"Elaboration and validation of a Homophobia Scale in secondary students at an emblematic national school in Perú"

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ASTRACT-- In Peru, homophobia is not a widely addressed topic and thus, there do not exist psychometric tests to measure this variable. This is why this research was born with this objective: to build and identify the validity and reliability of a homophobia scale in secondary students at an emblematic national school in Rímac. Hence, we elaborated pertinent items, which were evaluated through expert judgement and proved that the items had an adequate content validity. In addition, the test's items achieved adequate homogeneity and communality indexes. In order to determine construct validity, we undertook an exploratory factor analysis where we obtained an underlying three-factor structure as a result which explains the variance (50.757%). Moreover, we determined reliability through the split-half method, Cronbach's Alpha and McDonald's Omega, which gave us indexes higher than 0.70. Finally, we obtained a Likert-type scale with 18 items divided into 2 dimensions: Personal Homophobia and Interpersonal Homophobia with adequate evaluation scales differentiated according to gender.

Keywords: Homophobia, Personal homophobia, Interpersonal homophobia, Psychometry and Likert-type Scale.

I. Introduction

All round the world there are numerous types of crimes and different types of criminals, however, there exist countries that take homosexuals as law transgressors only because of having a different sexual orientation which is a clear act of homophobia. In the State-Sponsored Homophobia 2017: A world survey of sexual orientation laws: criminalisation, protection and recognition by Carroll and Ramón (2017, p. 8), it is stated that that there are 72 countries that have outlawed being homosexual by considering it a crime. In

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addition, eight of these countries punish homosexuality with death penalty. Thus, 45 states declare that lesbian relationships are illegal, while all the 72 consider a man who has a relationship with another man a crime.

In Peru, even though there are not laws that criminalize homosexuality, there do not exist laws that protect homosexual's rights. Centro de Promoción y Defensa de los Derechos Sexuales y Reproductivos (Center for the Promotion and Defense of Sexual and Reproductive Rights) (2016, p. 14), known as PROMSEX, claims that there exists a serious lack of legal protection for homosexuals which aggravates the violence and discrimination that these people suffer in their daily lives within the Peruvian territory.

Discrimination against homosexuals exists in the country and Aragón, Cruz, de Belaunde, Eguren, Gonzáles and Román (2016, p. 6) state that this group of people is perceived as one of the four groups within Peru that, due to their sexual orientation, suffer the most.

PROMSEX (2016, pp. 21-45) used a sample of 321 LGBT students in their study, all of them between 14 and 17 years old, who were surveyed online. It made it possible to know that the 82.8% of the surveyed population suffered from verbal abuse due to their sexual orientation. Also, the 19.9% was victim of physical aggression and the 81% suffered exclusion, all of these because of the same reason, sexual orientation. It is important to say that there also exists a 58.8% of the surveyed people that have listened to derogatory comments related to their sexual orientation, not only from their partners but also mostly from teachers and school staff.

To understand better this problem and move forward with the development of this work, it is necessary to make it clear what homophobia is exactly. Salin (2013) mentions that the word homophobia is composed of the Greek word "fobos" which means "fear", and "homo", which means "similar or the same". Then, the term homophobia refers to people's fear of those of their own gender. Maroto (2006, p. 4) defines homophobia as the aversion to gays and lesbians, as well as to their lifestyles or culture and behaviors based on an irrational feeling towards homosexuality. As we can observe in statistics, it can be stated that many times homophobia is manifested through aggressions.

Castañeda (2013, p.13) says that homosexuality is not limited to homosexuals anymore. It is not, as we used to think, a personal misfortune that afflicts some unfortunates but, luckily, it does not affect anybody else. This affirmation is true since homosexuality does not affect anybody, however, homophobia does affect lesbians, gays and bisexuals' lives and integrity.

Homophobia, as it could be determined, affects thousand of people around the world. It is undeniable that it is a type of discrimination and, hence, a form of violence. This is why there is a need to create a psychometric instrument that lets us detect and measure the levels of homophobia. The objective of this instrument construction, besides the detection of the problem, is to help fight against homophobia.

Nowadays, there exist very few scales that measure homophobia; however, such an instrument had not been created in Peru, although there have been some adaptations of foreign tests for research. This is why we can see the importance to design a scale of this type for the Peruvian reality, one that is adapted to the

population's characteristics and is the first of its kind. Also, we have chosen the school population as the object of study because of having reports of cases of homophobia inside the educational context, a problem that is often hidden or silenced by students, fixed silently or simply ignored by authorities.

II.   Experimental, Material and Methods

The research design was cross-sectional as it was not experimental. Sáez (2017) states that non-experimental research is carried out without manipulating the independent variables, it is retrospective since it is based on variables of facts that already happened (p.16). In this work, we built and identified an instrument's validity and reliability, so we did not need to manipulate the variable, also, we can say that it was cross-sectional because the necessary information for this research was collected in only one moment in time. In addition, we can say that the research type was instrumental as the research required the proposals by Ato, López and Benavente (2013, p. 1042), who mentioned that an instrumental research is the one which is in charge of studying the psychometric properties of psychological instruments.

It was not necessary a sample or a sampling method since we used a census. According to Statistics Canada (2010, p. 19), a census is a research that studies and analyzes each one of the population's units which makes the results be more precise and detailed. In this case, the population was composed of 1410 secondary students at an emblematic national school in Rímac, without any gender distinction, in 2018.

The research used the Zamalloa Homophobia Scale (ZHS) which is an instrument created for this work and comprises 43 Likert-type items. The scale measures the construct of Homophobia according to what has been stated by Thompson (1999).

For this research we undertook a pilot study (n= 230), as well as the study with its respective sample (n= 772). We started by using Aiken's V (> 0.80) and the binomial test (< 0.05) with the results of the expert judgement to determine the scale's content validity. Before analyzing the sample and the pilot's database, the Kolmogorov Smirnov normality test was done to determine whether they have a normal distribution or not.

Subsequently, we proceeded to analyze communality (>0.40) and also analyzed the items under the indicator of homogeneity (> 0.30) using an Item-test and a Dimension-item analysis through a reliability analysis. Moreover, we performed a Dimension-test correlation.

The next step was to analyze construct validity through an exploratory and confirmatory factor analysis after having checked the KMO (> 0.50) and the Bartlett's test of sphericity (< 0.05). After that, we identified the reliability through the half-split method and covariance. Moreover, we used the McDonald's Omega coefficient.

Finally, the evaluation scales were built by using percentiles. However, before that, we determined if there existed a difference among groups. In the case of gender, we used the Mann-Whitney U test (non-parametric). When verifying if there existed differences among groups, we could determine if it was necessary to elaborate a scale for each group.

For the analysis of the gathered data we used these programs: Microsoft Excel 2016 and IBM SPSS Statistics 20.

III.   Results and discussion

In the Item-test analysis shown in table 1, it can be deduced that items 4 and 30 are eliminated for not having a correlation higher than >0.3; having decided to be more strict to increase ZHS validity, we decided to eliminate the items 10, 15, 21 and 25 as well, since their correlation was very close to 0.3. The items 3 and 37, in this case, were also excluded from the test for not having a high correlation and for having been observed previously by the judges. Since items 3 and 15 were eliminated in this analysis phase, their pair items in the discrimination index, 17 and 11 respectively, were also excluded from the test.

Table 1

Homogeneity Index (Item-test) of the Zamalloa Homophobia Scale (ZHS)

			Homophobia			Homophobia
Item 1	Correlation Coefficient		,506**	Item 21	Correlation Coefficient	,329**
	Sig. (2-tailed)		.000		Sig. (2-tailed)	.000
Item 2	Correlation Coefficient		,718**	Item 22	Correlation Coefficient	,706**
	Sig. (2-tailed)		.000		Sig. (2-tailed)	.000
Item 3	Correlation Coefficient		,455**	Item 23	Correlation Coefficient	,624**
	Sig. (2-tailed)		.000		Sig. (2-tailed)	.000
Item 4	Correlation Coefficient		,282**	Item 25	Correlation Coefficient	,355**
	Sig. (2-tailed)		.000		Sig. (2-tailed)	.000

Ite m 5	Correlati on Coefficient	,609**	Ite m 27	Correlati on Coefficient	,609**
	Sig. (2-tailed)	.000		Sig. (2-tailed)	.000
Ite m 6	Correlati on Coefficient	,591**	Ite m 28	Correlati on Coefficient	,697**
	Sig. (2-tailed)	.000		Sig. (2-tailed)	.000
Ite m 7	Correlati on Coefficient	,573**	Ite m 30	Correlati on Coefficient	,285**
	Sig. (2-tailed)	.000		Sig. (2-tailed)	.000
Ite m 8	Correlati on Coefficient	,633**	Ite m 31	Correlati on Coefficient	,569**
	Sig. (2-tailed)	.000		Sig. (2-tailed)	.000
Ite m 9	Correlati on Coefficient	,486**	Ite m 32	Correlati on Coefficient	,587**
	Sig. (2-tailed)	.000		Sig. (2-tailed)	.000
Ite m 10	Correlati on Coefficient	,367**	Ite m 33	Correlati on Coefficient	,722**
	Sig. (2-tailed)	.000		Sig. (2-tailed)	.000
Ite m 11	Correlati on Coefficient	,422**	Ite m 34	Correlati on Coefficient	,478**
	Sig. (2-tailed)	.000		Sig. (2-tailed)	.000
Ite m 13	Correlati on Coefficient	,636**	Ite m 35	Correlati on Coefficient	,525**
	Sig. (2-tailed)	.000		Sig. (2-tailed)	.000
Ite m 14	Correlati on Coefficient	,504**	Ite m 37	Correlati on Coefficient	,488**
	Sig. (2-tailed)	.000		Sig. (2-tailed)	.000

Item				Item		
Item 15	Correlation Coefficient	,379**		Item 38	Correlation Coefficient	,644**
	Sig. (2-tailed)	.000			Sig. (2-tailed)	.000
Item 16	Correlation Coefficient	,513**		Item 40	Correlation Coefficient	,590**
	Sig. (2-tailed)	.000			Sig. (2-tailed)	.000
Item 17	Correlation Coefficient	,404**		Item 42	Correlation Coefficient	,488**
	Sig. (2-tailed)	.000			Sig. (2-tailed)	.000
Item 19	Correlation Coefficient	,646**		Item 43	Correlation Coefficient	,572**
	Sig. (2-tailed)	.000			Sig. (2-tailed)	.000
Item 20	Correlation Coefficient	,553**				
	Sig. (2-tailed)	.000				

In table 2, the resulting three-factor rotated matrix is shown after the exploratory factor analysis with the correct distribution of the 18 items. As it is observed, there are not 5 factors anymore as was shown in the beginning (cognitive, Affective, Verbal aggressions, Physical aggressions and Social aggressions), but 3.

Table 2

Rotated component Matrix of the Zamalloa Homophobia Scale (EHZ)

	Factor		
	1	2	3
Item	0.854		
Item	0.734		
Item	0.702		
Item	0.690		
Item	0.672		
Item	0.549		
Item	0.452		

Item		0.756	
Item		0.751	
Item		0.739	
Item		0.453	
Item			0.746
Item			0.742
Item			0.649
Item			0.623
Item			0.563
Item			0.501
Item			0.403

In table 3, we can notice the results of the confirmatory factor analysis of the 3-dimension model of the ZHS, where there is statistically significant evidence (p < .01). Also, CFI and GFI adjustment indexes were acceptable traditional values (> .90), with a moderate squared error (.05<RMSEA<.10) and a permissible Chi square (< 5); hence, we could confirm that the obtained model in the exploratory factor analysis had an adequate goodness of fit.

Table 3

Adjustment indexes of the model according to the Confirmatory Factor Analysis of the Zamalloa Homophobia Scale (ZHS)

Adjustment Index	CFA Results
CFI	.944
RMSA	.060
GFI	.934
Chi.square/df	3.774
CMIN	490.574
p-value for the model	.000

In table 4, based on the items' covariance, we can observe that the internal consistency of the total scale is 0.919; for the dimension Personal Homophobia, 0.911; and for Interpersonal Homophobia, 0.820. Taking into account Oviedo and Campo-Arias (2005, p. 577), who claim that internal consistency reliability requires a level higher than 0.70, we can say that the scale reliability level and its dimensions' is good. In the table, we can also observe the results of the Guttman Split-half method, in all the cases it is shown a correlation

higher than 0.70, therefore, we can determine that there exists a high reliability. In addition, we can also see the Omega coefficient's results, where Ventura and Caycho (2017, p. 626) tell us that the results have to be higher than 0.70 to determine that the test is reliable. As it is observed in the table, both the instrument as a whole and its dimensions obtain higher results, so it can be stated that they have a high reliability.

Table 4

Internal Consistency Reliability analysis of the Zamalloa Homophobia Scale (ZHS) and its dimensions

| | Reliability statistics | | | |
	Cronbach's Alpha	Split-half Guttman	McDonald's Omega	N of elements
Homophobia	.919	.849	.929	18
Personal H.	.911	.822	.906	14
Interpersonal H.	.820	.824	.775	4

In table 5 we can observe the direct scores with their respective equivalence in percentiles, both for the total scale and for its dimensions according to gender. Mann-Whitney's U results had a level of significance lower than 0.05, meaning that there are differences between the sample's result for males and females.

Table 5

Evaluation scales of the Zamalloa Homophobia Scale (ZHS) according to gender

Gender			Homophobia	Personal Homophobia	Interpersonal Homophobia
Male	N	Valid	507	507	507
		Missing	0	0	0
	Mean		28.7692	23.1617	10.8521
	Mode		18.00	14.00	7.00
	Standard dev.		9.77534	8.45550	4.41026

		Percentiles	1	18.0000	14.0000	7.0000
			10	18.0000	14.0000	7.0000
			20	20.6000	16.0000	7.0000
			30	22.0000	18.0000	8.0000
			40	24.0000	19.0000	8.0000
			50	26.0000	21.0000	9.0000
			60	28.8000	23.0000	10.0000
			70	32.0000	26.0000	12.0000
			80	36.0000	30.0000	14.0000
			90	43.0000	35.0000	17.0000
Female	N	Valid		266	266	266
		Missing		0	0	0
	Mean			21.8722	17.5526	8.7970
	Mode			18.00	14.00	7.00
	Standard dev.			4.18878	3.84303	2.30752
	Percentiles	1		18.0000	14.0000	7.0000
		10		18.0000	14.0000	7.0000
		20		18.0000	14.0000	7.0000
		30		19.0000	15.0000	7.0000

40	20.0000	16.0000	7.0000
50	21.0000	17.0000	8.0000
60	22.0000	17.0000	9.0000
70	23.0000	18.0000	9.0000
80	25.0000	20.0000	10.0000
90	27.0000	23.0000	12.0000

The construct of homophobia is a variable that has not often been used in the field of Peruvian research; however, due to the current situation in the country regarding homosexuality, it should be treated more frequently in research studies. Regarding psychometrics, tests that measure homophobia have not been found or designed in Peru and only a few of them have been designed in the world such as the Modern Homophobia Scale (MHS) by Sheela, Raja and Joseph P. Stokes (1998), which has been used for psychometric adaptations such as the ones by Rodriguez et al. (2013), Iglesias (2017), Cipra (2017), Rosales (2016) and León (2003).

Due to the inexistence of tests that measure the variable Homophobia, the initiative to create the Zamalloa Homophobia Scale (ZHS) was born, which is contemporary and adapted to the national context. In addition, it is structured differently from the already existent tests since the other tests such as the Modern Homophobia Scale by Sheela Raja and Joseph P. Stokes, one of the most used, measure homophobia dividing it into attitudes towards lesbians and attitudes towards gays. On the contrary, the ZHS was divided into two dimensions, Personal Homophobia and Interpersonal Homophobia, exactly as it is proposed by Thompson (1990) in his homophobia's classification, giving another measurement's perspective of that variable. Also, we added a discrimination index to verify that those evaluated answered truthfully.

This research began with the objective of constructing and identifying the validity and reliability of a scale of homophobia in secondary students at an emblematic national school emblematic in Rímac, 2018. This is why we had to investigate about this construct, which was based on the theory proposed by Thompson (1990), as mentioned before, the variable was divided into dimensions, creating thus 47 items. These items were grouped into one Likert-type scale following the conceptions of the Classical Test Theory.

The first objective was to determine the validity of the ZHS content, in order to do that, the scale was analyzed by expert judgement, 10 experts in total. After passing the Aiken's V analysis, it was decided that the item 39 had to be eliminated, as it had a lower value than 0.80, which is required by this test. Similar results

were obtained by O'Higgins (2017) for the attitudes scales towards homosexuality, but all its items were approved because they had a minimum Aiken's V of 0.87 and a maximum of 1.00.

Another statistics test was performed to determine the optimal validity of the content, the binomial test, which gave us results higher than 0.05 for Clarity as well as for Pertinence and Relevance; similar results were obtained by O'Higgins (2017).

It was observed that most of the authors did not carry out a content validity for their tests except for Pineda (2016), who used the Kendall's W for that; and O'Higgins (2017) with Aiken's V and the Binomial Test, analyses that were also used in this research.

After that, we performed the data collection, in this case, we did not use a sample but a census, which included 1410 secondary students at an emblematic national school in Rímac. In a census, we cannot generalize the results, but according to Statistics Canada (2010, p. 19), it lets us analyze every unit of the population, making the obtained results be more accurate and detailed.

During the ZHS administration, there were some limitations as some teachers did not agree with the research topic due to their negative opinion about homosexuality. What happened here is important to highlight since PROMSEX (2016, p. 17) mentions that 79.1% of the LGTB students have been victims of verbal aggressions through denigrating comments about their sexual orientation by teachers or school staff, which is a lamentable situation since they should be protective factors for students, regardless of their sexual orientation or any other fact. Those teachers who disagreed with the administration of the test complained to the school authorities and encouraged the suspension of the research within the school premises. This is why we could not administer the test to the 1410 students but only to 772, which was considered an acceptable quantity for the continuation of this work.

After data collection, we did the Item-test analysis where the items 4 and 30 were eliminated for having indexes lower than 0.3; likewise, we decided to exclude the items 10, 15, 21 and 25 since their indexes were very close to 0.3. The items 3 and 37 were also excluded from the ZHS as they did not have a high correlation and for being indicated to be insufficient by judges previously. The items 17 and 11 in the discrimination index were also eliminated since their pair items were discarded after the analysis.

In the case of this research, we carried out the Item-test and Item-dimension analysis, which was different from the study by León (2003), where he only had the Item-total analysis for each subscale of the Modern Homophobia Scale by Sheela Raja and Joseph P. Stokes (1998), for which we can say the this study performed a more exhaustive analysis.

Subsequently, we proceeded with the analysis of identification of ZHS construct validity. In the beginning, the Zamalloa Homophobia Scale was divided into 3 dimensions: Personal Homophobia, Interpersonal Homophobia and Discrimination Index, hence, it was divided in 5 factors in total: Cognitive and affective, part of the first dimension; and Oral aggressions, Physical aggressions and Social aggressions, part

of the second. However, after the elimination of the initial factors, the ZHS was divided into 3 factors, which explains the 50.157% of the variance; that is, these factors represent the variable Homophobia in this percentage. This variance is much higher than the obtained by León (2003) in the MHS adaptation, which obtained a 28.7% in the MHS-L subscale and a 33.6% in the MHS-G subscale.

Regarding the confirmatory factor analysis, we obtained an adequate goodness of fit index that let us determine that the ZHS obtained an optimal construct validity. Some other authors also used this method such as Páez et al (2015) for EANT, Campo et al (2017) for the EHF-4 or Rodríguez et al. (2013), Cipra (2017), Iglesias (2017) and Rosales (2016) for the Modern Homophobia Scale, each one in their respective research studies.

On the other hand, we analyzed reliability using the Cronbach's Alpha, the Split-Half method and the McDonald's Omega. Regarding the items' covariance, we obtained an internal consistency of 0.919 in the total scale; also, we used the Guttman Split-Half method, which showed a reliability of 0.849; while the Omega coefficient gave us a reliability of 0.929.

In this psychometric research about the ZHS, we used three different methods to determine reliability, this does not happen in all the cases, most of these types of studies only use the Alpha coefficient to analyze reliability. One example is Pineda (2016) who had a coefficient of 0.71 for the Internalized Homonegativity Test, other statistical test used is McDonald's Omega, which is not very widespread, only two other studies used it. The first was by Campo et al (2017), who obtained an Omega coefficient of 0.775. The second was Cipra (2017), whose indexes varied from 0.853 to 0.905 in the dimension about attitudes towards gays, while in the dimension about attitudes towards lesbians, he had omega indexes that varied from 0.888 to 0.923. The last analysis used was the Split-half method, but no records were found that it was used for their investigations.

Finally, we continued with the elaboration of the evaluation scale. In order to do that, we determined if there existed differences in the sample results according to gender, so we used the Mann-Whitney U test, which let us obtain a significance level inferior to 0.05, specifying that there existed differences between the results about males and females. Moreover, we analyzed the sample according to grades to define if there existed differences higher than 0.05, thus, we determined that there were not differences. Having these results into account, we established the evaluation scores differentiated by gender, using the diagnostic categories of Low, Medium and High.

We can conclude that this research accomplished all the objectives, even though there were some limitations during the study process. These obstructions can be prevented for future work on this topic and thus obtain better results than the ones found in this research. However, we can highlight that it is possible the construction of a Homophobia Scale for the Peruvian population of students enrolled in secondary school, with the necessary psychometric properties to support it.

It is possible to construct a Likert -type scale to measure the variable Homophobia and determine its validity and reliability in secondary students at an emblematic national school in Rímac.

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