Aged between 18 and 25 years old, from a public university in Lambayeque, which in the 2018-I academic year registered 2,205 students, according to the Statistical Planning Center of said university. A sample of 285 students was obtained from this.

Instruments

The State-Trait Anger Expression Inventory (STAXI-2) of the Spanish version of Miguel-Tobal, Casado, Cano-Vindel and Spielberger (2009), composed of 49 items organized in 6 scales (state of anger, trait anger, external expression of anger, internal expression of anger, internal control of anger and internal control of anger), 5 subscales (feeling, verbal expression, physical expression, anger temperament and anger reaction) and an anger expression index that provides a general measure of anger expression, external control of anger and internal control of anger), 5 subscales (feeling, verbal expression, physical expression, anger temperament and anger reaction) and an anger expression index that provides an overall measure of anger expression and control. A 4-point Likert scale with response alternatives was used. For part 1(anger state): “Not at all, somewhat, moderately, moderately, very much.” Parts 2 and 3 (trait anger and anger expression and control): “Almost never, sometimes, often, almost always.”

Procedure

As a preliminary phase, content validity of the items was performed by ten (10) expert judges in the field of psychology in order to ensure a

clear and adequate vocabulary of the items. Their concordance was quantified with Aiken’s V coefficient, which evaluated clarity, pertinence, and relevance. For the reliability analysis, a pilot study was conducted with 30 psychology students. Prior to the study, the participants read and signed the informed consent form and completed a demographic data form.

Data analysis

For the content validity of the STAXI-2, an Excel 2016 sheet was used to analyze the responses of 10 expert judges. Its concordance was quantified by means of Aiken’s “V” Coefficient, with values between 0 and 1 (Escurra, 1988; Flores & Terán, 2022). Also, the data entered in Excel were transferred to SPSS 23 for the analysis of internal consistency reliability, quantified by means of Cronbach’s Alpha Coefficient since it is a polytomous response category instrument. Subsequently, the construct analysis was performed by means of confirmatory factor analysis (CFA), whose data were transferred to an Excel spreadsheet and then transported to R Studio to evaluate the internal consistency of the STAXI 2 from a sample of 285 subjects.

RESULTS

Table 1

Content validity of the State-Trait Anger Expression Inventory (STAXI-2), according to Aiken’s V Coefficient.

ITEMS	Clarity	Relevance	Relevance	V FOR AIKEN
1	1.00	1.00	1.00	1.00
2	1.00	1.00	1.00	1.00
3	1.00	1.00	1.00	1.00
4	1.00	0.80	0.80	0.87
5	1.00	0.90	0.90	0.93
6	0.80	1.00	1.00	0.93
7	1.00	1.00	1.00	1.00

8	1.00	1.00	1.00	1.00
9	1.00	1.00	1.00	1.00
10	1.00	1.00	1.00	1.00
11	1.00	1.00	1.00	1.00
12	1.00	1.00	1.00	1.00
13	1.00	1.00	1.00	1.00
14	1.00	1.00	0.90	0.97
15	1.00	1.00	1.00	1.00
16	1.00	1.00	1.00	1.00
17	1.00	1.00	1.00	1.00
18	0.90	1.00	1.00	0.97
19	1.00	1.00	1.00	1.00
20	1.00	1.00	0.90	0.97
21	1.00	1.00	1.00	1.00
22	1.00	1.00	1.00	1.00
23	0.90	1.00	1.00	0.97
24	0.90	1.00	1.00	0.97
25	1.00	1.00	1.00	1.00
26	1.00	1.00	1.00	1.00
27	1.00	1.00	1.00	1.00
28	1.00	1.00	1.00	1.00
29	1.00	0.90	0.90	0.93
30	0.90	0.80	0.80	0.83
31	1.00	1.00	1.00	1.00
32	1.00	1.00	1.00	1.00
33	1.00	1.00	1.00	1.00
34	0.90	1.00	1.00	0.97
35	1.00	1.00	1.00	1.00

36	1.00	1.00	1.00	1.00
37	1.00	1.00	1.00	1.00
38	1.00	1.00	1.00	1.00
39	1.00	1.00	1.00	1.00
40	1.00	1.00	1.00	1.00
41	1.00	1.00	1.00	1.00
42	1.00	1.00	1.00	1.00
43	1.00	1.00	1.00	1.00
44	1.00	1.00	1.00	1.00
45	1.00	1.00	1.00	1.00
46	1.10	1.00	1.00	1.03
47	1.00	1.00	1.00	1.00
48	1.00	1.00	1.00	1.00
49	1.00	1.00	1.00	1.00

Table 1 reports the results of the Aiken V Coefficient of the State-Trait Anger Expression Inventory-STAXI-2, from which it is observed that, according to the values obtained, no item had to be eliminated, so the STAXI-2 with 49 items is retained.

Descriptive Analyses

Descriptive analyses of the State-Trait Anger Expression Inventory (STAXI-2) are presented.

Table 2

Descriptive analysis of the items and reliability measure by factor "Anger state" and its indicators.

Factor or Dimension	Indicators	Ítems	M	DE	α if the item is deleted
Estado de ira Alfa de Cronbach = 0.86	Sentiment Cronbach's alpha = 0.80	I1P1	0.56	0.67	0.76
		I1P2	0.77	0.73	0.75
		I1P3	0.68	0.68	0.73
		I1P5	1.56	0.86	0.84
		I1P7	0.57	0.67	0.74

Estado de ira Alfa de Cronbach = 0.86	Physical expression Cronbach's alpha = 0.70	I1P4	0.15	0.44	0.63
		I1P8	0.27	0.52	0.70
		I1P11	0.32	0.60	0.70
		I1P13	0.14	0.45	0.59
		I1P14	0.10	0.36	0.61
	Verbal expression Cronbach's alpha = 0.76	I1P6	0.41	0.71	0.76
		I1P9	0.34	0.63	0.67
		I1P10	0.31	0.61	0.67
		I1P12	0.79	0.78	0.73
		I1P15	0.20	0.53	0.75

Note: n = 285 M: Mean, SD: Standard deviation, α : Cronbach's alpha.

Table 2 presents the mean values, which are between 0.10 and 1.56. The highest standard deviation corresponds to item 5, being 0.86. Regarding Cronbach's Alpha, it can be seen that the values for the indicators of feeling (0.80), physical expression (0.70), and verbal expression (0.76) are between acceptable and good. Likewise, the value for the anger state dimension, in general (0.86), is considered good, according to Fisher (2007; cited in Mohamad, Sulaiman, Sern, and Salleh, 2015).

Table 3

Descriptive analysis of the items and reliability measure by factor "Anger trait" and its indicators.

Factor	Indicators	Ítems	M	DE	α if the item is deleted
Anger trait Cronbach's alpha = 0.88	Temperament of Anger Cronbach's alpha = 0.88	I1P16	1.02	0.82	0.85
		I1P17	0.76	0.76	0.84
		I1P18	0.91	0.82	0.84
		I1P20	0.45	0.64	0.87
		I1P23	0.82	0.77	0.84
	Anger reaction Cronbach's alpha = 0.82	I1P19	1.11	0.90	0.78
		I1P21	1.07	0.89	0.80
		I1P22	1.17	0.87	0.77
		I1P24	1.22	0.85	0.82
		I1P25	1.53	0.87	0.79

Note: n = 285 M: Mean, SD: Standard deviation, α : Cronbach's alpha.

Table 3 shows that the mean values are between 0.45 and 1.53. The highest standard deviation corresponds to item 19, being 0.90. Regarding Cronbach's Alpha, the values for the indicators anger temperament (0.88) and anger reaction

(0.82) are considered good. The same occurs for the factor or dimension trait anger, whose value is 0.88, which is considered good, according to Fisher (2007; cited in Mohamad, Sulaiman, Sern, & Salleh, 2015).

Table 4

Descriptive analysis of the items and reliability measure by factor "Anger Expression and Control" and its indicators.

Factor or Dimension	Indicators	Ítems	M	DE	α if the item is deleted
Anger expression and control Cronbach's alpha = 0.87	External expression of anger Cronbach's alpha = 0.68	I1P27	1.07	0.76	0.65
		I1P29	0.80	0.86	0.60
		I1P31	0.22	0.54	0.69
		I1P34	0.80	0.75	0.61
		I1P38	0.61	0.80	0.63
		I1P40	0.91	0.79	0.64
	Internal expression of anger Cronbach's alpha = 0.65	I1P28	1.44	0.98	0.62
		I1P32	1.12	0.94	0.55
		I1P35	0.71	0.90	0.59
		I1P37	0.98	0.86	0.56
		I1P39	0.90	0.88	0.58
	External control of anger Cronbach's alpha = 0.87	I1P42	1.44	0.93	0.70
		I1P26	1.71	0.93	0.86
		I1P30	1.68	0.97	0.86
		I1P33	1.92	0.91	0.84
		I1P36	1.89	0.92	0.84
		I1P41	1.72	0.91	0.85
		I1P43	1.76	0.90	0.87
		I1P44	1.79	0.97	0.85
Internal control of anger Cronbach's alpha = 0.87	I1P45	1.02	0.98	0.88	
	I1P46	1.92	0.88	0.84	
	I1P47	1.88	0.92	0.83	
	I1P48	1.97	0.88	0.84	
	I1P49	1.91	1.00	0.84	

Note: n = 285 M: Mean, SD: Standard deviation, α: Cronbach's alpha.

Table 4 presents the mean values, which are between 0.22 and 1.97. The highest standard deviation corresponds to item 49, being 1.00. Regarding Cronbach's Alpha, it can be seen that the values for the indicators external expression of anger (0.68), internal expression of anger (0.65), external control of anger (0.87), and internal control of anger (0.87) are acceptable and good, respectively. Similarly, the value for the anger expression and control dimension,

overall (0.87), is considered good, according to Fisher (2007; cited in Mohamad, Sulaiman, Sern, & Salleh, 2015). Although the internal expression of anger indicator presents an Alpha value of 0.65, which for Fisher could be considered poor, Ghazali (2008), also cited by Mohamad and colleagues, states that, for many researchers, an Alpha coefficient of 0.60 in the social sciences, is considered acceptable.

Table 5

Overall reliability measures, according to factors or dimensions.

Factor	Ítems	α
1. Anger state	1,2,3,5,7,4,8,11,13,14,6,9,10,12,15	0.86
2. Trait anger	16,17,18,20,23,19,21,22,24,25	0.88
3. Anger expression and control	27,29,31,34,38,40,28,32,35,37,39,42 26,30,33,36,41,43,44,45,46,47,48,49	0.87

Note: n = 285, α : Cronbach's alpha = 0.8

Table 5 shows the reliability measures, according to Cronbach's Alpha Coefficient, for each of the factors or dimensions of the STAXI-2. It is observed that the anger state factor presents an α of 0.86, trait anger an α of 0.88, and anger expression and control an α of 0.87, evidencing that the STAXI-2 presents good internal consistency for each of its factors. Para confirmar la validez del instrumento con su multidimensionalidad se procedió a realizar el análisis de la estructura interna of the

instrument through the AFC using the diagonally weighted least squares method (WLSMV), given that the variables are ordinal (Schuberth, Henseler, & Dijkstra, 2018). The path diagram with their respective parameters estimated under this estimation method is seen in Figure 1. The measurement models of the STAXI-2 are represented considering the dimensions with their respective items, according to their content based on their theoretical foundation.

Figure 1

Path Diagram using the free scale least squares estimation method.

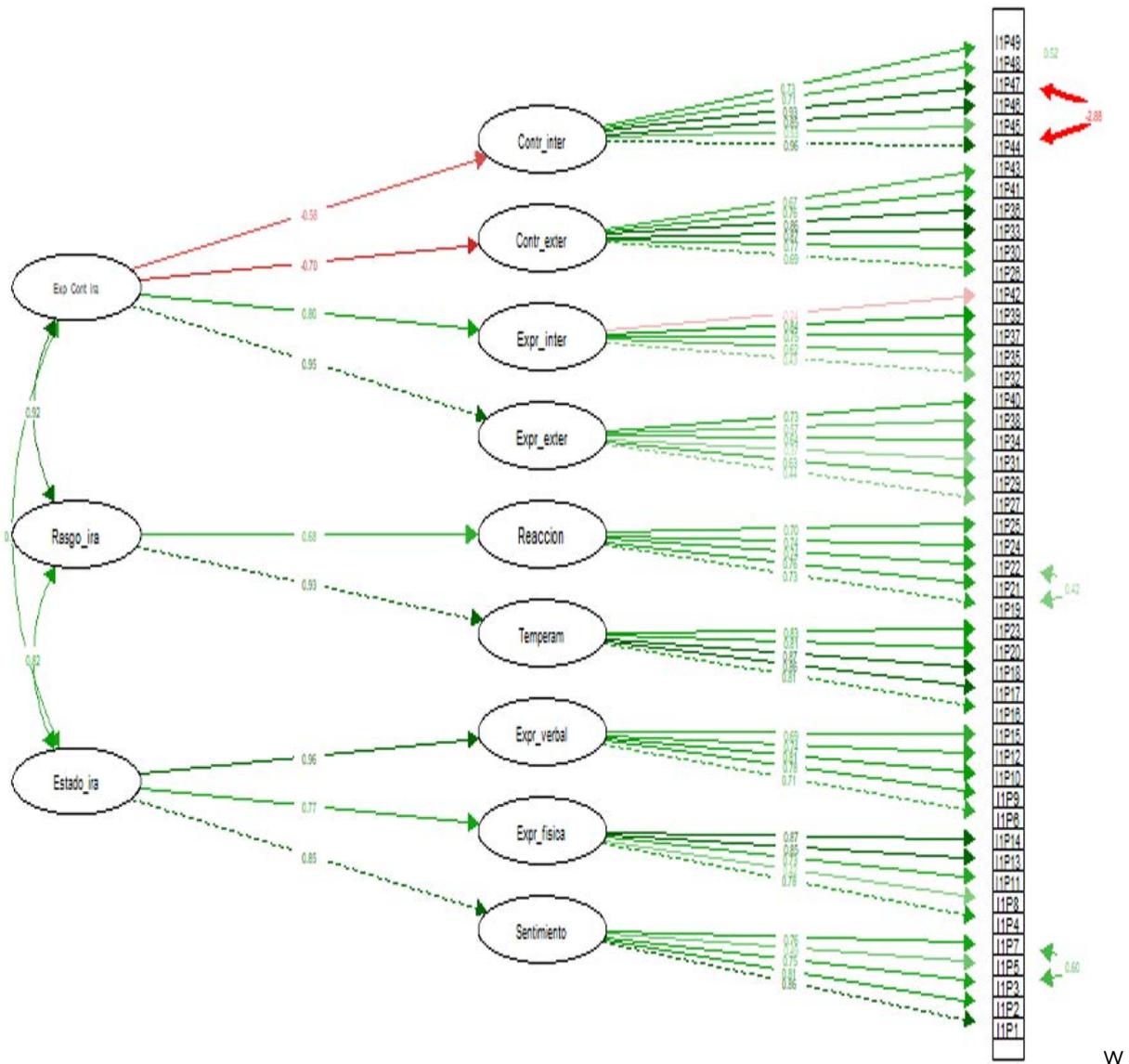


Figure 1 presents the plot of the standardized coefficients of the measurement model for the diagonally weighted least squares estimation method.

Table 6

Goodness-of-fit index using the AFC of the State-Trait Anger Expression Inventory (STAXI-2).

Method of estimation	χ^2	gl	p	χ^2/df	RMSEA	CFI	NFI	RFI
Free-Scale Least Squares	1917.2611	1064	0	1.801	0.0531	0.9124	0.8236	0.813

Note: n = 285. χ^2 : Chi-square, gl: degrees of freedom, p: p value, RMSEA=error of approximation, CFI=comparative fit index, NFI=normal fit index, RFI=relative fit index. $\chi^2/df = 1.8019$

Table 6 shows the analysis of the STAXI-2 scores through the AFC, for which the WLSMV method designed for ordinal data was used (Gadermann et al., 2019; Li, 2016; Lloret et al., 2017). From this, it results that the ratio of Chi-square over degrees of freedom obtained values of $S-B X^2/df < 1 = 1.801$, considered acceptable (Tabachnick & Fidell, 2007). However, it merits mentioning that there is no consensus on an acceptable ratio for this statistic. Recommendations vary from as high as 5.0 to as low as 2.0 (Hooper et al., 2008). Regarding the STAXI-2 measurement model, Table 7 reports the respective goodness-of-fit indices: RMSEA= 0.0531, considered very good when $< .05$ (Dash & Paul, 2021), although tolerable up to $< .08$ (Hu & Bentler, 1999). CFI= 0.9124, considered an acceptable value ≥ 0.9 , according to the criteria of Kocakaya and Kocakaya (2014). NFI= 0.8236, which is < 0.90 , although its increment is sensitive to the sample (Brett & Drasgow, 2002), so NFI should not be considered as a single decisive element.

DISCUSSION

The objective of the study was to analyze the psychometric properties of the Spanish version of the 49-item state-trait anger expression inventory (STAXI-2) by Miguel-Tobal, Casado, Cano-Vindel and Spielberger (2009) for students of a public university of Lambayeque. The results suggest adequate adjustments, both in the measurement model and in the internal structure, presenting consistent scores as reliability indicators. The results show that the 49-item STAXI-2 is valid and reliable and presents a structure of 3 factors or scales: 3 subscales for state anger (feeling = 0.80, physical expression = 0.70 and verbal expression = 0.76) $\alpha = 0.86$; 2 subscales for trait anger (temperament = 0.88 and reaction = 0.82), $\alpha = 0.88$, and 4 subscales for expression and control of anger (external expression = 0.68, internal expression = 0.65, external control = 0.87 and internal control = 0.87) $\alpha = 0.87$, which shows reliability, according to Cronbach's Alpha, that is, there is good internal consistency of the instrument for the study sample. Favorable goodness-of-fit indices are also reported for the 3-factor model or scales, being Although with a larger sample and from the general and hospital population than that of the present study whose

sample was university students, the study by García-Batista, et al. (2018) allowed verifying the fit of a three-factor model for the state-anger scale: feeling (0.862), physical expression (0.852) and verbal expression (0.782), two-factor model for the trait-anger scale: temperament ($\alpha = 0.840$) and reaction ($\alpha = 0.816$) and a four-factor model for the control scale: external expression (0.753), internal expression (0.752) and anger expression: external control ($\alpha = 0.862$) and internal control ($\alpha = 0.828$). These values are like those reported in the present research, values that range between 0.70 (acceptable) and .80 (good) for state anger, trait anger, external control and internal control; with the exception of the external expression and internal expression subscales whose values range between 0.65 and 0.68 respectively, unlike $\alpha = 0.75$ for both subscales in the study by García-Batista, et al. (2018).

These moderate differences could suggest reconsiderations regarding the expression of anger in different contexts, an issue that has been discussed in previous research. Likewise, the results are similar to those of Monteza and Pacheco (2020), with respect to reliability, unlike Monteza and colleague applied the Omega Coefficient, which yielded acceptable values of $\alpha = 0.96$, $\alpha = 0.89$ and $\alpha = 0.67$ for the scales of state anger, trait anger, and expression and control of anger, and in the present study the Cronbach Coefficient was used, which yielded $\alpha = 0.86$, 0.88 and 0.87 respectively. It is highlighted that the sample of the aforementioned researchers was 500 police officers. With respect to the internal structure through the CFA, acceptable values were also obtained, according to the goodness of fit index, although Monteza and Pacheco (2020) used different estimators: GFI=0.90, SRMR= 0.062, PNFI= 0.84; except for NFI= 0.91, which in the present study gave a value of 0.8236. Likewise, with respect to composite reliability in the study carried out by Anastasio (2020) in a sample of 592 university students from Piura, adequate reliability was obtained in each factor or dimension: State-anger $\alpha = 0.930$; trait-anger, $\alpha = 0.918$ and in the expression and control dimension of anger, $\alpha = 0.773$ was obtained, giving evidence of very significant values, according to McDonald's omega coefficient. While, in the study reported from the Cronbach Coefficient, values $\alpha = 0.86$ were obtained for state of anger, $\alpha = 0.88$ for trait anger and $\alpha = 0.87$ for expression and control of anger, values considered good for 3 factors with an $\alpha = 0.8$, but a higher value for

the present study in the expression and control of anger dimension ($\alpha = 0.87$) than, reported by Anastasio (2020), $\alpha = 0.773$, a value that is also considered acceptable, according to Tuapanta, Duque and Mena (2017). for whom the minimum acceptable value for Cronbach's alpha coefficient is 0.7.

One of the limitations of this study is probably the type of non-probability sampling used. This is because it is discussed that the results could not be extrapolated to a broader population because it does not allow for the representativeness of the population. However, there are authors who state that the type of non-probabilistic sampling is appropriate for pilot studies in which the purpose is to study the properties of an instrument, instead of obtaining inferences that can be generalized to the entire population (Bhardwaj, 2019 ; Bhattacharjee, 2012).

CONCLUSIONS

The 49-item State-Trait Anger Expression Inventory (STAXI-2) showed favorable adjustments as a psychometric instrument that seeks to measure the expression of state-trait anger in university students from a public university in Lambayeque. Future research could consider expanding the sample in order to have a valid and reliable instrument for the entire student population of the department of Lambayeque that includes private universities and subsequently include samples from different regions of the country.

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