

## MEASUREMENT OF ATTITUDES TOWARD LESBIANS AND GAY MEN IN STUDENTS OF HEALTH SCIENCES FROM NORTHEAST MEXICO

### *MEDICIÓN DE ACTITUDES HACIA LESBIANAS Y HOMBRES HOMOSEXUALES EN ESTUDIANTES DE CIENCIAS DE LA SALUD DEL NORESTE DE MÉXICO*

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#### Abstract

The aims of this paper were to describe the distribution of the Attitudes Toward Lesbians and Gay men scale (ATLG; Herek, 1984), estimate the percentages of rejection, and provide evidence regarding its concurrent validity. An incidental sample of 452 undergraduate students of health sciences was collected. The distribution of ATLG total score fitted to a normal distribution. The percentage of rejection was 18% (including 3% extreme rejection). The correlation between the ATLG total score and a homophobia scale was positive and with a large effect size. Male participants showed higher scores of open rejection toward gay men than female participants. The means of ATLG total score were higher in heterosexuals than non-heterosexuals, and in persons not having homosexual friends or relatives than in persons who did have, and in students who had started their couple sexual life than in those who had not. Hence, validity evidences were found. It is recommended the use of ATLG scale in Mexico. *Key words:* Homophobia, attitude, lesbianism, homosexuality, sex, Mexico.

## Resumen

Los objetivos de este artículo fueron describir la distribución de la Escala de Actitudes hacia Lesbianas y Hombres Homosexuales (ATLG; Herek, 1984), estimar los porcentajes de rechazo y proporcionar evidencias de validez concurrente. Una muestra de 452 estudiantes universitarios de ciencias de la salud fue reclutada. La distribución de la puntuación total de la ATLG se ajustó a una curva normal. El porcentaje de rechazo fue 17% (incluyendo 3% de rechazo extremo). La correlación entre la puntuación total de la ATLG y una escala de homofobia fue positiva y con un tamaño de efecto grande. Los participantes masculinos mostraron mayor rechazo abierto hacia los hombres homosexuales que las participantes femeninas. Las medias de la puntuación total de la escala ATLG fueron más altas en heterosexuales que en homosexuales, en participantes que no tenían amigos o parientes homosexuales que en aquéllos que sí, y en estudiantes que habían iniciado su vida sexual de pareja que en aquéllos que no. Por lo tanto, se encontraron evidencias de validez. Se recomienda el uso de la escala ATLG en México.

*Palabras clave:* Homofobia, actitud, lesbianismo, homosexualidad, sexo, México.

## Introduction

*Attitude toward homosexuality*

The concept of attitude refers to an individual's evaluative positioning toward an object. The personal positions, within an attitudinal continuum, range from total acceptance to complete rejection, including intermediate points (Haddock, 2004). When there exist a very polarized, collective rejection, including very negative evaluations and stereotypes that devalue and marginalize a group of individuals for a particular feature, this is named as stigmatization (Major & Eccleston, 2005).

Sexual orientation toward persons of the same sex has been traditionally stigmatized in Western society and this tendency became harder since the advent of Judeo-Christian values (Crompton, 2006). In the past the homosexuality was even criminalized or stigmatized as a psychopathology. Nevertheless, nowadays, there exists a public policy for protection against discrimination and blatant acts of violence grounded on sexual orientation. These acts are still frequent in Mexico and require some type of prevention (Aguirre & Rendón, 2008); hence the need to have instruments to evaluate the attitude toward persons with a non-heterosexual sexual orientation. Among the instruments designed for this purpose the Attitudes Toward Lesbians and Gay men (ATLG) scale, created by Herek (1984), stands out.

Sakalli (2002) highlights that, among heterosexual persons, the scores of rejection toward

homosexuality are higher when they think that homosexuality is a personal choice or when they feel that homosexuality is a perversion. These beliefs are frequent among religious and conservative persons. Troiden (1989) points out that, among heterosexual persons, the attribution of homosexuality to a matter of personal choice prevails. On the other hand, most homosexual men attribute their homosexuality to natural or congenital causes; among lesbians the attributions of their sexual orientation to a matter of personal choice prevail.

One of the advantages derived from ATLG scale has been the opportunity to investigate the differential aspects of attitudes toward homosexual men and lesbians among heterosexual individuals. It has been observed that heterosexual men feel more rejection and take greater social distance from gay men than from lesbians (LaMar & Kite, 1998), while heterosexual women report more disgust toward lesbians than toward gay men. Overall, women express less rejection of sexual orientation toward persons of the same sex than men. Despite of these differential aspects, the correlation between individual attitude toward both homosexual men and lesbians is high (Herek, 2000a).

This greater rejection toward homosexuality in the own sex puts the attitude at the service of heterosexual identity consolidation within

a hegemonic heterosexist ideology (Jewell & Morrison, 2010). The greater rejection toward male homosexuality is grounded in much more homophobic cultural attitude toward men than toward women at the service of the hegemony of heterosexual family rooted in marital ties (Herek & McLemore, 2013).

There are more conflicts with the issue of establishing sexual orientation among teenagers than among adults (Rosario, Schrimshaw, Hunter, & Braun, 2006), hence adolescents' attitude toward homosexuality essentially serves a symbolic function or even a defensive one (Herek & McLemore, 2013). Thus the adolescents have higher mean scores than young and mature adults. Blackwell and Kiehl (2008), working with a sample of 163 nurses with a wide age range (20 to 65 years old) found mean differences in the ATLG total score when comparing four groups of age (20-29, 30-39, 40-49, 50 and older). Participants with ages between 40 and 49 year old as well as those between 30 and 39 year old expressed higher acceptance than younger participants (20-29 year old). This was attributed to a cohort effect and greater psychological maturation. Regarding religion, persons with no adscription to a particular religion show higher levels of acceptance (Herek, 1987; Herek & McLemore, 2013).

Several studies support the idea that those persons having homosexual relatives or friends show more favorable attitudes toward homosexuality, owing to the positive experience that these relationships involve and the modification of previous mental representations that stigmatize homosexuality, and that were internalized throughout the process of socialization (Hinrichs & Rosenberg, 2002; Lingardi, Falanga & Augelli, 2005).

#### *ATLG scale*

Herek's ATLG scale is the most widely used instrument to measure the attitude toward homosexual men and lesbians since 1980s, and it has been validated in different countries (Herek & McLemore, 2011). Its dimensional structure is constituted by two correlated factors: rejection toward gay men and rejection toward lesbians (Herek, 1984). Nevertheless, this factor model has not shown a good fit to data in studies proceeding from Latin American countries.

Cárdenas and Barrientos (2008), in a sample of Chilean students found a structure of three correlated factors for the 10 items composing the attitude toward lesbians subscale: traditional values (L3, L5, L6, L8, L9, and L10), social sanction (L4 and L7) and social rights (L1 and L7), and a structure of two correlated factors for the 10 items composing the attitude toward gay men subscale: rights and stereotypes (G1, G2, G3, G4, G6, G9, and G10), and the natural/unnatural (G5, G7, and G8). Barrientos and Cárdenas (2012) found a better data fit with a model of five factors hierarchized to two higher-order, correlated factors than with a model of two correlated factors. The fit indexes of hierarchized model were adequate (*chi-square/df* = 3.34, *CFI* = .93, *NFI* = .91, *RFI* = .88, and *RMSEA* = .06).

Moral and Valle (2011), in a sample of 356 Mexican students, found a structure of three correlated factors for the 20 items composing the ATLG scale: a factor of rejection toward lesbians (ATL) constituted by ten items (L1 to L10) with high internal consistency ( $\alpha$  = .91), another factor of open rejection toward gay men (ATG-Open) constituted by five items (G2, G3, G4, G6, and G10) with high internal consistency ( $\alpha$  = .85), and a third factor of subtle rejection toward gay men (ATG-Subtle) constituted by five items (G1, G5, G7, G8, and G9) with high internal consistency ( $\alpha$  = .78). This model had a better data fit than the model of two correlated factors; its fit indexes were adequate (*chi-square/df* = 2.11, *FD* = 0.99, *PNCP* = 0.52, *GFI* = .90, *AGFI* = .88, and *RMSEA* = .06). More recently, in a sample of 452 students, Moral and Valle (2013) found that these three factors nested to a general factor showed an adequate data fit (*chi-square/df* = 2.38, *RMSEA* = .05, *GFI* = .91, and *AGFI* = .90), and this hierarchized model resulted invariant between men and women in the multigroup contrast (*chi-square/df* = 1.80, *RMSEA* = .04, *GFI* = .87, and *AGFI* = .83). The authors opted by the nested model owing to the high correlations among the three factors.

#### *Attitude toward homosexuality in health sciences students*

The stigmatization of sexual orientation toward persons of same sex by professionals in the fields of health sciences is a documented fact (Cohen,

Romberg, Grace, & Barnes 2005; Kan et al., 2009; Yen, 2007). This affects the quality of medical attention and infringes the health rights of non-heterosexual persons. For this reason, the attitude toward homosexuality is being evaluated in health sciences students, and workshops to facilitate an attitudinal change toward acceptance of sexual diversity have been implemented in some medical schools (Sequeira, Chakraborti, & Panunti, 2012; Wright, Lester, & Cullen, 2001).

Campo and Herazo (2008), in a systematic review of papers on the prevalence of rejection attitude toward non-heterosexual persons among medical students, published from 1998 to 2007 in six data bases, found only 6 studies; these ones reported rejection attitude between 10 and 25% of students. Campo, Diaz and Herazo (2009), in a second systematic review, found low level of rejection toward non-heterosexual persons among dentistry students. Campo, Herazo and Cogollo (2010), in a third systematic review, reported that between 7 and 16% of nursing students rejected homosexuality, finding a higher level of rejection among men than among women. Parker and Bhugra (2000) found that a high proportion of British medical students (10-15%) harbored a negative attitude toward homosexuality. In another sample of British medical students, Skinner, Henshaw and Petrak (2001) informed that 12% of male participants exhibited negative attitude toward homosexual men; this percentage of rejection was lower among women, and both sexes showed a lower proportion of rejection toward lesbians than gay men. Klamen, Grossman and Kopacz (1999) observed 13% of rejection responses (including extreme rejection) in American medical students, and homophobic responses (extreme rejection) were found in 2.75% of the total sample. Moral and Valle (2012) observed a negative attitude (including extreme rejection) in 21% of Mexican students of health sciences, and an extremely negative attitude was found in 4% of participants. Overall, in these studies performed in different countries with diverse instruments, the mean percentage of rejection (including extreme rejection) was 15%, and the one for homophobic attitude (extreme rejection) was 3%.

### *Objectives and hypothesis*

The stigmatization and discrimination of HIV-infected patients, especially those with a non-heterosexual orientation, is a reality in the institutions of Health Services (Cordova, Ponce & Valdespino, 2009), and is even more tangible among young people in the process of formation (Wright et al., 2001). As it has been previously pointed out, in some schools of Medicine and Health Sciences there is a great deal of sensitivity, and efforts are being made to evaluate and promote workshops aiming to an attitudinal change. Precisely, this is a pending issue in Mexico, as a Latin American country with a heterosexist culture (Castañeda, 2005). A better focused evaluation and intervention, in necessary case, should be carried out on students of first semesters, because their attitude is open to the demands required by their future professional role, so avoiding resistances of difficult modification later on their carrier.

Starting from the model of three correlated factors (attitude of rejection toward lesbians, attitude of open rejection toward homosexual men, and attitude of subtle rejection toward homosexual men) (Moral & Valle, 2011) and the model of 3 factors nested to a general factor (Moral & Valle, 2013), the aims of this study were to: 1) describe the distribution of the ATLG total score and its three factors, 2) estimate the levels of attitudinal rejection in the sample, 3) compare means among factors, 4) contrast mean differences by sex, sexual orientation, having started couple sexual life, having homosexual friends, having friends living with HIV, religious adscription, having been tested for HIV infection, and attending HIV patients, 5) calculate correlations with age and number of sexual partners, and 6) estimate its convergent validity in relation to a homophobia scale (EHF) created in Mexico (Moral & Sulvarán, 2010).

The expected percentage of rejection attitude (including extreme rejection) is 15%, and an attitude of extreme rejection is expected in 3% of participants (Campo et al., 2010; Klamen et al., 1999; Moral & Valle, 2012; Parker & Bhugra, 2000; Skinner et al., 2001).

The highest mean is expected in ATG-Subtle and the lowest one in ATG-Open owing to the attitudinal change experienced in modern society, in which blatant rejection has tended to disappear

and be substituted by subtle rejection (Herek & McLemore, 2013).

In non-heterosexual persons it is expected that their attitudes will be clearly more positive than the attitudes in heterosexual persons, in line with the construction of a positive identity and social categorization phenomena of in-group and out-groups (Turner & Reynolds, 2007). It is expected to find higher mean scores (more rejection) among participants without couple sexual experience, persons not having homosexual friends, persons not having friends living with HIV, people not having been HIV tested and student not attending HIV patients (Klaman et al., 1999), among Christians and Catholics (Herek, 1987), and among adolescents and younger people (Blackwell & Kiehl, 2008). The comparison by sexual orientation will be the most differential one because this aspect defines the attitudinal object. A further justification of these latter hypotheses is given in the discussion section.

It is expected to find a moderate-high direct correlation between ATLG and EHF scales, thus establishing convergent validity owing to the high affinity in their contents.

## Methods

### *Participants*

An incidental sample of 452 health sciences students from a private university in the city of Monterrey, Mexico, was collected. This sample was constituted by 252 women (56%) and 200 men (44%). Using binomial test, the number of women resulted significantly higher than the number of men ( $p = .02$ ). The values of mean, median and mode for age were 19 years old, varying from 17 to 24. A high percentage of the sample (85%) was affiliated to catholic religion (380 out of 452 participants), 5% (21 out of 452) defined themselves as members of Christian religions, and 11% (51 out of 452) were affiliated to other religions; there were no atheists among the participants. All of them were single. The sexual orientation was heterosexual in 95.8% of the participants who answered to this question (432 out of 451), homosexual in 2.2% (10 out of 451), and bisexual in 2% (9 out of 451).

### *Instruments*

The Attitudes Toward Lesbians and Gay men scale (ATLG; Herek, 1984) is constituted by 20 items, 10 to evaluate the attitudes toward homosexual men (items G1 to G10) and 10 to evaluate the attitudes toward lesbians (items L1 to L10). The items with a redaction related to acceptance of male homosexuality (4 items: G1, G5, G7 and G10) and lesbianism (3 items: L2, L4 and L7) are evaluated along a disagreement, 5-point, Likert-type scale (from 1 = strongly agree to 9 = strongly disagree). The sum of these 7 items with the remaining 13 negatively-keyed items yields a total score. A higher score means greater rejection (Herek & McLemore, 2011). The ATLG scale has been validated in Mexico by Moral and Valle (2011). In a sample of 356 Mexican students, they found high internal consistent ( $\alpha = .94$ ) and a structure of three correlated factors: rejection toward lesbians (ATL) open rejection toward gay men (ATG-open) and subtle rejection toward gay men (ATG-Subtle).

Homophobia scale (EHF). This self-report scale is constituted by ten dichotomic items: yes/no. The scoring of the scale is obtained by summing the numerical values across the ten items: one point for each affirmative answer to questions 1 to 6 and one point for each negative answer to questions 7 to 10, with a possible total cumulative score ranging from 0 to 10. Moral and Sulvarán (2010) recommended to reduce the EHF-10 scale to six items (EHF-6): 3, 5, 6, 8, 9 and 10. These six items yielded an adequate internal consistency ( $\alpha = .66$ ), and one-factor structure with data fit ranging from good ( $RMSSR = .03$ ,  $GFI = .98$ ,  $AGFI = .96$ ) to adequate ( $\chi^2/df = 2.93$ ,  $RMSEA = .06$ ) by Maximum Likelihood.

### *Procedure*

After getting approval from University authorities and professors, having clearly explained the objectives of this research to the participants, having identified the responsible persons of this study, and having obtained informed consent, the ATLG and EHF scales were applied in the classrooms. The answers to the questionnaires were anonymous, and the confidential treatment of individual data was guaranteed. The ethical norms of the American Psychological Association (APA, 2002) were

followed during the design and implementation of this investigation.

#### Statistical Analysis

The adjustment to normality of the ATLG total score and their factors was contrasted through Kolmogorov-Smirnov test (ZK-S). Mean differences were compared with analysis of variance and the Student's t-test. The effect size was estimated by Cohen's d. Correlations were estimated through the Pearson's product-moment coefficient and eta coefficient. The level of statistical significance was predefined at .05. Statistical calculations were executed by SPSS 16.

## Results

### Description of distributions

In this sample of 452 participants, the mean of ATLG total score was 85.03 (95% CI: 82.03, 88.03), with a standard deviation of 32.45 and a standard error of the mean of 1.53. The distribution fitted to a normal curve ( $ZK-S = 0.74, p = .64$ ) (Table 1).

The mean of the ATLG total score was divided by the number of items for its interpretation from response to item in a rejection sense, and thus five intervals of constant amplitude ( $(9 - 1)/5 = 1.6$ ) were defined: 1 to 2.59 (discrete value 1 = "completely disagree"), 2.60 to 4.19 (discrete value 3 = "disagree"),

Table 1.  
Descriptive statistics and internal consistency of ATLG scale

Statistics		ATLG	ATG-Open	ATG-Subtle	ATL
Internal Consistency	<i>N. of Items</i>	20	5	5	10
	<i>alpha</i>	.94	.84	.79	.91
Descriptive statistics	<i>Min</i>	20	5	5	10
	<i>Max</i>	180	45	45	90
	<i>M</i>	85.03	18.55	28.69	37.79
	<i>SD</i>	32.45	8.98	9.31	17.30
	<i>Mdn</i>	85	17	29	38
	<i>Mo</i>	85	19	29	46
	<i>Sk</i>	0.22	0.55	-0.38	0.34
	<i>K</i>	-0.31	-0.13	-0.35	-0.33
Distribution with range reduced from 1 to 9	1 to 2.59 (1)	69 (15.3%)	117(25.9%)	26(5.8%)	111(24.6%)
	2.60 to 4.19 (3)	149 (33%)	159(35.2%)	52(11.5%)	160(35.4%)
	4.20 to 5.79 (5)	152(33.6%)	104(23%)	123(27.2%)	115(25.4%)
	5.80 to 7.39 (7)	67(14.8%)	57(12.6%)	145(32.1%)	55(12.2%)
	7.40 to 9 (9)	15(3.3%)	15(3.3%)	106(23.5%)	11(2.4%)
Normality	ZK-S	0.74	1.93	1.67	1.16
	<i>p</i>	.64	< .01	.01	.14

N = 452, SE of Sk = 0.12 and SE of K = 0.23. ATLG: Total score (items from G1 to L10). ATG-Open: Open rejection toward homosexual men (items G2, G3, G4, G6, and G10). ATG-Subtle: Subtle rejection toward homosexual men (items G1, G5, G7, G8, and G9). ATL: Rejection toward lesbians (items from L1 to L10). Discrete values of response to item in a rejection sense: 1 = "completely disagree"; 3 = "disagree"; 5 = "indifferent"; 7 = "agree", and 9 = "definitively agree".

4.20 to 5.79 (discrete value 5 = “indifferent”), 5.80 to 7.39 (discrete value 7 = “agree”), and 7.40 to 9 (discrete value 9 = “definitively agree”).

The value obtained for the ATLG total score was 4.25, which indicated a response of indifference (between 4.20 and 5.79; discrete value = 5). The 15% of the responses was strongly disagree with the statement of rejection, 33% disagree, 34% indifference, 15% agree, and 3% totally agreement (Table 1).

The distribution of the factor of rejection toward lesbians (ATL) fitted to a normal curve. Nevertheless, the distributions of the factors of rejection toward gay men (ATG-Open and ATG-Subtle) were skewed, and they did not fit to a normal curve (Table 1).

The means of the factors were also divided by the number of items. The ATG-Open (3.71) and

ATL (3.78) factors yielded values within the interval of acceptance (2.60 to 4.19), while the ATG-Subtle factor (5.74) fell within interval of indifference (4.20 to 5.79) (Table 1).

*Mean difference with paired data*

The means of subtle rejection toward gay men were higher than the means of open rejection toward gay men and rejection toward lesbians in the total sample, as well as in the samples of women and men. The mean of open rejection toward gay men and the mean of rejection toward lesbians were statistically equivalent in the total sample, but women showed significantly higher rejection toward lesbians than open rejection toward gay men, and men showed significantly higher open rejection toward gay men than rejection toward lesbians (Table 2).

Table 2.  
*Mean differences by paired data in the total sample, women and men*

Sample	Comparisons	<i>M</i>	<i>SD</i>	<i>r</i>	<i>MD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Total sample (N = 452)	ATG-Open	3.71	1.80	.66	-2.03	-28.67	451	< .01
	ATG-Subtle	5.74	1.86					
	ATG-Open	3.71	1.80	.78	-0.07	-1.25	451	.21
	ATL	3.78	1.73					
	ATG-Subtle	5.74	1.86	.73	1.96	31.28	451	< .01
	ATL	3.78	1.73					
Women (n = 252)	ATG-Open	3.42	1.67	.64	-2.20	-23.55	251	< .01
	ATG-Subtle	5.62	1.83					
	ATG-Open	3.42	1.67	.83	-0.41	-6.61	251	< .01
	ATL	3.83	1.74					
	ATG-Subtle	5.62	1.83	.75	1.79	22.43	251	< .01
	ATL	3.83	1.74					
Men (n = 200)	ATG-Open	4.07	1.89	.69	-1.81	-17.02	199	< .01
	ATG-Subtle	5.88	1.89					
	ATG-Open	4.07	1.89	.76	0.36	4.04	199	< .01
	ATL	3.71	1.72					
	ATG-Subtle	5.88	1.89	.71	2.17	22.21	199	< .01
	ATL	3.71	1.72					

ATLG: Total score (items from G1 to L10). ATG-Open: Open rejection toward homosexual men (items G2, G3, G4, G6, and G10). ATG-Subtle: Subtle rejection toward homosexual men (items G1, G5, G7, G8, and G9). ATL: Rejection toward lesbians (items from L1 to L10).

Table 3.  
Comparison of means by Student's t-test for two independent samples

Grouping Variable	Descriptive statistics						Student's t-test			Cohen's d
	No			Yes			t	gl	p	
	N	M	SD	N	M	SD				
Total Score. Rejection toward lesbians and gay men (ATLG)										
Man	252	83.56	32.18	200	86.88	32.78	-1.08	450	.28	
Heterosexual orientation	19	49.47	30.87	432	86.61	31.68	5.01	449	< .01	-1.17***
Couple sexual life	318	88.79	32.24	133	76.20	31.40	3.81	449	< .01	0.39*
Gay friends	134	99.16	32.33	316	79.18	30.69	6.22	448	< .01	0.64**
Friends living with HIV	442	85.11	32.21	9	81.78	46.36	0.30	449	.76	
HIV Test	392	85.91	32.10	58	79.41	34.97	1.42	448	.16	
Patient living with HIV	399	84.88	32.31	52	86.27	34.07	-0.29	449	.77	
Open rejection toward gay men (ATG-Open)										
Man	252	17.10	8.34	200	20.37	9.45	-3.90	450	< .01	-0.37*
Heterosexual orientation	19	12.16	8.04	432	18.81	8.93	3.19	449	< .01	-0.75***
Couple sexual Life	318	19.23	9.14	133	16.99	8.45	2.43	449	.02	0.25*
Gay friends	134	23.46	9.03	316	16.44	8.13	8.11	448	< .01	0.83**
Friends living with HIV	442	18.54	8.91	9	17.89	12.81	0.22	449	.83	
HIV Test	392	18.65	8.89	58	17.76	9.65	0.71	448	.48	
Patient living with HIV	399	18.54	8.94	52	18.42	9.37	0.09	449	.93	
Subtle rejection toward gay men (ATG-Subtle)										
Man	252	28.12	9.17	200	29.40	9.47	-1.45	450	.15	
Heterosexual orientation	19	16.16	9.74	432	29.24	8.92	6.23	449	< .01	-1.46***
Couple Sexual Life	318	29.38	8.96	133	27.03	9.98	2.46	449	.01	0.25*
Gay friends	134	31.81	8.76	316	27.40	9.25	4.69	448	< .01	0.48*
Friends living with HIV	442	28.76	9.32	9	25.22	9.30	1.13	449	.26	
HIV Test	392	28.81	9.19	58	27.90	10.31	0.70	448	.49	
Patient living with HIV	399	28.64	9.46	52	29.04	8.28	-0.29	449	.77	
Rejection toward lesbians (ATL)										
Man	252	38.33	17.40	200	37.11	17.19	0.75	450	.46	
Heterosexual orientation	19	21.16	15.24	432	38.57	17.03	4.38	449	< .01	-1.03**
Couple Sexual Life	318	40.18	17.09	133	32.18	16.57	4.57	449	< .01	0.47*
Gay friends	134	43.90	18.11	316	35.35	16.27	4.92	448	< .01	0.51*
Friends living with HIV	442	37.82	17.13	9	38.67	25.67	-0.15	449	.88	
HIV Test	392	38.45	17.24	58	33.76	17.44	1.93	448	> .05	
Patient living with HIV	399	37.70	17.15	52	38.81	18.52	-0.43	449	.67	

Cohen's d:  $M1-M2 / ((n1*S1^2) + [n2*S2^2] / [n1+n2 - 2])^{1/2}$ . Effect size: \*small [0.20, 0.62], \*\* medium [0.63, 1.14], \*\*\* large  $\geq 1.15$  (Hopkins, 2002).



*Mean Differences between independent groups*

Men had significantly a higher mean (more rejection) in the ATG-Open factor than women. The effect size was small ( $d = -0.37$ ). The means were statically equivalent between both sexes in ATLG, ATG-Subtle, and ATL (Table 3).

The differences of mean of ATLG total score and its three factors were statistically significant between heterosexual persons and the persons that defined themselves as non-heterosexual (homosexuals and bisexuals), between the participants who had begun their sexual life or not, and between people having gay friends or not. Homosexual persons, participants beginning couple sexual life and people having gay friends showed higher acceptance. The effect

sizes varied from small (0.25) to large (-1.46) (Table 3).

The means of ATLG total score and its three factors were statistically equivalent between persons who had friends living with HIV or not, between participants who had undergone HIV test or not, and between students who had attended to patients living with HIV or not (Table 3).

*Correlations with age and number of sexual partners*

The ATLG scale and its three factors correlated with number of sexual partners, but age was independent. The greater the number of sexual partners, the lower the rejection toward gay men and lesbians (Table 4).

Table 4.

*Correlations of the ATLG total score and its factors with age and number of sexual partners*

ATLG	EHF-6 (N = 356)					
	Age (N = 452)		N. of sexual partners (N = 448)			
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
ATLG	-.05	.31	-.17	< .01	.76	< .01
ATG-Open	-.04	.44	-.12	.01	.71	< .01
ATG-Subtle	.07	.16	.13	< .01	.69	< .01
ATL	-.04	.45	-.20	< .01	.68	< .01

EHF-6 = 6-item Scale of homophobia (Moral & Martinez. 2010). ATLG: Total score (items from G1 to L10). ATG-Open: Open rejection toward homosexual men (items G2, G3, G4, G6, and G10). ATG-Subtle: Subtle rejection toward homosexual men (items G1, G5, G7, G8, and G9). ATL: Rejection toward lesbians (items from L1 to L10).

Table 5.

*Comparison of means among religious adscription groups*

ATLG	Catholics (n = 380)		Christians (n = 21)		Others (n = 51)		<i>F</i>	eta	eta2
	M	DE	M	DE	M	DE			
	Total score	86.17	30.08	105.71	26.89	68.00			
ATG-Open	18.61	8.76	21	25.00	51	15.43	8.79**	.19	.04
ATG-Subtle	29.24	8.73	32.81	7.92	22.88	11.64	13.31**	.24	.06
ATL	38.32	16.75	47.91	12.95	29.69	19.83	9.73**	.20	.04

N = 452. \*\*  $p < .01$ . ATLG: Total score (items from G1 to L10). ATG-Open: Open rejection toward homosexual men (items G2, G3, G4, G6, and G10). ATG-Subtle: Subtle rejection toward homosexual men (items G1, G5, G7, G8, and G9). ATL: Rejection toward lesbians (items from L1 to L10).

*Comparison of means by religious groups*

There were found significant differences in the means of the ATLG total score and its three factors among the three religious groups (Catholics, Christians and other religions). Higher levels of rejection were found among Christians. On the contrary, participants ascribed to other religions showed the greatest acceptance. The associations between prejudicial attitude and religion were low by eta coefficient, varying from .19 to .24 (Table 5). Being possible to assume equality of variances among three groups in the ATG-Open and ATL factors by Levene's test, the differences between pairs were contrasted through the Fisher's LSD (Least Significant Difference) test. This null hypothesis could not be maintained for the ATLG total score and ATG-Subtle factor, therefore the pair comparisons were performed by Tamhane's T2 test. All pair comparisons were significant, except between Christians and Catholics in the ATG-Subtle factor.

*Convergent Validity in Relation to the EHF Scale*

The model of a general factor with six indicators for the EHF scale (items 3, 5, 6, 8, 9 and 10) had the best data fit, as expected (Moral & Sulvarán, 2010). Its fit indexes were good by Maximum Likelihood:  $\chi^2(9, N = 357) = 20.20, p = .02; FD = 0.06, RMSEA = .06, GFI = .98, AGFI = .96$  and  $CFI = .96$ . Its internal consistence was high ( $\alpha = .70$ ).

The ATLG total score had convergent validity with the EHF-6 scale, being the correlation between these two scales high ( $r = .76, p < .01$ ), so that both scales shared 58% of the variance. The factor of open rejection toward homosexual men was the one with the highest correlation with EHF-6 scale ( $r = .71, p < .01$ ), followed by the factor of subtle rejection toward homosexual men ( $r = .69, p < .01$ ). The correlation with the factor of rejection toward lesbians was .68 (Table 4).

## Discussion

The percentage of rejection attitude (including extreme rejection) in these students was slightly higher than expected one (18% versus 15%), but the percentage of extreme rejection coincided totally with the expected one that was 3% (Campo et al., 2010; Klamen et al., 1999; Moral & Valle,

2012; Parker & Bhugra, 2000; Skinner et al., 2001).

The factor of subtle rejection toward gay men had the highest mean; this fact implies that this factor elicits more rejection. The sample had an ambiguous attitude in this factor, that is, an attitude between rejection and acceptance, while the other two factors revealed an attitude of acceptance toward gay men and lesbians. This is in line with expectations grounded on the current changes in Western culture. There is a growing tolerance for sexual diversity, homosexuality is not criminalized any more, and attacks and blatant discrimination against homosexuals are considered an offense; nonetheless, homophobia still persists and is manifested through subtle and symbolic devaluations, jokes, defamatory gossips, and masked differential treatments (Herek & McLemore, 2013).

The distribution of ATLG scale fitted to a normal curve, so that it can be scaled by the mean and standard deviation. From the present results, differential normative criteria by sex are not required because the means were equivalent between men and women, except for the factor of open rejection toward gay men in which sex had a small effect size. Nevertheless, in this same population, Moral and Valle (2012) found significant sex differences not only in the factor of open rejection toward gay men, with a medium effect size ( $d = 0.61$ ), but also in the total score and in the factor of subtle rejection toward homosexual men, with a small effect size ( $d = 0.33$  for both factors). Therefore, these two latter differences are weaker and vary from sample to sample, when the sex difference in open rejection toward gay men is stronger and more stable.

The higher open rejection toward male homosexuality in men compared to women can be explained by the greater social stigmatization for male homosexuality than for lesbianism. This stigmatization is a powerful control mean to avoid the potential deviation of male sexuality before the restriction imposed by female sexuality (Moral, 2010). The mentioned restriction proceeds from the "good girls" that demand and enforce respect toward themselves (Paternostro, 1998). Men strongly internalize the prohibition of homosexual deviation imposed by culture, and thus their attitude of open rejection toward male homosexuality decreases in a slower way than the one of women

within the cultural current of change.

It cannot be argued clearly that women reject lesbianism more than men with the present data. The means were equivalent by sex in ATLG total score and ATL score. Women extremely disagreed with blatant rejection toward gay men, what determines the significant difference between ATG-Open and ATL. Therefore, there is only a partial support for the hypothesis of higher rejection to homosexuality in the own sex (Herek, 2000a). This hypothesis is maintained only in men.

The ATLG scale did not have correlation with age, within the limited range of age of the present sample (17 to 24 year old) and, therefore, it is not required differential normative criteria between teenagers from 17 to 19 years and young adults from 20 to 24 years. The significant effect that age has had in other studies is more related to the birth cohort than to the development stage of the participants (Blackwell & Kiehl, 2008). From a developmental hypothesis, it would be possible to argue that adolescents will express more homophobia because they are consolidating the definition of their sexual identity, which is consistent with a defensive function to which the attitude serves. However, what other investigations have shown is that older adults have a greater attitudinal rejection probably due to their more conservative perspective of the social world. Indeed the dominant function to which the attitude toward homosexuality serves is more expressive than defensive (Herek, 2000b; Herek & McLemore, 2013). In a population sample study, age might probably be a differentiating factor, especially between younger people and older adults, being younger people more liberal owing to a birth cohort effect.

As expected, those who had started their couple sexual life showed an attitude of lower rejection than those who did not, and the correlation between rejection and number of sexual partners was negative. It seems that sexual experience strengthens sexual identity and orientation and provides more flexibility to the attitude, what favors the acceptance of gay men and lesbians (Herek, 2000b).

The EHF scale showed to be consistent and it is recommended its reduction to only one attitudinal factor with six indicators, as in the study by

Moral and Sulvarán (2010). In spite of the limited scoring range of the EHF scale in its version of 6 items (0 to 6), its correlation with ATLG total score was high; besides, correlation of homophobia was higher with open rejection than with subtle rejection, reflecting convergent validity.

The ATLG scale was created with the intention of measuring the attitude of heterosexual persons toward homosexual men and lesbians (Herek, 1984) and, for this reason, the expectation was to find a more negative attitude among persons who define themselves as heterosexuals than among persons who define themselves as non-heterosexuals. In formulating this hypothesis was considered the 'awareness movement' that is going on among non-heterosexual people to overcome the social stigmatization that falls on them (Aguirre & Rendón, 2008), and the aspects of positive identity elicited by an attitudinal rating scale (Turner & Reynolds, 2007). Likewise, among persons having homosexual friends it was expected a more positive attitude due to the positive schematic-experiential function to which the attitude serves (Herek, 1987, 2000b) or to the positive experiential situation that modifies the attitude (Lingardi, et al., 2005). These two expectancies are clearly confirmed, being higher the differences between self-defined sexual orientation than between the presence or absence of an experiential situation, obtaining this way an evidence of validity for the ATLG scale. In addition, sexual orientation and experiential situation generate greater difference than the fact of being a man or a woman, suggesting that attitudes of these health sciences students are quite flexible and probably the traditional aspects of sex roles are not so rigid.

In accordance with the expectation (Herek, 1987), the finding of greater rejection toward homosexual men and lesbians among Christians and lower rejection among followers of other religions could be attributed to the degree of involvement and frequency of religious practice within cults with clearly homophobic ideologies. The other cults are ways of idiosyncratic religious expressions invested with magic-esoteric and New-Age ideas, and this includes some followers of Buddhism, which harbor less homophobic ideologies than Catholicism and Christianity.

Those who had been tested for HIV infection averaged lower than those who had not, as expected, but the difference was not statistically significant. This lack of significance could be due to unequal sizes of each group, and that HIV tests were probably more motivated by clinical practices and suffered surgical procedures than by engaging in risk sex behaviors. Attending to patients with HIV did not have effect on attitude. This clinical care involves contact with the stigmatized group (men having sex with men), so a lower rejection toward homosexuality could be expected (Sánchez, Rabatín, Sánchez, Hubbard, & Kalet, 2006). The refutation of this hypothesis could be due to unequal sizes of each group, and that the participants were students of first semesters, and their clinical experience and contact with stigmatized object were very scarce.

This study has several limitations. A non-probabilistic sample (an incidental sample of health sciences students from a private university in Monterrey, Mexico) was recruited, so that the conclusions derived from this study should be applied as hypothesis to this population and others alike. In addition, this investigation used only self-report instruments, hence the results might differ from those obtained by projective tests, reaction times or psychophysiological measurements.

In conclusion, in these students of health sciences, the distribution of the ATLG total score fitted to a normal curve, and thus, it can be scaled by the mean and standard deviation. It does not require differential normative criteria for men and women. The sex only had a small effect size on open rejection toward gay men, with higher rejection in men than women. The ATLG scale was independent of age within the range of 17 to 24 years old of this sample. As expected, Christians were the most homophobic, followed by Catholics, while persons belonging to other religions (modern idiosyncratic religious beliefs) were those that showed the greatest acceptance; nobody in this sample was an atheist. The homophobia scale (EHF) was consistent and should be reduced to six indicators to define only one attitudinal factor; its correlation with the ATLG scale was high. As further evidence of validity of the ATLG scale, clear differences were found in its total score and three factors

between heterosexuals and non-heterosexuals, between those having homosexual friends or not, and those had started their couple sex life or not.

It is recommended to use ATLG scale in Mexico and to build normative criteria for general population using probability samples with a wider range of age, as the ATLG scale is a reliable and valid instrument to assess attitudes toward homosexual men and lesbians among university students of health sciences.

If it is stated that a percentage of rejection higher than 10% is high, then this one is high in these students, either from the ATLG total score or from the scores of open rejection toward gay men and toward lesbians. If the percentage of subtle rejection toward gay men is taken into account, then the percentage is very high, being the rejection present in more than half of the sample, with almost a quarter of participants showing extreme rejection. The variable with the greatest effect on rejection toward non-heterosexual persons was self-defined sexual orientation, followed by having non-heterosexual friends, having started couple sexual life and finally sex. Owing to the high rejection percentages, the implementation of workshops that promote the acceptance of sexual diversity in students of health sciences is recommended. It is suggested to work on the risk factors identified by this study. Thus, in these workshops, subtle manifestations of rejection and discrimination as an expression of group membership based on sexual orientation could be made aware. The work groups could promote direct and positive contacts with persons who self-define as non-heterosexual, and participants could engage in debates on the greater cultural condemnation toward male homosexuality and the pressure to show heterosexuality as a sign of normality.

Finally, it is necessary to further develop the research and expand the diversity of participants to advance the validation process in Mexico.

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