Adaptation of the Family Functioning Test: Psychometric properties in high school students

Adaptación del Test de Funcionamiento Familiar: Propiedades psicométricas en estudiantes de secundaria

Rocío Yrene Torres Prado[1*], ytorresprado07@gmail.com, Patrik Manuel Toledo Quispe[1], Patrikmanuelt@gmail.com, Nancy Elena Cuenca – Robles[1], ncuencar@ucv.edu.pe, Carlos Bacilio De La Cruz – Valdiviano[2], cdelacruz@unfv.edu.pe, María Rosario Palomino Tarazona[1] mpalominota@ucv.edu.pe
[1]Universidad César Vallejo, Perú
[2]Universidad Nacional Federico Villarreal, Perú
Received: 05/26/2021 Accepted: 08/15/2022 Published: 08/25/2022 DOI: https://doi.org/10.5281/zenodo.7448416

Abstract

Family is considered as a fundamental point for the development of people, where affection and security are found. The objective of this study was to analyze the evidence of validity and reliability of the Family Functionality Test in high school students. 625 students from 11 to 18 years of age participated (MA=14.52, SD=1.253, 60.8% male) and were students from first-fifth year of secondary level education. Construct validity was evidenced by confirmatory factor analysis showing optimal fit values X^2/gl =3.84, CFI=0.943, TLI=0.932, SRMR=0.0342, RMSEA=0.0675. Internal consistency reliability obtained a Cronbach's Alpha of 0.915 and Omega of McDonald of 0.917 for the entire test. The results provide psychometric evidence, so the conclusion is that the family functioning test contains valid elements to be applied in secondary students.

Keywords: Psychometrics, adolescents, well-being, society, family functionality.

Resumen

La familia es considerada como un punto fundamental para el desarrollo de las personas, donde se halla afecto y seguridad. El presente estudio tuvo como objetivo analizar las evidencias de validez y confiabilidad del Test de funcionamiento familiar en estudiantes de secundaria. Participaron 625 estudiantes de 11 a 18 años (MA=14.52, DS=1.253, 60.8% varones) de primero a quinto de educación secundaria. Para la validez de constructo se evidenció mediante el análisis factorial confirmatorio mostrando valores de ajuste óptimo X^2/gl =3.84, CFI=0.943, TLI=0.932, SRMR=0.0342, RMSEA=0.0675. La confiabilidad por consistencia interna obtuvo un Alfa de Cronbach de 0.915 y Omega de McDonald de 0.917 para el total del test. Los resultados proporcionan evidencias psicométricas, por lo que se concluye que el test de funcionamiento familiar contiene elementos válidos para ser aplicado en estudiantes de secundaria.

Palabras clave: Psicometría, adolescentes, bienestar, sociedad, funcionamiento familiar.

Introducción

Family is considered a fundamental factor for the development of people, where affection and security are found. Therefore, it is important to have validated instruments in order to assess family functioning, which will have an impact on the prevention of risk behaviors in young people. To begin with, Minuchin in 1998 mentioned that family is a natural group that has developed patterns of interaction over time. These constitute the family structure, which in turn governs the functioning of family members, defines their range of behaviors and facilitates their reciprocal interaction[1]. Likewise, Lebrija et al. (2016) mentioned that family constitutes the psychosocial matrix where the child begins and continues his development process[2], he also referred that primary emotional bonds that are established within family form the models of behavior and relationship that will be the social base for coexistence with others[2]. Similarly, Corbin in 2012 pointed out that family is part of society, and it is a structure that can change over time[3]. In the same way, the Pan American Health Organization (PAHO) and the World Health Organization (WHO) in 1996 defined family from a psychosocial perspective as one of the microenvironments where the adolescent remains and, it is therefore responsible for ensuring that its operation favors a healthy lifestyle. This lifestyle should promote the well-being and development of family members[4].

The Family Functioning test is based on Von Bertalanffy's general systems theory, where, in summary, Garibay mentions in 2013 that the general systems theory seeks the formulation and derivation of the principles that are valid for any system in general. The principles are totality, dynamic interaction, equifinality, negative entropy and regulation[5]. Likewise, Eguiluz in 2003 mentions that three concepts are taken from the theory to understand the functioning of family: a) Family can be seen as a system in constant transformation; b) it is explained as a self-governed active system, and c) it is an open system interacting with other systems[6].

In the field of psychometrics, Cassinda et al., in Angola in 2016, carried out the research: "Factorial structure, reliability and validity of the family perception test of family functioning in Angolan adults", its objective was to validate the test perception of family functioning for the Angolan population. The result revealed the adjustment of the instrument to a single factor of the test that obtained 36.52% of the accumulated variance, in addition to excellent communalities and high internal consistency. It concludes that the test has adequate psychometric properties for the Angolan population[7].

Also, Fuentes and Merino, in Peru, in 2016, carried out the validation study of a family functioning instrument in 131 students from 3 schools and high schools in Concepción - Chile, the sampling was non-probabilistic and intentional. They used the family functioning test and What is your family like from PAHO. They conclude that the What is your family like instrument is adequate for measuring family functioning[8].

Castilla et al., in 2014, performed the psychometric analysis of the Smilkstein family APGAR scale in 256 male adolescents aged 11 to 18 years in Lima, Peru. They found significantly high correlations between items and test ($p<0.001$) with a Cronbach's alpha of 0.788, and using Varimax orthogonal rotation, only one factor was found[9].

In Peru in 2018, Álvarez carried out the research: validity and reliability of the family functioning test in university students of a public and private institution in Lima. The sample included 101 male and female university participants. As a result, reliability was obtained with Cronbach's Alpha coefficient of 0.883, which corresponded to a high level of confidence and the validity of the scale was carried out through item analysis, obtaining a DI (Discrimination Index) < 0.2, where item 1 obtained the lowest value (ID=0.48), and item 13 (ID=0.69) the highest. She concludes that the scale has adequate psychometric properties for its application in the studied population[10].

With the intention of obtaining an instrument that measures family functioning in secondary school adolescents, and thus strengthen psychometric research, where it is desired to know the mental health of young people within their family environment, also according to the information reviewed from previous validations, there is no validation in Peru in the population of high school students, but there is validation in university students. Therefore, the intention is to measure psychometric analyzes in high school students such as validity, internal consistency and exploratory factor analysis.

Thus, the research problem is formulated using the following question: Does the family functioning test have psychometric properties in high school students from educational institutions?

It was proposed as a general objective: To determine the psychometric properties of the family functioning test in high school students. Likewise, different specific objectives were proposed. First: To determine the content validity of the family functioning test. Second: To perform the descriptive analysis of the items of the family functioning test. Third: To analyze the construct validity of the family functioning test. Fourth: To analyze the reliability of the internal consistency of the family functioning test in high school students. Fifth: To develop scales and percentile standards according to the sample.

Metodología

The research is instrumental (Montero, 2002) since it seeks the development of the psychometric properties of psychological instruments, as well as their adaptation[11]. The sample consisted of 625 students (39.2% women and 60.8% men) from 11 to 18 years of age (MA=14.52, SD=1.253) from first to fifth year of secondary school from 7 public educational institutions. Sampling was non-probabilistic for convenience. For validation studies Streiner and Norman in 1995, suggested considering 10 participants for each item to establish the sample size[12]. In this study there were 62 people for each item.

The employed technique was the survey, and the instrument was the Family Functioning Test, built and validated by the authors Pérez et al., in 1997, with psychometric evidence for the application from 11 years of age and older. The test has an original validity, which was imposed to the opinion of 30 expert judges on the subject, obtaining 86.6%. Likewise, they performed the internal consistency analysis with the Cronbach's alpha coefficient of 0.88, which demonstrates a reliable test[13].

Permission was requested from the public educational institutions, where the objective of the study was explained to them, as well as the fact that participation was anonymous, voluntary and could be withdrawn at any time during the test; in addition to having the consent of the parent or guardian. Data collection was carried out through the Google form that was shared via WhatsApp, in the period from July to October 2021.

Results

For content validity, five experts specialized in the review of measurement instruments, five clinical psychologists, one of whom is a specialist in statistics, and a methodologist were consulted and reviewed the theoretical concept and indicators of the variable family functioning, as well as the pertinence, relevance and clarity of the questions in the questionnaire for the understanding of Peruvian adolescents. The specialists did not suggest changes to the statements or the response

options. Finally, the degree of agreement among the judges on the family functioning questionnaire was measured with Aiken's V coefficient with a result equal to 1.00[14], being the agreement of the 5 judges what was required for the item to be confirmed as valid[15].

Results in Table 1 show the preliminary statistical analysis of the items before performing the exploratory factor analysis, we can observe that no alternative responses: almost never (1), few times (2), sometimes (3), many times (4) and almost always (5) were not located at the extremes of 0% or greater than 80%, which indicates that the participants responded without bias, without falsification and social desirability or acceptability[16]. The mean indicates that the majority tended to score between 3 and 4, and the standard deviation shows that their responses were similar. The range of skewness (g1) and kurtosis (g2) are within the threshold of +/- 1.5 [17], indicating that the data do not move away from the normal distribution, The corrected item-test correlation (IHC) values are higher than 0.20, where item 7 obtained the lowest value (ID=0.530), and item 13 (ID=0. 742) the highest, proving that they tend to measure the same variable, in the same way in communalities (h2) the analysis proves that it allows to see how the items are related to the construct of the test to be evaluated, with which it can be demonstrated that the 14 items do not present low values and that the values are related to each other, which means that the items manage to capture the indicators of the variable. The communalities above 0.30 corroborate that the items and their factors are related[18].

Finally, the discrimination index (id) showed p=0.000<0.05 values in all the items, which shows the discriminative capacity, meaning that the items have the capacity to differentiate the greater or lesser presence of the trait measured[19]. According to the results found, it is adequate to perform the Exploratory Factor Analysis.

Table 2 shows the validity in relation to the internal structure of the Family Functioning Test, the exploratory factor analysis (EFA) was applied. The feasibility analyses to perform the factor analysis showed satisfactory results KMO=.948 and Bartlett's sphericity (x^2 =3872.778; p=.000). The results of Bartlett's test allowed for determining that the matrix is factorizable, the value of p= .000 where p< .01 shows that it is highly significant, in the same way the Kaiser-Meyer-Olkin Index (KMO) indicates a high level to carry out the factorization when obtaining the result of .948.

Table 3 shows the total variance explained, in the Exploratory Factor Analysis AFE indicates a single factor that explained 48.063%, i.e., family functioning is explained by 48.063% by the instrument.

Table 4 shows the values of the Confirmatory Factor Analysis (CFA) of 14 items after correction with the AFE. The absolute fit indices X^2/gl is less than 5.00, the RMSEA and the SRMR value yielded acceptable values less than 0.08, achieving evidence with acceptable values and with an adequate fit. Finally, the comparative adjustment indexes, the IFI and CFI values indicate acceptable values, being greater than 0.9 [20].

Table 5 shows the factor loadings of the 14 items generated by the confirmatory factor analysis. The factor loadings are strong, exceeding the required minimum of 0.5; the factor loadings obtained were between 0.871 and 0.618 [20]. Likewise, the presence of a single factor of the variable family functioning with 14 items can be observed, where all the items adequately comply with the values to represent the variable and the construct.

Table 6 shows the results of the reliability coefficients for internal consistency by means of the Alpha and Omega of the family functioning test of 625 participants with an adequate value for the 14 items. The Alpha coefficient for the total instrument obtained a reliability of 0.915. Similarly, the Omega coefficient for the total instrument obtained a value of 0.917, which indicates that the scores obtained are adequate for the reliability of an instrument[21].

Table 7 shows the normative data of the Family Functioning Test, where the high school student who obtains a minimum score of 14 to 44 points will be categorized as a very dysfunctional family, similarly, those who reach scores of 45 (Pc 25) to 52 will have a dysfunctional family category, and those who score from 43 (Pc 50) to 57 points will be categorized as a functional family, and finally those who score from 58 (Pc 75) to 70 (maximum) points will have a very functional family category.

Table 1: Preliminary statistical analysis of Family Functioning Test items (n = 625)

Ítems	Frecuency												
	1	2	3	4	5	M	DE	g1	g2	IHC	h2	id	Aceptable
p1	6.2	12.2	28.2	32.2	21.3	3.50	1.138	-0.453	-0.501	0.629	0.475	0.000	Yes
p2	3.7	7.8	26.9	37.0	24.6	3.71	1.038	-0.614	-0.047	0.677	0.544	0.000	Yes
p3	3.0	6.6	20.2	40.3	29.9	3.88	1.011	-0.839	0.355	0.587	0.424	0.000	Yes
p4	6.6	9.6	19.0	37.8	27.0	3.69	1.158	-0.768	-0.169	0.709	0.584	0.000	Yes
p5	4.8	8.6	26.1	38.7	21.8	3.64	1.062	-0.643	-0.034	0.619	0.462	0.000	Yes
p6	5.3	7.7	19.2	38.6	29.3	3.79	1.107	-0.857	0.145	0.641	0.492	0.000	Yes
p7	7.2	8.2	28.8	33.9	21.9	3.55	1.133	-0.591	-0.230	0.530	0.349	0.000	Yes
p8	2.7	5.3	12.6	39.2	40.2	4.09	0.989	-1.185	1.144	0.616	0.457	0.000	Yes
p9	6.9	10.7	26.1	32.5	23.8	3.56	1.163	-0.546	-0.450	0.648	0.498	0.000	Yes
p10	7.7	10.2	33.1	33.0	16.0	3.39	1.107	-0.454	-0.307	0.549	0.373	0.000	Yes
p11	10.2	12.3	24.3	30.6	22.6	3.43	1.249	-0.471	-0.730	0.662	0.520	0.000	Yes
p12	9.6	13.6	29.9	31.0	15.8	3.30	1.173	-0.365	-0.628	0.565	0.392	0.000	Yes
p13	3.8	7.0	20.5	41.3	27.4	3.81	1.036	-0.836	0.326	0.742	0.630	0.000	Yes
p14	6.6	10.1	17.1	31.8	34.4	3.77	1.208	-0.801	-0.300	0.666	0.530	0.000	Yes

Note: FR: response format; M: mean; SD: standard deviation; g1: Fisher's skewness coefficient; g2: Fisher's kurtosis coefficient; IHC: corrected homogeneity index; h2: commonality; id: discrimination index.

Table 2: KMO and Bartlett's test of family functioning		
Kaiser-Meyer-Olkin measure of sampling adequacy		0.948
Bartlett's test for sphericity	Approx. chi-square	3,872.778
	gl	91
	Sig.	0.000

Table 3: Total variance explained							
	Component	Initial eigenvalues			Sums of loads squared by the extraction	% variance	% accumulated
		Total	% de varianza	% acumulado	Total		
Model with 14 items	1	6.729	48.063	48.063	6.729	48.063	48.063

Table 4: Evidence of validity based on internal structure using the AFC of the Family Functioning Test								
						RMSEA 90% CI		
Adjustment index	Theoretical model	CFI	TLI	SRMR	RMSEA	Lower	Higher	AIC
X^2 /gl	3.84	0.943	0.932	0.0342	0.0675	0.0594	0.0757	23108

Note: X^2/gl = Chi-square between degrees of freedom; CFI: comparative goodness-of-fit index; TLI: Tucker-Lewis index; SRMR: Standardized root mean square residual; RMSEA: Root mean square error of approximation; AIC: Parsimonious Goodness-of-F.

Table 5: Factor loadings of the proposed model		
Factor	Indicador	Estimador
Factor 1	11 We can discuss various topics without fear.	0.871
	4 Affection is a part of our daily lives.	0.865
	14 We show our affection for one another.	0.863
	13 The interests and needs of each person are respected by the family unit.	0.807
	9 Tasks are distributed in such a way that no one is overburdened.	0.777
	1 As a group, decisions are made about important family matters.	0.747
	2 Harmony prevails in my home.	0.747
	6 We can accept each other's faults and cope with them.	0.741
	12 When faced with a difficult family situation, we are able to seek help from other people.	0.69
	5 We express ourselves without insinuations in a clear and direct manner.	0.686
	8 When someone in the family has a problem, the others help him/her.	0.631
	10 Family customs can be modified in certain situations.	0.628
	3 In my house, everyone fulfills his or her responsibilities.	0.621
	7 We take into consideration the experiences of other families when faced with difficult.	0.618

Table 6. Reliability by internal consistency through Cronbach's Alpha and Omega coefficient of the Family Functioning Test.		
Family Functioning Test	Cronbach's α	McDonald's ω
Total	0.91	0.911

Table 7: Family Functioning Test normative data		
		Family Functioning
N	Valid	625
	Lost	0
	Minimum	12
	Maximum	70
Percentiles	25	43
	50	50
	75	55

Discuscion

The family is a determining environment for the development of an individual, especially in adolescents, who experience very strong changes during this period, and it is precisely family functioning that is par excellence primordial for their cognitive, social and mental growth, for which it is essential to have validated and reliable instruments that allow the evaluation of the population in question.

First, the content validity of the family functioning test was analyzed through the evaluation of judges, where five specialists participated. A result equal to 1.00 was obtained in Aiken's V coefficient, this follows the parameters developed by Escurra in 1988, where he mentions that with respect to the proportion of agreements that must exist for each group of judges 5, 6 and 7 to evaluate the content validity, a complete agreement among them is required for the item to be valid, which, according to the value obtained, confirms that the items are acceptable.

Then, the preliminary statistical analysis of the Family Functioning Test items showed that the response alternatives were not located at the extremes of 0% or > 80%, which indicates that the adolescents responded without bias, likewise, the skewness and kurtosis coefficients were within the range of +/- 1.5, which is favorable for carrying out the exploratory factor analysis (EFA). The discrimination index (id) showed p=0.000<0.05 values in all items and demonstrates that the items have the ability to differentiate the greater or lesser presence of the trait measured, which is affirmed by the researcher Cohen and Swerdlik in 2002.

Thirdly, the factor analysis was performed and showed optimal results with a KMO index of 0.948 and Bartlett's sphericity (x2 =3872.778; p=0.000), which reflects a high level for carrying out the factorization, and shows that the test has only one factor, ctor, as well as in the study of the authors Cassinda et al. (2016) which found a KMO index of 0.854 and when performing the factorization found only one factor. For the total variance explained, a value of 48.063% was obtained for a single factor, i.e., the family functioning tests are explained by 48.063% by this instrument. These data are superior to the study conducted by Cassinda et al. (2016) concluding that this test allows studying family functioning in high school students.

After that, evidence of internal validity was determined by confirmatory factor analysis. Estimating the original 14-item model, the fit indexes were adequate with X2/gl of 3.84, as well as significant values in the comparative fits with CFI=0.943 and TLI=0.932, with a quadratic error of 0.0675.

Likewise, Figure 1 shows that based on the confirmatory factor analysis, the model of the instrument is distributed in a single factor with 14 items. Also, all items adequately meet the values to represent the construct.

Finally, reliability by internal consistency is demonstrated through Cronbach's Alpha with the value of .915 and McDonald's Omega of 0.917 which are high values and very close to the unit, for the study of Alvarez (2018) it obtained a result of 0.883 in young university students, similar to the study of Cassinda et al. in the year 2016 that found Cronbach's alpha with a value of 0.879 for the 14 items in an adult population.

The limitations of the study were due to the pandemic, the inability to apply the survey in person, and the non-probabilistic type of sampling, making its generalization to the population difficult.

The results of the scales were determined by quartiles, where it is established that those who score between 14 and 44 points will be categorized as a very dysfunctional family, those who score between 45 (Pc 25) and 52 points will be categorized as a dysfunctional family, those who score between 43 (Pc 50) and 57 points will be categorized as a functional family, and finally those who score between 58 (Pc 75) and 70 (maximum) points will be categorized as a very functional family.

Conclusions

General: The general objective was to determine the psychometric properties of the family functioning test in adolescents from educational institutions. In response to this, statistical evidence of validity and reliability of the family functioning test has been demonstrated for application in Peruvian adolescents from first to fifth year of high school in public institutions in Lima.

First: Content validity of the test was determined by the criterion method of judges. In response, content validity was found by means of Aiken's V, showing scores of 100% in all its items.

Second: The descriptive analysis of the test items was performed. In response to this, the descriptive analysis of the items showed adequate response frequency indexes, not exceeding 80%, nor reaching 0%. Likewise, the range of skewness (g1) and kurtosis (g2) are within the range of +/- 1.5, which confirms that the data do not deviate from the normal distribution. The values of the corrected item-test correlation (IHC) are higher than 0.20, which shows that they tend to measure the same variable, similarly acceptable values were obtained in communalities (h2), with values higher than 0.300. Finally, the discrimination index (id) showed p=0.000<0.05 values in all the items, which shows the discriminative capacity.

Third: The construct validity analysis of the test was determined. In response to this, for construct validity, a single factor that explained 48.063% of the total variance was extracted. In the exploratory factor analysis, satisfactory KMO results of .948 and Bartlett's sphericity (x2 =3872.778; p=.000) were shown. The validity of the internal structure was found by confirmatory factor analysis, where significant values were obtained in the adjustments with X2/gl of 3.84, as well as significant values in the comparative adjustments with CFI=0.943 and TLI=0.932, with a quadratic error of 0.0675.

Fourth: The reliability of the test by internal consistency was obtained. The result shows the reliability by internal consistency by means of Cronbach's Alpha, with an adequate value of 0.915 for the 14 items and by means of McDonald's Omega coefficient with a value of 0.917, which indicates that the instrument is reliable.

Fifth: Scales and percentile norms were developed for the general test where the minimum score of 14 to 44 points will be categorized as a very dysfunctional family, scores of 45 (Pc 25) to 52 will be categorized as a dysfunctional family, scores of 43 (Pc 50) to 57 points will be categorized as a functional family, scores of 58 (Pc 75) to 70 (maximum) points will be categorized as a very functional family, and scores of 58 (Pc 75) to 70 (maximum) points will be categorized as a very dysfunctional family.

References

1. Minuchin S, Fishman C. Técnicas de terapia familiar. Paidós Ibérica, S.A. ed. Barcelona: Harvard University Press; 1984.
2. Lebrija Amezcua CK, Alamilla Moya E, León Mendoza R, Hermosillo García ÁM. El papel de la familia y de la escuela en la formación de valores. Revista electrónica de Psicología Iztacala. 2016; 19(4).
3. Vélez León P, Placencia Tapia M, Carrera Herrera X. La familia en el contexto social. Estudios sobre el contexto familiar desde la educación y la bioética Loja, Ecuador: Universidad Técnica Particular de Loja; 2019.
4. Organización Panamericana de la Salud O, Organización Mundial de la Salud O. Familia y adolescencia: Indicadores de Salud Washington, D.C.: W. K. Kellogg Foundation; 1996.
5. Garibay Rivas S. Enfoque sistémico. 2nd ed. México: El Manual Moderno S.A. de C.V.; 2013.
6. Eguiluz LdL. Dinamica de la Familia: Un enfoque psicológico sistémico. Primera edición ed. México: Pax México; 2003.
7. Cassinda Vissupe MD, Angulo Gallo L, Guerra Morales VM, Louro Bernal I, Martínez González E. Estructura factorial, confiabilidad y validez de la prueba de percepción del funcionamiento familiar en adultos angolanos. Revista Cubna de Medicina General Integral. 2016; 32(4).
8. Fuentes Aguilar AP, Merino Escobar JM. Validación de un instrumento de funcionalidad familiar. Red de Revistas Científicas de América Latina, el Caribe, España y Portugal. 2016; 14(2).
9. Castilla HA, Caycho TP, Shimabukuro M, Valdivia AA. Percepción del funcionamiento familiar: Análisis psicométrico de la Escala APGAR-familiar en adolescentes de Lima. Revista de Psicilogía educativa. 2014; 2(1).
10. Alvarez Machuca MCV. Validez y confiabilidad del test de funcionamiento familiar FF-SIL en estudiantes universitarios de una institución pública y privada de Lima. Tesis para optar el título de segunda especialidad profesional en psicoterapia familiar sistémica. Lima: Universidad Nacional Federico Villarreal, Facultad de Psicología.
11. Montero I, León OG. Clasificación y descripción de las metodologías de investigación en Psicología. Revista Internacional de Psicología Clinica y de la Salud/International Journal of Clinical and Health Psychology. 2002; 2(3): p. 503-508.
12. Román Mella F, Vinet EV, Alarcón Muñoz AM. Escalas de Depresión, Ansiedad y Estrés (DASS-21): Adaptación y propiedades psicométricas en estudiantes secundarios de temuco. Revista Argentina de Clínica Psicológica. 2014; XXIII(2).
13. Pérez Gonzáles E, De la Cuesta Freijomil D, Louro Bernal I, Bayarre Vea H. Funcionamiento familiar. Construcción y validación de un instrumento. Ciencia ergo-sum. 1997; 4(1): p. 63-66.
14. Aiken LR. Test psicológicos. Undécima edición ed. México: Pearson Educación; 2003.
15. Escurra M. LM. Cuantificación de la validez de contenido por criterio de jueces. Revista de la Pontificia Universidad Católica del Perú. 1988.
16. De las Cuevas y Catresana C, Gonzales de Rivera y Revuelta JL. Autoinformes y respuestas sesgadas. Anales de Psiquiatría. 1992; 8(9): p. 362-366.
17. Pérez ER, Medrano L. Análisis Factorial Exploratorio: Bases Conceptuales y Metodológicas. Revista Argentina de Ciencias del Comportamiento (RACC). 2010; 2(1): p. 58-66.
18. Meneses J, Barrios M, Bonillo A, Cosculluela A, Lozano LM, Turbany J, et al. Psicometría Barcelona: UOC; 2013.
19. Cohen RJ, Swerdlik ME. Pruebas y evaluación psicológicas. Introducción a las pruebas y a la medición. Sexta edición ed. México: Mc Graw Hill; 2002.
20. Escobedo Portillo MT, Hernández Gómez JA, Estebané Ortega V, Martínez Moreno G. Modelos de Ecuaciones Estructurales: Características, Fases, Construcción, Aplicación y Resultados. Ciencia & Trabajo. 2016; 18(55).
21. Campo-Arias A, Oviedo HC. Propiedades Psicométricas de una Escala: la Consistencia Interna. Revista de Salud Pública. 2008; 10(5): p. 831-839.
22. Kerlinger FN, Lee HB. Investigación del comportamiento. Cuarta edición ed. California State University: Mc Graw Hill; 1992.