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Research Article

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Attitude scale towards LGBTI individuals: Validity and reliability study

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Article Info	Abstract
	The purpose of this study was to develop an instrument to measure university students' attitudes towards LGBTI individuals. The sample included 220 university students attended a public university located in the west of Turkey during 2016-2017 education year. The participants were 94 men and 126 women and their age ranged from 18 to 25. During the scale development process, a few steps have been followed. At first, items that had negative correlations with the scale have been removed from the analysis. Then exploratory factor analysis (EFA) has been performed. The results of EFA revealed 28 items loading three factors. These three factors explained 43.9% of the variance. For the reliability of the scale, the Cronbach's alpha reliability coefficient of the scale and its sub-dimensions have been found to be .95, .94, .81, and .70 respectively. The results of this study showed that the attitude scale towards LGBTI individuals is a valid and reliable scale.

1. Introduction

The term of LGBTI is an acronym consisting the first letter of lesbian, gay, bisexual, transsexual, and intersex (Sah, 2012). Lesbian refers to women's sexual, erotic, and emotional orientation towards their own gender. The history of the word comes from Lesbos Island in which poet Sappho lived in B.C. 6. century. The concept of gay emerged with liberation movement. Initially, it involved both men and women homosexuality, it now more refers to men's sexual orientation towards own gender (Gay and Lesbian Cultural Research and Solidarity Association [KAOS GL], 2011). Bisexual is used to express person's erotic, emotional, and sexual orientation towards both men and women. The term of transsexual can be acceptable for both women and men. Transsexual is not related to person's behavior, rather it is more connected to intra processes. Therefore, it may not be possible to understand whether a person is transsexual by looking at that person's physical appearance. For transsexual, a person can orient towards men when he or she is woman, or towards women when he or she is a man. Scientific definition of intersex refers to ones who were born with abnormal reproduction and sexual organs. Intersex individuals have different external sexual organs, internal reproduction organs and/or internal glands (KAOS GL, 2011).

Even though some societies respond positively to homosexual orientations, LGBTI individuals are seen in lower prestige and as sick people in most societies (Sah as cited in Güney et. al., 2004; Sakallı-Uğurlu & Uğurlu, 2004). This brings out the term of homophobia when talking about LGBTI. When looking at etymology of homophobia, 'phobia' means illogical fear and hate. 'Homo' means 'same' and refers to homosexuality (lesbian, gay). Nowadays, statements such as "I am not

a homophobic", "let's keep them away from me", "I do not want to witness their relationship around me", and "that is enough as long as they do not talk with me" are frequently used. However, this is another version of hate towards LGBTI individuals (Alper, 2014). Besides homophobia, there are various discriminatory ideologies towards LGBTI people such as heteronormativity, heterosexist, transphobia, gayphobia, lezphobia, and biphobia (KAOS GL, 2011).

According to psychoanalytic view, phallic stage of psychosexual development has effects on these people's sexual development. In this stage, a child recognizes the sexual organ first time, then identifies with same sex parent to develop sexual roles. After identification, child has develops inward hostility towards same sex parent in order to be closed to opposite sex parent. This condition is named as Oedipus and Electra complex in psychoanalytic. If a person cannot resolve the conflicts, advance to the next stage, and have successful mother and father figures, there could be sexual deviations. LGBTI individuals' sexual orientation could be based on experiences in that stage (Burger, 2006).

More people in Turkey believe that homosexuality is a sin. The belief comes from social norms, and official regulations and laws re-generate societies adopting heterosexual relationships and norms (Sarac & Rahim, 2010). In this study, the authors attempted to develop an attitude scale investigating the society's views towards other relationships, aside from heterosexual relationships.

The purpose of this study was to develop an instrument to measure university students' attitudes towards LGBTI individuals. Literature review showed that organizations such as Kaos Gl and Spod in Turkey have done studies and developed various instruments. Throughout Turkish literature, there have been scales such as Homosexuality Attitudes Scale (Doğan, Doğan, Beştepe, & Eker, 2008), The Attitudes toward Lesbians and Gay Men Scale (Duyan & Gelbal, 2004), and Lesbian Internalized Homophobia Scale (Ozturk & Kindap, 2011). Most of the studies are adaptation studies and there are limited instruments to measure this concept. Therefore, because there is not a scale including all components of LGBTI, it was aimed to develop such a scale. At the same time, to our knowledge, there is not a scale to measure university students' attitudes towards this population. Accordingly, the goal of this study was to develop an instrument appropriate for university students to learn about their attitude towards all types of LGBTI.

2. Method

2.1. Participants

The participants of the study included 94 men, 126 women, totally 220 university students attended a public university located in the west of Turkey. Age of participants ranged from 18 to 25. The departments of the participants are Psychological Counseling and Guidance, Classroom Teaching, Computer Engineering, International Trade, Social Work, History, Literature, and others.

2.2. Instrument development

Before creating the items, initially a group of 30 students were asked to write essays about their thoughts, emotions, and behaviors about LGBTI individuals. Based on the content analysis of essays, remarkable statements were transformed to attitude items. Then, the literature and previous studies were reviewed for forming the items. With this literature review, a theoretical baseline about the developing such a scale was generated. Some of the items included positive and some included negative statements. It was especially placed importance about that items had cognitive, emotional, and behavioral statements.

After forming the items, faculty members in Psychological Counseling and Guidance at the university investigated the items and shared their expert views. Items which were not attitude statements and items which were not appropriate to the purpose of this scale were removed. Thus, finally 89 items were compiled.

2.3. Data collection

The instrument was utilized to 265 students attended a university located in the west of Turkey during spring semester of 2016-2017 education year. Participants rated how much they agreed with each item. Items were responded by using a 5-point Likert scale such as absolutely disagree (5), disagree (4), partially agree (3), agree (2), and absolutely agree (1). Total score was obtained by summing the person's responses. A higher total score indicates a general positive attitude towards LGBTI individuals whereas a lower score indicates a negative attitude. 45 cases responding more than one option for items, giving missing information, or not responding some items were detected and removed from the analysis. With the rest of the data (*n = 220*), the analysis were completed.

2.4. Data analysis

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy to test how suited data was for factor analysis showed that sample was significantly represent the population. To test the construct validity, exploratory factor analysis (EFA) was performed, and to determine the number of factors, scree plot was examined and Horn's parallel analysis was used. To examine reliability, Cronbach's Alpha consistency coefficient was used.

3. Results

Cronbach's Alpha internal consistency of the scale consisting total 89 items was found as .67. After removing 43 items which were negatively correlated with the all scale, Chronbach's Alpha coefficient was found as .95. To determine the construct validity of rest 46 items after reliability analysis, an exploratory factor analysis was conducted. In this context, first KMO and Bartlett's test of sphericity were performed to test the suitability of the data for factor analysis. The results are presented in Table 1.

Table 1
KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.93
Bartlett's Test of Sphericity	Approx. Chi-Square	5313.223
	df	1035
	sig	.00

In Principal Components Analysis, KMO was found as .93. KMO test analyzes whether partial correlations were small and whether distribution was enough for factor analysis. As Kaiser values get close to 1, it indicates marvelous, values under .50 are not acceptable (values around .90 meritorious, values around .80 middling, values around .70 and .60 mediocre, and values around .50 miserable; Tavşancıl, 2010). KMO value for this study was marvelous. The results of Bartlett's test was found as 9267.223 (*p < .001*). A significant Bartlett's Test support suitability of the data for construct detection.

There are various techniques to determine the number of factors of a scale. Some of the most used techniques are Kaiser's eigenvalue, Catell's scree test, and Horn's parallel analysis. According to Kaiser's rule, the factors with eigenvalues greater than 1.0 are retained for further examination. An eigenvalue for a factor explains how much variance explained by that factor. However, Kaiser's rule is criticized for retention too many factors in some conditions (Pallant, 2016).

Parallel analysis is another method to determine the number of factors. In parallel analysis, eigenvalues are compared with randomly created data set of the same size. In this method, only eigenvalues greater than the eigenvalues of randomly generated data set are retained. This method has been shown the most accurate approach to determine the correct number of factors (Pallant,

2016). Therefore, parallel analysis was used in this study and it was found that there are three-factor structure of the scale. Explained variance as a results of the analysis are presented in Table 2.

Table 2
Total Variance Explained

Factors	Initial Eigenvalues			Extraction Sums of Squared Loadings (Factors)		
	Total	**% of Variance**	**% Cumulative**	**Total**	**% of Variance**	**% Cumulative**
1	15.787	34.320	34.320	15.787	34.320	34.320
2	2.578	5.605	39.925	2.578	5.605	39.925
3	1.847	4.016	43.942	1.847	4.016	43.942
4	1.726	3.752	47.693	1.726	3.752	47.693
5	1.415	3.076	50.770	1.415	3.076	50.770
6	1.342	2.917	53.686	1.342	2.917	53.686
7	1.187	2.581	56.267	1.187	2.581	56.267
8	1.120	2.435	58.703	1.120	2.435	58.703
9	1.072	2.331	61.034	1.072	2.331	61.034
10	1.014	2.204	63.238	1.014	2.204	63.238
11	.999	2.171	65.409			

Table 2 shows that the total explained variance was 63.2% (63.2 > 50%). It was found that the scale has 10 factors which had eigenvalues exceeding 1 (if an eigenvalue is lower than 1, it is no retained). In Horn's parallel analysis to determine the number of factors, totally three factors exceeding eigenvalues determined by Kaiser's criterion were retained. The results of the parallel analysis are shown in Table 3.

Table 3
Output From Parallel Analysis

Eigenvalue	Random Eigenvalue	Standard Dev
1	2.0198	.06
2	1.9082	.05
3	1.8182	.05
4	1.7451	.04
5	1.6812	.04
6	1.6244	.03
7	1.5657	.03
8	1.5186	.03
9	1.4683	.03

In addition, Catell's scree plot was examined to specify dimensions. The scree plot is presented below in Figure 1.
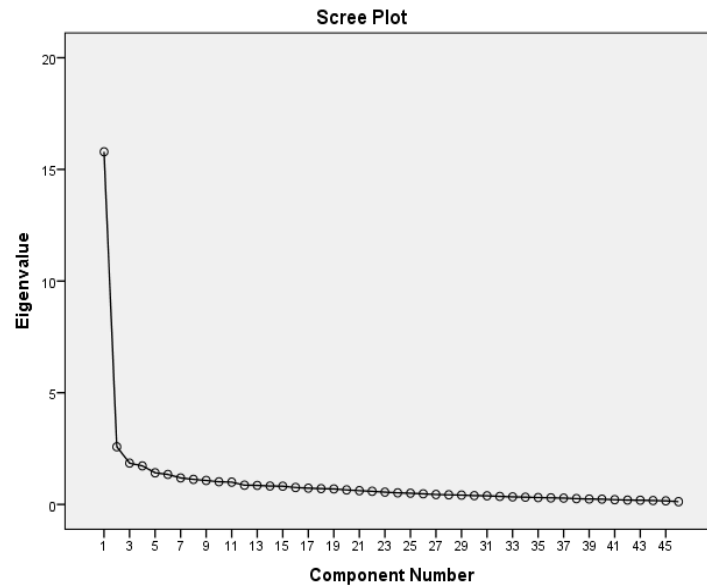
Figure 1. Catell's Scree Plot

As shown in Figure 1, scree plot showed that the scale has three-factor structure as well. Rotation procedure to determine which items loading to factors has been shown on rotated component matrix in Table 4.

Table 4
Rotated Component Matrix

Items	Factors		
	1	2	3
m35	.77		
m82	.75		
m89	.75		
m83	.72		
m65	.70		
m22	.68		
m50	.67		
m26	.66		
m74	.62		
m36	.61		
m31	.59		
m62	.51		
m21	.47		
m46	.46		
m9	.45		
m70	.44		
m57	.43		
m77	.43		
m7	.39		
m71		.78	
m72		.72	
m73		.72	
m88		.44	
m85		.41	
m14			.66
m56			.57
m29			.50
m13			.42

As shown on rotated component matrix in Table 4, the scale consisted of three factors. Loadings of each items in the factors were acceptable (the lowest loading value was .389; the highest loading value was .782). There was no item loading higher value more than one factor. Items in the factors and the number of items in each factors are shown in Table 5.

Table 5
Factors and Loadings of Items

Factors	The Number of Items	Item Numbers
1	19	35, 82, 89, 83, 65, 22, 50, 26, 74, 36, 31, 62, 21, 46, 9, 70, 57, 77, 7
2	5	71,72,73,88,85,
3	4	14,56,29,13

The first factor consisting of 19 items was named "Alienation." This factor includes items referring that LGBTI individuals are not desired, not accepted, and not welcomed by the society. Sample items include "I think LGBT individuals are less than human.", "I want LGBT individuals to be deported from our country.", or "If I find out that my child is an LGBT individual, I will disown him/her."

Second factor of the scale was named "Excessiveness" and include items implying that LGBTI individuals are extreme, show off their gender identity, and manipulate their gender orientation to receive attention. This factors have five items, and sample items are following: "I think LGBT is a result of being a wannabe.", "According to me, LGBT individuals turn their identities into a show.", or "According to me, LGBT individuals exaggerate their own rights."

The last factor was named as "Disease". This factor has items referring that LGBTI individuals are not mentally or physically healthy. This factor consists of four items. Sample items include "I think LGBT is a disease.", "I think LGBT individuals should receive psychological support.", or "I think LGBT individuals have harmful behaviors to the society."

Table 6
Reliability Coefficients of the Scale and Subscales

Factors	Chronbach's Alpha Values
1. Alienation	.94
2. Excessiveness	.81
3. Disease	.70
Total	.95

Chronbach's alpha internal consistency coefficient for the total scale was found as .95. In addition, Chronbach's alpha values ranged between α_{max} = .94 (Alienation) and α_{min} = .70 (Disease). These results revealed that the internal consistency of the scale was high.

As shown in Table 7, item-total correlations ranged between .41 and .82. These correlations are higher than the generally accepted value of .20. These values showed that all items are under same construct.

Table 7
Item-total Correlations

Item Number	Item-total correlation	Item Number	Item-total correlation
m35	.66	**m70**	.59
m82	.67	**m9**	.46
m83	.61	**m57**	.65
m89	.56	**m77**	.57
m65	.72	**m7**	.63
m22	.65	**m71**	.52
m26	.66	**m72**	.59
m74	.82	**m73**	.60
m36	.67	**m85**	.41
m31	.77	**m88**	.58
m50	.75	**m13**	.58
m62	.72	**m14**	.54
m21	.60	**m29**	.56
m46	.54	**m56**	.46

As shown in Table 8, the results of Pearson product-moment correlation testing the relationship between the factors revealed that there were statistically significant positive relationships between the factors. Among these, the highest correlation was between Alienation and Disease (*r=.69; p<.001*), and the lowest correlation was between Excessiveness and Disease (*r = .58; p < .001*). All factors were highly correlated to the total score. These results indicate that all factors are under same construct.

Table 8
Factor Correlation Matrix

	Excessiveness	Alienation	Total
Disease	.58**	.69**	.79**
Excessiveness		.64**	.77**
Alienation			.97**

**$p < .001$

4. Discussion

This study aimed to develop a reliable and valid instrument to measure university students' attitudes towards LGBTI individuals. For this purpose, first the literature was reviewed, students were asked to write essays, and 106 items were complied. Five experts were consulted for the content validity of these items. Based on experts' suggestions, 17 items were removed. The internal consistency of the rest 89 items was calculated, and 43 items which were negatively correlated to the scale were removed. Exploratory factor analysis were conducted with the rest 46 items, and a scale with 28 items under three factors explaining 43.9% of the variance was finalized. The results of rotation showed that loads of factors ranged between .39 and .78. The factors were named as "Alienation", "Excessiveness" and "Disease". The results of validity and reliability analysis showed that this scale is a reliable and valid instrument to determine university students' attitudes towards LGBTI individuals.

The findings of this study may be thought to be coincide with the other related studies about LGBTI individuals. Szymanski and Chung (2001) developed the Lesbian Internalized Homophobia Scale [LIHS], which comprised five dimensions: (i) connection with the lesbian

community, (ii) public identification as a lesbian, (iii) personal feelings about being a lesbian, (iv) moral and religious attitudes toward lesbianism, and (v) attitudes toward other lesbian. The dimensions of public identification as a lesbian, and moral and religious attitudes toward lesbianism may be seen to be related with the factors of this study about LGBTI individuals in that the developed scale within this study is about the views of others towards the LGBTI individuals. The Turkish adaptation of LIHS by Öztürk and Kındap (2011) yielded the same dimensions, except the personal feelings about being a lesbian and moral and religious attitudes toward lesbianism showed up to be one construct in the adaptation study as personal feelings about being a lesbian and moral/religious attitudes. Lesbian, gay and bisexual identity scale [LGBIS] by Mohr and Kendra (2011) has eight dimensions as (i) acceptance concerns, (ii) concealment motivation, (iii) identity uncertainty, (iv) internalized homonegativity, (v) difficult process, (vi) identity superiority, (vii) identity affirmation, and (viii) centrality. The dimensions of acceptance concerns and concealment motivation are also related to the dimensions found in this study.

This instrument may be thought as valid and reliable to use in studies with LGBTI individuals. Further studies may be suggested to check the validity of the scale with different groups including confirmatory factor analysis. It could be useful to measure high school students', or people' from low literacy rate attitudes, emotions, and thoughts towards LGBTI individuals. The instrument's validity may also be controlled with the participants out of Turkey.

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Appendix

English translation of the instrument items*

Items	1. Dimension: Alienation
35.	I think LGBT individuals are less than human.
82.	I want LGBT individuals to be deported from our country.
89.	If I find out that my child is an LGBT individual, I will disown him/her.
83.	I use rude words against LGBT individuals because of their sexual tendencies.
65.	I disregard the opinions of LGBT individuals.
22.	According to me, LGBT individuals' only concern is sex.
50.	I don't want to be in the same environment with an LGBT individual.
26.	I think that, when compared to other individuals, LGBT individuals are more prone to abuse others sexually.
74.	I don't want an LGBT friend around me.
36.	I would have hated myself if I were an LGBT individual.
31.	According to me, LGBT is a perversion.
62.	According to me, LGBT individuals affect society's life style negatively.
21.	According to me, LGBT individuals exclude others who are not like them.
46.	I think LGBT individuals are using their identities for financial benefit.
9.	I get scared when I see an LGBT individual.
70.	According to me, LGBT individuals should live in their private space.
57.	If an LGBT individual tells me that s/he likes me, I will feel bad.
77.	I don't defend the rights of LGBT individuals.
7.	I think LGBT is a sin.
Items	**2. Dimension: Excessiveness**
71.	I think LGBT is a result of being a wannabe.
72.	According to me, LGBT individuals turn their identities into a show.
73.	According to me, LGBT individuals exaggerate their own rights.
88.	If my child tells me that s/he is an LGBT individual, I will take him to the hospital.
85.	According to me, individuals should fulfill their gender roles that they biologically belong to.
Items	**3. Dimension: Disease**
14.	I think LGBT is a disease.
56.	I think LGBT individuals should receive psychological support.
29.	I think LGBT individuals have harmful behaviors to the society.
13	I cannot stand the romantic relationships of LGBT individuals.

*There are no reverse items in the scale. The researchers may contact with the corresponding author for the original Turkish version of the scale.