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Expanding the internalized homonegativity Scale by including the factor of fear of being identified as a non-heterosexual person

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The purpose of this instrumental research was to expand the Internalized Homonegativity Scale to assess a new factor, the fear of being identified as a non-heterosexual person, and to validate the new instrument. A questionnaire was applied to an incidental sample of 200 medical students from a private university in Monterrey, Mexico. This questionnaire was composed of four items about socio-demographic information, one is about self-defined sexual orientation, 16-item Internalized Homonegativity Scale (plus five items to assess the new factor), Attitude Towards Lesbians and Gay Men Scale, and Kinsey's Sexual Orientation Scale. The overall internal consistency was excellent. Upon removing two items, a four-factor model was reproduced through exploratory factor analysis; the goodness of fit was good. The four factors showed evidence of internal consistency and discriminant validity. The IHN-21 total score followed a normal distribution and its mean was higher among men than among women. IHN-21 had negative correlation with age and sexual orientation, and positive correlation with attitude of rejection towards gay men and lesbians. It is concluded that the scale shows internal consistency and reliability and construct validity.

Key words: Homonegativity, attitude, sexual orientation, factor analysis, psychometrics.

INTRODUCTION

This study proposes as research question: is the fear of being identified as a non-heterosexual person a relevant dimension to evaluate internalized homonegativity from its broader concept? There is a scale to assess this broader concept developed in the population of medical students. Upon creating the items to assess the fear of being identified as a non-heterosexual person, new questions arise:

(i) Do these items show internal consistency reliability and convergent validity within a factor that could be named 'fear of being identified as a non-heterosexual person'?
(ii) Do these items have discriminant validity within the factor structure of the scale?
(iii) Does the model with the new factor have structural validity?

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(iv) Do the new factor and the expanded scale show concurrent validity regarding attitude towards homosexual persons, sexual orientation, sex, and age?
(v) Does the level of internalized homonegativity vary when the original or expanded version of the scale is used?

The term 'externalized homonegativity' originally made reference to heterosexuals' negative attitudes towards non-heterosexual persons, which is behaviourally expressed through actions such as avoidance, use of antigay epithets, discrimination, and even violence (Herek et al., 2015). The term 'internalized homonegativity', on the other hand, was used to describe negative attitudes towards oneself when one recognizes one's homoerotic attraction, feelings, and/or desires. These negative judgments and feelings towards oneself arise when a heterosexist ideology prevails in the society in which one lives and this ideology is internalized (Berg et al., 2017). In this way, the theorists clarified that the concept of 'internalized homonegativity' applies to a minority of people, to the "others", and those "others", in their fullest expression, are the exclusively homosexual persons. Notwithstanding non-heterosexual orientation should be respected (Kite and Bryant-Lees, 2016); most people have been implicitly upholding the normalcy of heterosexuality. Likewise, any hint of homoerotic desires, fantasies, and/or behaviours as well as any clue of ambiguity have been deemed deviant or pathological by many people (Anderson and Holland, 2015; Cheng, 2018).

Recently, the use of the term 'internalized homonegativity' has been introduced as a concept potentially applicable to any individual regardless of sexual orientation since, taking into account the concealable nature of sexual orientation, anyone can be labelled as a non-heterosexual person in any given social interaction (Moral and Valle, 2013). This broadened conceptualization of internalized homonegativity leads to the applicability of attitudinal rejection towards homosexuality, including its manifest and subtle aspects, both to the public and to the internal or phenomenological sphere of any individual. This new approach implies that homoerotic desires, feelings, fantasies, and/or behaviours could potentially exist in any individual regardless of her/his sexual orientation. Likewise, the individual could be vulnerable to enacted sexual stigma and, as a consequence, to the development of internal psychological conflicts (ranging from mild discomfort to unbearable mind states) owing to the internalization of the prevailing cultural negative attitudes towards homosexuality (Moss, 2002; Savin-Williams, 2016). It should be noted that this extended application takes the concept out of the psychopathological domain so as to reflect the angst experienced by people when they realize that, in order to recognize and integrate their own homoerotic yearnings in their identity, they must

overcome the cultural and religious prejudices against homosexuality (Moss, 2002). Likewise, people with heterosexual identity could experience this angst when they realize that they have to constantly prove their heterosexuality to others (Herek, 2007). Thus, internalized homonegativity is positioned as a universal attitudinal phenomenon (Herek et al., 2015).

In recent decades, there has been a change in public policies regarding tolerance and fight against discrimination based on sexual orientation and identity (Consejo et al., 2017). Nevertheless, even today, the differences in status and power based on sexual stigma continue being perpetuated by institutions and ideological systems (Fisher et al., 2017; Hatzenbuehler, 2016; Pachankis and Bränström, 2018). When non-heterosexual people become visible, they are problematized and regarded as unnatural, sexual deviants that require explanation, thus implying the existence of a deficit in the person (Herek, 2010). Likewise, sexual stigma leads to the categorization of non-heterosexual people as weak, losers, and perverse; all of these categories are not just negative characteristics, but also derogatory and malevolent attributes in frank opposition to the development of both a positive self-concept and a healthy self-esteem by non-heterosexual people (Moss, 2002). It becomes clear that internalized homonegativity, in its broadest sense, includes a dimension of fear of being identified as a non-heterosexual person owing to the stigmatization that implies if three arguments are taken into account. First, sexual stigma constitutes a shared knowledge; second, sexual orientation is a hidden attribute; and third, any person can be perceived as a non-heterosexual person (Herek, 2007; Herek et al., 2015; Moss, 2002). This dimension, albeit always recognized by the theoretical approaches of rejection towards homosexuality, has not become a specific aspect measured when studying internalized homonegativity.

Currently, there is an instrument intended to measure internalized homonegativity, in its broadened sense, which is composed of 16 items (Internalized Homonegativity Scale, IHN-16; Moral and Valle, 2013). It is composed of three factors: rejection towards the public manifestation of homosexuality (PMH) or rejection in the public sphere, rejection towards own homoerotic feelings and desires (HFD) or rejection in the personal sphere, and conceptualization of non-heterosexual persons as incapable of intimacy (PII) or subtle rejection. The IHN-16 scale came from an extension of the scale generated by Currie et al. (2004), a scale that was originally composed of 12 items distributed across the following three factors: public identification as gay, sexual discomfort with gay men, and social discomfort with gay men. The 16-item version presented better properties than the original 12-item version, and has recently been validated (Valle and Moral, 2018). It should be noted that, since the first studies, IHN-16 was developed, applied and validated in sex-balanced samples composed of university students

who were mostly heterosexual (Moral and Valle, 2013, 2015; Valdez et al., 2018; Valle and Moral, 2018).

In a recent validation study (Valle and Moral, 2018), the values of internal consistency of IHN-16 scale and its rejection factor towards the public manifestation of homosexuality were good (ordinal α = 0.88 and 0.84, respectively). Those ones for the rejection factor towards own homoerotic feelings and desires as well as for the factor related to the conceptualization of non-heterosexual people as incapable of intimacy were acceptable (ordinal α = 0.75 and 0.78, respectively). When testing a hierarchical model composed of three lower-order factors and a higher-order factor of homonegativity by the method Scale-Free Least Squares, using the polychoric correlation matrix as input data, it was found that the higher-order factor showed convergent validity, since its average variance extracted was 0.64 and its composite reliability was 0.84. The values of composite reliability of the three factors were higher than 0.70, although their values of average variance extracted were lower than 0.50. The goodness of fit of the model was good: χ^2/df = 1.20, GFI = 0.97, AGFI = 0.96, NFI = 0.96, CFI = 0.99, RFI = 0.95, SRMR = 0.07 and RMSEA = 0.03. Furthermore, as additional evidence of construct validity, it was found that the strength of association between IHN-16 scale and ATLG scale (Attitudes Towards Lesbians and Gay Men Scale; Herek, 1984) was very strong (r = 0.71, p < 0.001).

The purpose of this study was to develop and validate an expanded version of IHN-16 scale by adding five new items intended to more fully assess the broadened construct of internalized homonegativity (without reference to sexual orientation), including the dimension related to fear of being identified as a non-heterosexual person (FIN). Seven specific objectives were defined, namely:

(1) To describe the distribution and test the discriminability and internal consistency of the items composing the IHN-21 scale.
(2) To test the 4-factor model by exploratory and confirmatory factor analysis, verifying that the factors have internal consistency, convergent validity, and discriminant validity. Internal consistency refers to proportion of true variance that test or factor measures. Convergent validity involves that the variance of items or indicators explained by their factor is higher than the one explained by other non-attributable or random factors. Discriminant validity can be shown through a shared variance between factors lower than the average variance of items explained by their factor.
(3) To describe the distribution of the total score of the IHN-21 scale and its four factors.
(4) To compare the means between the factors and interpret the levels of internalized homonegativity.
(5) To find out whether the level of internalized homonegativity varies when the original or expanded

version of the scale is used, and whether it has changed in recent years.
(6) To assess the relationship of the total score of IHN-21 scale and the scores of its factors with the socio-demographic variables of sex and age.
(7) To provide evidence of concurrent construct validity, using as criterion variable the Kinsey´s sexual orientation (KSO) scale (Kinsey, Pomery, and Martin, 1948) and ATLG scale (Herek, 1984).

To know whether there has been a change in the level of homonegativity in recent years, it was necessary to compare the data of the original version of the scale obtained in this study with the data obtained in a previous study conducted with the same scale (Moral and Valle, 2013). In turn, it was necessary to compare the two versions of the scale in the present study to find out whether the level of homonegativity changes when one or the other version is used. In relation to the seven stated objectives, it was hypothesized that:

(1) The new items would present good properties of discriminability and internal consistency in both the scale and their factor.
(2) The new four-factor model would show a good data fit, and that these four factors would also have internal consistency as well as convergent and discriminant validity.
(3) The distribution of the total score of IHN-21 scale and the scores of its factors would follow a normal distribution, but, in case of violation of the normality assumption, it would be so because of the presence of a slight positive skewness or a long tail towards higher values (atypical cases) indicative of rejection.
(4) There would be statistically significant mean differences between the factors, with the highest mean corresponding to HFD owing to self-defined sexual identity (Fisher et al., 2017) and the lowest mean to PMH owing to cultural changes towards a greater acceptance of sexual diversity (Kite and Bryant-Lees, 2016). The global attitudinal mean is expected to be indicative of ambiguity, that is to say, neither an attitude of rejection nor an attitude of acceptance, since most of the students define themselves as heterosexuals (Moral and Valle, 2013).
(5) There would be statistical equivalence of means when comparing the means of the present study to those ones of the study carried out in 2013 (Moral and Valle, 2013). Nevertheless, PMH might show a lower mean owing to a change in attitude towards a greater acceptance of homosexuality in the manifest aspects (Kite and Bryant-Lees, 2016). Regarding the level of homonegativity when measured by one or another version of the scale, there could be differences, since there is a change of content in the scale. If the change in the composition of the items increases the content of open or external rejection, the level of homonegativity could be lower. Conversely, if the

change increases the internal or subtle rejection content, the level of homonegativity could be higher (Moos, 2002).

(6) A higher mean level of internalized homonegativity would be found among men than among women because homonegativity in society falls more on men than on women (Berg et al., 2017), as well as a greater level of rejection at younger age (Moral and Valle, 2015).

(7) There would be a negative correlation of internalized homonegativity with KSO and a positive correlation with ATLG scale, and it would be expected a strong strength of association with KSO scale and ATLG scale (Moral and Valle, 2015).

MATERIALS AND METHODS

Research design

This empirical study for validating a measurement instrument had an ex post facto transversal design since data were collected at a single moment and the variables were not manipulated. A non-probability, convenience sampling was used.

Participants

The inclusion criterion was being a medical student at a private university in Monterrey. The exclusion criterion was the not providing informed consent, whereas the elimination criterion was to find missing data in the responses to IHN-21 scale. A sample composed of 202 participants who were studying the second or third year of medicine was collected; nonetheless, after eliminating two cases owing to missing data, a sample of two hundred participants was analysed. Among these two hundred students, 48.5% were women, 47% were men, and 4.5% did not indicate their sex. With regard to their marital status, all of them were single. The age ranged from 17 to 26, M = 19.82, and SD = 1.16; its distribution was leptokurtic (K_3 = 4.37, 95% CI [3.70, 5.04]), positively skewed (Sk = 0.70, 95% CI [0.36, 1.04]), and did not follow a normal distribution (D'Agostino-Pearson test: K^2 = 79.52, p < 0.001). Concerning religious denomination, 79% of participants said they were Catholic Christians, 8% non-Catholic Christians, 10.5% atheists or agnostics, 1.5% believers without any religious affiliation, and 1% Buddhists. With respect to self-defined sexual orientation, 95% of participants identified themselves as heterosexual and 5% as non-heterosexual.

Instruments of measurement

The questionnaire was composed of four sociodemographic questions (age, sex [woman and man], marital status, and religious denomination), a question regarding self-defined sexual orientation with three response options (heterosexual, homosexual, and bisexual), and three self-assessment scales.

IHN-21 scale

It comprises the 16 items that compose IHN-16 scale plus five new items that were added in order to assess the proposed theoretical dimension of fear of being identified as a non-heterosexual person. The positively-keyed items (items 1, 2, 3, 4, 11, and 20) are evaluated along a disagreement, five-point Likert-type scale (1 =

"strongly agree", 3 = "agree", 5 "neither agree nor disagree", 7 "disagree", and 9 = "strongly disagree") as suggested by Herek (1984) for the ATLG. The scores on IHN-21 are obtained by summing these items with the remaining 15 negatively-keyed items (from 1 = "strongly disagree" to 9 = "strongly agree"), and dividing this sum by the total number of items that were summed, so that the score ranges from 1 to 9. The higher the score, the greater is the level of internalized homonegativity (Annex Table 1).

In the first research performed with IHN-16, it was found that the overall internal consistency is good (Cronbach's α = 0.88). Its factor structure comprised three factors: PMH (items 2, 4, 9, 10, 11, and 14), with good internal consistency (Cronbach's α = 0.81); HFD (items 1, 3, 12, 13, 15, and 16), with good internal consistency (Cronbach's α = 0.81); and PII (items 5, 6, 7, and 8) with questionable internal consistency (Cronbach's α = 0.69). Through the method of generalized least squares, the goodness of fit for a hierarchical model composed of three lower-order factors and one higher-order factor ranged from good (χ^2/df = 1.66 and RMSEA = 0.05, 90% IC [0.04, 0.07]) to adequate (GFI = 0.91 and AGFI = 0.88). The hierarchical model was specified to overcome the problem of discriminant validity between factors that presented the model composed of three correlated factors. IHN-16 total scores followed a normal distribution (Moral and Valle, 2013).

ATLG scale

It is composed of 20 items, 10 about an attitude of rejection towards gay men (ATG subscale, items G1 to G10) and 10 about an attitude of rejection towards lesbians (ATL subscale, items L1 to L10), to which respondents indicate their level of agreement or disagreement. The positively-keyed items concerning gay men (4 items: G1, G5, G7, and G10) and lesbians (3 items: L2, L4, and L7) are evaluated along a disagreement, five-point Likert-type scale (from 1 = "strongly agree" to 9 = "strongly disagree"). The sum of these items with the remaining 13 negatively-keyed items (from 1 = "strongly disagree" to 9 = "strongly agree") yields a total score so that the higher the score, the greater the level of rejection. The score ranges from 20 to 180 (Herek, 1984). If the sum of the items is divided by the number of items that are summed, then the score would range from 1 to 9. From previous research it has been found that the internal consistency of ATLG scale is excellent (Cronbach's α > 0.90). Each one of the subscales is unifactorial and has shown a good internal consistency (Cronbach's α > 0.85); the distributions of their scores have shown a skewed distribution and the correlation between them has ranged from 0.40 to 0.60 in different studies (Herek, 1998).

The scale was validated in Mexico by Moral and Valle (2011) with a sample composed of 356 students; the overall internal consistency was excellent (α = 0.94), and its total scores followed a normal distribution. After performing principal components analysis with promax rotation, and using Kaiser's criterion to establish the number of factors, these authors found that three factors could be defined. One factor was related to rejection towards lesbians (ATL), and had an excellent internal consistency (Cronbach's α = 0.91). Another factor was related to open rejection towards gay men (ATG-O, comprising the items G2, G3, G4, G6, and G10), and showed a good internal consistency (Cronbach's α = 0.85). The third factor was related to subtle rejection towards gay men (ATG-S, comprising items G1, G5, G7, G8, and G9), and presented an acceptable internal consistency (Cronbach's α = 0.78). This factor structure composed of three correlated factors showed an adequate goodness of fit (χ^2/df = 2.11, GFI = 0.90, AGFI = 0.88, and RMSEA = 0.06) by generalized least squares (Moral and Valle, 2011).

In the present sample, ATLG was not applied to a subgroup of 51 out of 200 students. Among the 149 reminding participants, overall internal consistency was excellent (ordinal α = 0.94 and α = 0.92). The bell-shaped distribution of the ATLG total score showed

moderate positive skewness; therefore, the null hypothesis of normality was rejected (K^2 = 0.24, p = 0.027). The internal consistency values of its factors from Moral and Valle's (2011) model varied from excellent to good through the ordinal coefficient alpha (ordinal α = 0.86 for ATG_O, 0.86 for ATG_S, and 0.91 for ATL), and from acceptable to good through Cronbach´s alpha (α = 0.82 for ATG_O, 0.77 for ATG_S, and 0.85 for ATL). The null hypothesis of normality was sustained for the distribution of ATG_S through D´Agostino-Pearson test (K^2 = 3.39, p = 0.183). The bell-shaped distributions of the ATG_O and ATL showed a moderate positive skewness; therefore, the null hypothesis of normality was not sustained (K^2 = 27.26, p < 0.001 and K^2 = 8.15, p = 0.017, respectively).

Kinsey´s sexual orientation scale (KSO)

It is composed of one closed-ended question regarding sexual orientation and comprises seven response options ranging from 0 for those who identify themselves as exclusively heterosexual to 6 for those who identify themselves as exclusively homosexual. Its reliability through the retest correlation at three months was 0.88 in the total sample of non-heterosexual persons, 0.90 among non-heterosexual men and 0.87 among non-heterosexual women (Schrimshaw et al., 2006). Regarding construct validity, it showed correlations higher than 0.85 with Sell's Assessment of Sexual Orientation (Sell, 1996).

In the present sample, KSO was not applied in all groups, so that the number of cases was 143; the correlation between the three categories of self-defined sexual orientation and KSO scores was very high (Cramer's V = 0.88, p < 0.001). KSO score was equal to 0 in 132 out of 134 participants who defined themselves as heterosexual; the remaining two heterosexual participants had scores equal to one and two. The three participants who defined themselves as homosexual had scores equal to six, and the six participants who defined themselves as bisexual had scores between four and six.

Procedure

The study was approved by the authorities of the Department of Basic Sciences of the Medical School in which this study was carried out. During the regularly scheduled time for classes, professors from the Department of Basic Sciences invited their students to answer a questionnaire about attitudes. Participation was voluntary, unpaid, and anonymous. Participants were briefed about this research and were requested to provide informed consent. No personal identification data were requested; nevertheless, those responsible for this research were clearly identified, and there was a mailing address to resolve any question raised by the research. Thus, the study met the standards of the American Psychological Association (2017). The percentage of students that participated in this research represented around 21.9% of the whole population of medical students at the school surveyed.

Data analysis

The discriminability of the items was determined through the difference in central tendency of the item between the group of high and low scores on the scale (25th and 75th percentile, respectively), and these comparisons were performed through the Mann-Whitney U test. The two criteria of discriminability were: a significant difference, and with an average greater than 1 (one eighth of the range of scores on the item). The correlation between the item (i) and the sum of the remaining items (t-i) through

serial correlation coefficient ($PSC_{i,t-i}$) and the ordinal alpha coefficient of the scale after removing the item (ordinal $α_{t-i}$) were calculated to probe the internal consistency. It was interpreted that the item showed a weak internal consistency when this correlation was lower than 0.30 and the value of ordinal alpha increased.

From the polychoric correlation matrix, the number of factors was determined through the convergence of Horn's parallel analysis (intersection point: 95th percentile of the eigenvalues), optimal coordinates (same specification), and Velicer's minimum average partial method. Factors were extracted through the Minimum Residual method, and after extracting the factors, a non-orthogonal Promax rotation on the factor loading matrix was performed. From the structural matrix, the Average Variance Extracted (AVE) and McDonald's coefficient omega or composite reliability (ω) were calculated. An AVE > 0.50 and ω ≥ 0.70 were interpreted as convergent validity (Borsboom, Mellenbergh, and van Heerden, 2004). With an AVE > 0.40, one can speak of an adequate convergent validity if it is compensated for by a greater requirement in the composite reliability, that is, a value ω > 0.80 (Borsboom et al., 2004). Likewise, the shared variance between two factors (the square of the correlation between the two factors) indicates discriminant validity if its value is lower than two thirds and lower than the AVE for each factor (Borsboom et al., 2004). The internal consistency values of the scale and its factors were calculated through the ordinal alpha; values lower than 0.50 were interpreted as an unacceptable internal consistency, between 0.50 and 0.59 poor, from 0.60 to 0.69 questionable, from 0.70 to 0.79 acceptable, from 0.80 to 0.89 good and equal or higher than 0.90 excellent.

A four-factor model was specified and punctual parameter estimation was calculated through free-scale least squares. The 95% confidence intervals for the point estimations were computed by the percentile method with the extraction of 2,000 bootstrap samples. The goodness of fit was evaluated through eight indices: relative chi-square ($χ^2$/df), Jöreskog-Sörbom's Goodness-of-Fit Index (GFI), and its adjusted form (AGFI), Bentler's Comparative Fit Index (CFI)), Bentler-Bonett's Normed Fit Index (NFI), Bollen's Relative Fit Index (RFI), Steiger-Lindt's Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMSR). It was stipulated as close fit values: $χ^2$/df ≤ 2; GFI, CFI, NFI, and RFI ≥ 0.95; AGFI ≥ 0.90; and RMSEA and SRMSR ≤ 0.05. It was established as acceptable values: $χ^2$/df ≤ 3; GFI, CFI, NFI and RFI ≥ 0.90; AGFI ≥ 0.85; RMSEA< 0.08; and SRMSR < 0.10 (Byrne, 2016).

After reviewing for the presence of a bell-shaped profile on the histogram, we tested if the scores of the scale and its factors were normally distributed through the D'Agostino-Pearson omnibus test. The comparison of means between the factors was performed through paired-samples t-test. Effect size was estimated through Cohen's d. Values of d lower than 0.2 were interpreted as a trivial effect size, between 0.2 and 0.49 small, between 0.5 and 0.79 medium, and equal or higher than 0.8 large (Téllez et al., 2015). In the comparisons of means on IHN-16 between the present study and the study carried out in 2013 (Moral and Valle, 2013), and in the comparisons of means between both sexes in the present study, the assumption of equality of variance was tested through Fisher's test in the former case, and Levene's test in the latter case. Student's t-test for independent samples was used to determine the difference of means; Welch's correction was used in case of violation of the assumption of equality of variance. Effect size was estimated by the bias corrected Hedge's g statistic, and interpreted with the same criteria used for the interpretation of Cohen´s d.

The correlations of IHN with age and ATLG total scores and ATLG factor scores were calculated through the Pearson's product-moment correlation coefficient (r). The correlation of ATLG total score with sexual orientation was calculated by the polyserial correlation coefficient (r_{PS}). Absolute values of r or r_{PS} between 0.1 and 0.29 were interpreted as a weak association force, between 0.30 and 0.49 moderate, between 0.50 and 0.69 strong, and equal

or higher than 0.70 very strong (Téllez et al., 2015). The statistical calculations were performed with SPSS version 24.0 and its additional R package version 2.4, LISREL 8.52, Excel 2013, and AMOS version 16. The significance level for a two-tailed test was fixed at 0.05.

RESULTS

Distribution, discriminability, and internal consistency of the items

None of the items had floor or ceiling effect, that is, no item had 80% or more of its scores concentrated in the lowest or the highest value. Items 7, 8, 9, 12, 13, 15, 17, 18, and 21 showed negative asymmetry (long tail to the left), Kelly's percentile coefficient of skewness (Sk_p = -0.3). Conversely, items 1, 2, 5, and 10 showed positive asymmetry or long tail to the right (Sk_p = 0.3). The values of kurtosis were between -0.1 and 0.1, except for item 4 that went out of this range, its adjusted percentile coefficient of kurtosis (Kpc) or centered on 0 was 0.18, so that showed leptokurtosis (heavier tails than a normal distribution). Therefore, there were no cases of extreme asymmetry and kurtosis, or zero variability. All the items fulfilled the two discriminability criteria: significant central tendency difference, and a value for this differences higher than 1. Only item 3 showed weakness in its internal consistency, the value of the overall ordinal alpha, which was 0.90, increased in one thousandth with its removal. However, the correlation between item 3 and sum of the 20 remaining items was greater than 0.30 ($PSC_{i,t-l}$ = 0.32).

Exploration of the factor structure and internal consistency

The number of factors was four based on the convergence of Horn's parallel analysis (PA), optimal coordinate (OC), and the minimum average of the squared partial correlations (Velicer´s criterion). When extracting four factors, 49.1% of the variance of the items was explained. After rotating the factor loading matrix, a first factor composed of six items with loadings higher than 0.45 was formed in the pattern matrix (items 2, 4, 9, 10, 14, and 20). This first factor showed high internal consistency (ordinal α = 0.85), and convergent validity (AVE = 0.51 and ω = 0.86). Items 2, 4, 9, 10, and 14 corresponded to PMH. Item 20, which is one of the new items, had its highest loading in this first factor, and its content is congruent with the content of the remaining five items. Item 11 had loadings lower than 0.30 in the pattern matrix and, against the expectation, showed its highest loading in the fourth factor (l = 0.22); nevertheless, its highest loading in the structural matrix was higher than 0.40 (λ = 0.45), and appeared, according to the expectation, in this first factor. When this item was included in this first factor, the internal consistency of this factor was maintained, but its convergent validity worsened (AVE = 0.46 and ω = 0.85).

The second factor was composed of five items with loadings equal or higher than 0.35 (items 1, 3, 13, 15, and 16). Its internal consistency was acceptable (ordinal α = 0.77); even though its AVE was lower than 0.50 (AVE = 0.43), its McDonald's omega was higher than 0.70 (ω = 0.78). These five items corresponded to HFD. Even though item 12 had a loading lower than 0.30 in the pattern matrix, its highest loading (in absolute value) in the structural matrix was 0.36 and, according to the expectation, appeared in this second factor. Nevertheless, upon maintaining item 12, both convergent validity of this factor (AVE = 0.38 and ω = 0.77) and its internal consistency (ordinal α = 0.75) worsened.

The third factor comprised four out of the five new items of FMN (items 17, 18, 19, and 21). Its internal consistency was good (ordinal α = 0.80) and showed convergent validity (AVE = 0.53 and ω = 0.81). Item 20 was expected to have its highest loading in this new factor instead of presenting it in the first factor. Nevertheless, upon including item 20 in this third factor, both convergent validity (AVE = 0.45 and ω = 0.78), and internal consistency worsened (ordinal α = 0.77). Therefore, item 20 is an indicator that belongs to the first factor.

The fourth factor comprised four items with loadings higher than 0.56 (items 5, 6, 7, and 8); these items corresponded to the factor PII. Its internal consistency was acceptable (ordinal α = 0.78); even though its AVE was lower than 0.50 (AVE = 0.46), its McDonald's omega was higher than 0.70 (ω = 0.77).

The variances shared between the factors ranged from 0.18 to 0.32, with a mean of 0.22, and these values were lower than the AVEs of each one of the factors. Therefore, the factors showed discriminant validity.

Items 11 and 12 were eliminated owing to internal inconsistency within their factors. With the remaining 19 items, the number of factors again was four based on PA, OC, and Velicer's criterion. When extracting four factors from polychoric correlation matrix, the explained variance increased slightly, 51.6%. The configuration of loadings was same than in the previous factor solution. In addition, convergent validity improved in three out of four factors owing to higher structural loadings: PMH with items 2, 4, 9, 10, 14, and 20 (AVE = 0.51 and ω = 0.86), FMD with items 17, 18, 19, and 21 (AVE = 0.53 and ω = 0.81), and PII with items 5, 6, 7, and 8 (AVE = 0.46 and ω = 0.77). In HFD, with items 1, 3, 13, 15, and 16, its convergent validity worsened slightly (AVE = 0.42 and ω = 0.77). The internal consistency of the factors did not change (ordinal α = 0.85, 0.77, 0.80, and 0.78, respectively). The four factors showed discriminant validity (minimum shared variance of 0.13, maximum of 0.33, and average of 0.20).

In order to complement the exploratory analysis, we specified a model composed of four correlated factors
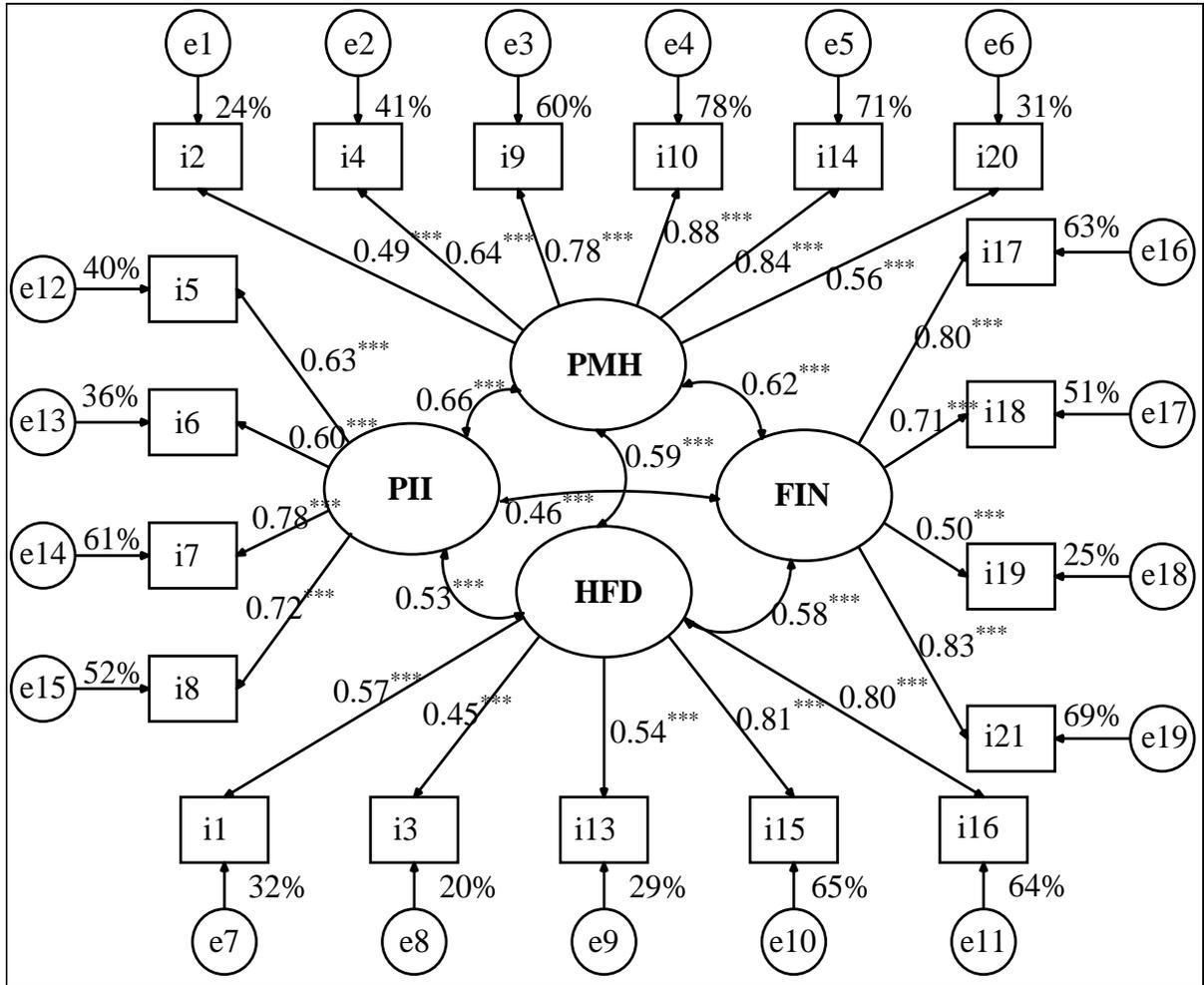
Figure 1. Four-correlated factor model of IHN scale composed of 19 items.
Notes. The discrepancy function was minimized through the scale-free least squares method. The polychoric correlation matrix was used as input data. Significance testing and standard error were estimated through the percentile method with the extraction of 2,000 bootstrap samples: *** $p < 0.001$. Endogenous variables: PMH = rejection towards the Public Manifestation of Homosexuality, HFD = rejection towards own Homoerotic Feelings and Desires, PII = conceptualization of non-heterosexual Persons as Incapable of Intimacy, FIN = Fear of being Identified as a Non-heterosexual person, and e = measurement residual. Items of IHN-19 = i1 to i21 without i11 and i12.

and independent measurement residuals (Figure 1), using the same sample of 200 students in which the exploratory factor analysis was performed; hence it is not properly a confirmatory test. It was decided to specify a model composed of correlated factors instead of a hierarchical model composed of four lower-order factors and one higher-order factor to better assess the discriminant validity of the factors. The expectation was that this type of validity ought to be good based on the results obtained through exploratory factor analysis. In the previous studies with IHN-16 (Moral and Valle, 2013; Valle and Moral, 2018), there were problems of discriminant validity between factors, and that is why a hierarchical model was specified (Figure 1).

All the estimations of the parameters were significant

based on bootstrap confidence intervals. The factors PMH (AVE = 0.51 and ω = 0.86) and FMD (AVE = 0.52 and ω = 0.81) presented convergent validity. The other two factors had values of AVE higher than 0.40 and composite reliability coefficients higher than 0.70 (AVE = 0.42 and ω = 0.78 for HFD, and AVE = 0.47 and ω = 0.78 for PII). The shared variance between the factors ranged from 0.21 to 0.43 (< 0.67) with a mean of 0.33 (< 0.50); the variance shared between each pair of factors was lower than the AVE from each factor. Therefore, the four factors presented discriminant validity. The goodness of fit was good for seven indices (χ^2/df = 177.48/146 = 1.22 < 2, GFI = 0.97, AGFI = 0.96, CFI = 0.99, RFI = 0.95, and NFI = 0.96 > 0.95, and RMSEA = 0.03 < 0.05) and acceptable for one index (SRMR = 0.07 < 0.08).

Distributions of the scores on IHN-19 and its four factors

The distributions had bell-shaped, unimodal profiles, and the values of the arithmetic means, medians, and modes were close. The distributions of the IHN-19 total score (without items 11 and 12) and three out of its four factors followed a normal distribution in accordance with the two-tailed D'Agostino-Pearson omnibus test with a level of significance at 0.05. The distribution of the scores of the rejection factor towards the public manifestation of homosexuality deviated from a normal distribution, showing positive skewness, that is, long tail to the right (Sk = 0.57, 95% CI [0.23, 0.90]). However, this positive skewness was moderate, $0.5 < Sk = 0.57 < 1$, $K/SEK = 3.30$ (Table 1).

The scores on the scale and its factors were calculated by summing the items (all of them were scored in the direction of a rejection attitude) and dividing that sum by the number of items that were summed; this way, scores within a continuous range from 1 to 9 were obtained. The level of internalized homonegativity was interpreted by dividing this continuous range into five intervals of constant amplitude ([maximum value - minimum value]/number of items = [9-1]/5 = 1.6) such that each one of these intervals be in correspondence with each one of the five ordinal values of response to the items. Values between 1 and 2.59 were interpreted as an attitude of clear acceptance, between 2.6 and 4.19 acceptance, between 4.2 and 5.79 ambiguous attitude, between 5.8 and 7.39 rejection, and between 7.4 and 9 clear rejection. The mean scores of 4.34 in IHN-19 scale, 4.97 in HFD, 4.66 in PII, and 4.81 in FIN indicated an ambiguous attitude (between 4.2 and 5.79), and the mean score of 3.31 in PMH indicated an attitude of acceptance (between 2.6 and 4.19).

Comparison of means between the four factors and level of internalized homonegativity

After performing Mauschly's test, a violation of the assumption of sphericity (equality of the variances of the differences between the six pairs of factors) was detected (W = 0.93, $\chi^2[5, N = 200] = 15.41$, p = 0.009); therefore, Greenhouse-Geisser's epsilon correction factor was used, ε = 0.95, so as to decrease Type I error rate. There were significant differences between the means of the four factors (F[2.86, 569.68] = 77.11, p < 0.001). The effect size was large ($\eta^2 = 0.28$). Pairwise comparisons was performed through the paired-sample t-test with the Bonferroni correction for the level of significance (2*α/[k*(k-1)] = 0.1/12). The mean of PMH was significantly lower than the means of the other three factors, and the effect size was large in all three cases. In the three remaining comparisons, mean differences were no significant (Figure 2).

Comparison of means with the previous study by Moral and Valle (2013)

With scores ranging from 1 to 9, the mean IHN-19 total score in the present study (M = 4.34, 95% CI [4.17, 4.51]) was significantly lower (t[429] = -2.04, p = 0.042) than the mean of IHN-16 total score (M = 4.60, 95% CI [4.42, 4.78]) in the study carried out in 2013 (Moral and Valle, 2013). The effect size of the study on the total scores was small (bias corrected Hedges' g = -0.20, 95% CI [-0.39, -0.01]). Likewise, the mean score on PMH (M = 4.97, 95% CI [4.74, 5.20]) in the present study (without item 11 and with item 20) was significantly lower (t[429] = -4.07, p < 0.001) than the mean score (M = 3.92, 95% CI [3.71, 4.13]) on the original factor (with item 11 and without item 20). The effect size of study on the factor scores was also small (bias corrected Hedges' g = -0.39, 95% CI [-0.58, -0.20]). The mean differences in the other two factors were not significant.

Nevertheless, there were no significant mean differences when comparing the original version of IHN-16 between the two studies. On the contrary, when comparing the two versions of the scale (IHN-16 vs IHN-19) in the present sample, there were significant differences. The mean of IHN-16 total score was significantly higher than the mean of IHN-19 total score (t[199] = 6.39, p < 0.001), with a medium effect size of the version of scale on total scores (Cohen's d = 0.45). Likewise, the mean of the original PMH factor was also significantly higher (t[199] = 10.36, p < 0.001) than the one of the revised PMH factor. Effect size of the version on factor scores was medium (Cohen's d = 0.73). The mean of the original HFD factor was significantly higher (t[199] = 10.36, p < 0.001) than the mean of the revised HFD factor. The effect size of the version on factor scores was also median (Cohen's d = 0.73).

## Relationship with sex and age

The mean of the IHN-19 total score among men (M = 4.14, 95% CI [3.93, 4.35]) was significantly higher (t(174.53) = 2.49, p = 0.014) than the mean among women (M = 4.58, 95% CI [4.30, 4.86]), with a small effect size (bias corrected Hedges' g = 0.36). Likewise, the mean of PMH among men (M = 3.67, 95% CI [3.34, 4]) was significantly higher (t[172.81] = 3.42, p = 0.001) than the mean among women (M = 2.96, 95% CI [2.71, 3.20]), with a small effect size (bias corrected Hedges' g = 0.49). The mean differences between men and women in the other three factors were not significant in a two-tailed test with a significance level of 0.05. Nevertheless, if the test is one-tailed with the same significance level, there would be a significant difference in PII (t[189] = 1.89, p = 0.037), with a mean among men (M = 4.87) higher than the one among women (M = 4.45).

Owing to the fact that the distribution of age did not fit

Table 1. Descriptive statistics and normality test for the scores in IHN-19 and its four factors.

Statistics	IHN-19	PMH	HFD	PII	FIN
[Min, Max]	[1.42, 8.37]	[1, 8.67]	[1, 9]	[1, 9]	[1, 9]
M	4.34[4.17, 4.51]	3.31[3.10, 3.51]	4.97[4.74, 5.20]	4.66[4.44, 4.88]	4.81[4.57, 5.06]
Mo	4.16	3.33	5	5	5
SD	1.22	1.48	1.65	1.58	1.77
Sk	0.17[-0.17, 0.50]	0.57[0.23, 0.90]	-0.18[-0.51, 0.16]	0.24[-0.10, 0.58]	0.09[-0.25, 0.43]
Sk/SE	0.97	3.30	-1.03	1.40	0.52
K	0.54[-0.13, 1.21]	0.41[-0.26, 1.08]	< 0.01[-0.67, 0.67]	0.20[-0.47, 0.87]	-0.17[-0.84, 0.50]
K/SE	1.57	1.20	0.01	0.59	-0.49
P10	2.68	1.33	2.6	2.5	2.5
P20	3.42	2	3.48	3.5	3
P25	3.63	2	3.8	3.5	3.625
P30	3.84	2.33	4.6	4	4
P40	4.16	3	5	4.5	4.5
P50	4.37	3.33	5	4.75	5
P60	4.64	3.67	5.4	5	5
P70	4.90	4	5.8	5	5.5
P75	5	4.33	5.8	5.5	6
P80	5.11	4.33	6.2	6	6.5
P90	5.84	5	7	7	7
DP	3.41	12.30	1.06	2.31	0.52
p	0.182	0.002	0.589	0.315	0.772

Notes. [Min, Max] = minimum and maximum values in the sample with a potential range of values from 1 to 9. M (95% CI) = arithmetic mean estimated with a 95% confidence interval, using Student's t-distribution with 198 degrees of freedom and a two-tailed significance level at 0.05; Mo = mode. SD = standard deviation. Sk [95% CI] = coefficient of skewness based on the third moment estimated with a 95% confidence interval, using the standard normal distribution with a two-tailed significance level at 0.05. Sk/SE = standardized skewness; K [95% CI] = coefficient of excess kurtosis based on the fourth moment estimated with a 95% confidence interval, using the standard normal distribution with a two-tailed significance level at 0.05. K/SE = standardized excess kurtosis. Pk = percentiles of order k estimated through the method of linear interpolation or high weighted average (Haverage). Normality test: DP = D'Agostino-Pearson omnibus test, p = probability for a two-tailed test. IHN-19 = Internalized Homonegativity scale with 19 out of 21 items (without items 11 and 12). PMH = rejection towards the Public Manifestation of Homosexuality (with item 20 and without item 11). HFD = rejection towards own Homoerotic Feelings and Desires (without item 12). PII = conceptualization of non-heterosexual Persons as Incapable of Intimacy. FIN = Fear of being Identified as a Non-heterosexual person (without item 20).
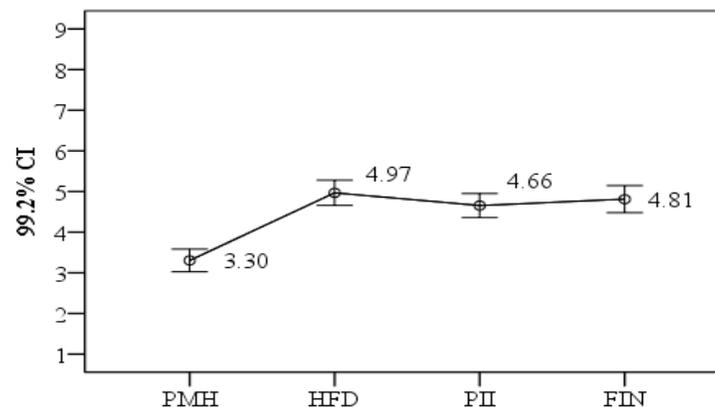
Figure 2. Mean diagram of the four factors composing the IHN-19 scale, with error bars at 99.2% confidence intervals.
Notes. PMH = rejection towards the Public Manifestation of Homosexuality. HFD = rejection towards own Homoerotic Feelings and Desires. PII = conceptualization of non-heterosexual Persons as Incapable of Intimacy. FIN = Fear of being Identified as a Non-heterosexual person.

Table 2. Correlations between IHN-19 and sexual orientation.

IHN-19	Kinsey's sexual orientation scale	H₀: $r_{PS} = 0$		H₀: bivariate normal distribution				
		Wald test		Test of model			Test of close fit	
	r_{PS} [95% CI]	W	p	χ^2	df	p	RMSEA	p
Total score	-0.74 [-0.93, -0.54]	540.46	< 0.001	80.088	5	0.151	0.067	0.704
PMH	-0.51 [-0.73, -0.30]	210.75	< 0.001	70.279	5	0.201	0.057	0.759
HFD	-0.76 [-0.96, -0.56]	570.76	< 0.001	30.615	5	0.606	< 0.001	0.951
PII	-0.64 [-0.85, -0.44]	370.62	< 0.001	50.187	5	0.394	0.016	0.884
FIN	-0.37 [-0.64, -0.10]	60.99	0.008	30.198	5	0.670	< 0.001	0.964

Notes. N = 149. IHN-19 total score = Internalized Homonegativity scale with 19 out of 21 items (without items 11 and 12). PMH = rejection towards the Public Manifestation of Homosexuality. HFD = rejection towards own Homoerotic Feelings and Desires. PII = conceptualization of non-heterosexual Persons as Incapable of Intimacy. FIN = Fear of being Identified as a Non-heterosexual person.

to a normal curve because of a severe kurtosis (K/SEK = 4.37/0.34 = 12.77), a mathematical transformation was performed for this variable. The Box-Cox's transformation with a lambda parameter of -1.5 yielded the closest proximity to a normal distribution. The new transformed variable, with a bell-shaped profile, showed symmetry (Sk = -0.34, 95% CI [-0.67, 0.01], Sk/SESk = -1.95), likewise, its sample coefficient of excess kurtosis was slightly higher than 2 (K = 2.21), and its standardized value of excess kurtosis was lower than 7 (K/SEK = 6.46). With this transformed variable, correlations between age and the scores of IHN-19 scale were calculated, using a repetitive sampling method with the extraction of 2,000 bootstrap samples to estimate the 95% confidence intervals and the significance of the correlation coefficients. Age was correlated with a weak strength of association, with IHN-19 total score (r = -0.15, 95% CI [-0.28, -0.01]), PII (r = -0.15, 95% CI [-0. 27, -0.02]), and FIN (r = -0.16, 95% CI [-0.28, -0.05]). The other two factors of the IHN-19 were independent of age (r = -0.07, 95% CI [-0.20, 0.07] for PMH, and r = -0.09, 95% CI [-0.25, 0.06] for HFD).

Convergent validity with KSO and ATLG

The correlations between IHN-19 and its four factors and the ordinal variable sexual orientation (KSO) were calculated through the polyserial correlation coefficient. In the five correlations, the bivariate normal distribution assumption was maintained by both the goodness-of-fit chi-square test (p > 0.05) and the root mean square of approximation error (p > 0.10 for H₀: RMSEA = 0.05). The correlation between IHN-19 total score and KSO was significant and negative; its strength of association was very strong. Among the factors of the IHN-19 scale, HFD and PII had the highest correlations, and FIN showed the lowest correlation (Table 2).

The correlations between IHN-19 total scores and ATLG total scores and the scores of the factors

composing ATLG were positive and with a strong strength of association; among the factors of the IHN-19 scale, PMH and HFD had the highest correlations, and again FIN showed the lowest correlations (Table 3).

DISCUSSION

The first objective, after describing the distribution of the items composing the IHN-21 scale, was to find out if there exit problems owing to floor effect, ceiling effect, or extreme skewness or kurtosis, and to test the discriminability and internal consistency of the items. There were no distributional anomalies. Since all of the items fulfilled the two criteria of discriminability and the two criteria of internal consistency (with the exception of item 3 which only fulfilled one out of the two criteria of internal consistency), none of them was removed. It should be noted that the removal of item 12 increased the value of the internal consistency of the scale by a thousandth in a previous validation study (Valle and Moral, 2018), and a similar finding occurred in the present study, although with item 3 instead of item 12. In neither case was the removal of the corresponding item necessary.

The second objective was to verify the four-factor structure for IHN scale. This hypothesis was confirmed through the convergence of Horn's parallel analysis (PA), optimal coordinate (OC), and Velicer's criterion. After performing exploratory factor analysis, two items were removed owing to low factor loadings and worsening of the internal consistency of the factor. These items were as follows: item 11 ("I do not feel uncomfortable in gay bars") as an indicator of PMH, and item 12 ("Making or responding to gay flirting would be very difficult for me") as an indicator of HFD.

A previous validation study of IHN-16 scale (Valle and Moral, 2018) proposed to remove item 12 owing to three reasons. A first reason was its low factor loading and problems of internal consistency in its factor (HFD). A

Table 3. Correlations between IHN-19 and ATLG scale.

Scales	IHN-19	PMH	HFD	PII	FIN
ATLG	0.69***[0.59, 0.77]	0.65***[0.55, 0.74]	0.57***[0.45, 0.67]	0.48***[0.34, 0.59]	0.35***[0.20, 0.48]
ATG	0.69***[0.59, 0.76]	0.59***[0.48, 0.69]	0.60***[0.49, 0.69]	0.49***[0.36, 0.61]	0.37***[0.22, 0.50]
ATG_O	0.58***[0.46, 0.67]	0.59***[0.47, 0.68]	0.47***[0.34, 0.59]	0.35***[0.20, 0.49]	0.28***[0.12, 0.42]
ATG_S	0.65***[0.54, 0.73]	0.50***[0.36, 0.61]	0.56***[0.44, 0.66]	0.54***[0.41, 0.64]	0.37***[0.22, 0.50]
ATL	0.62***[0.51, 0.71]	0.65***[0.54, 0.73]	0.48***[0.34, 0.59]	0.41***[0.26, 0.53]	0.30***[0.14, 0.44]

Notes. N = 149. ATLG = Attitudes towards lesbians and gay men. ATG = Attitude of rejection towards gay men. ATG-O = Attitude of open rejection towards gay men. ATG-S = Attitude of subtle rejection towards gay men. ATL = Attitude of rejection towards lesbians. IHN-19 = Internalized Homonegativity scale with 19 out of 21 items (without items 11 and 12). PMH = rejection towards the Public Manifestation of Homosexuality. HFD = rejection towards own Homoerotic Feelings and Desires. PII = conceptualization of non-heterosexual Persons as Incapable of Intimacy. FIN = Fear of being Identified as a Non-heterosexual person. Pearson's product-moment correlation coefficient at 95% confidence interval. Level of significance in a two-tailed test: *p < 0.05, **p < 0.01, ***p < 0.001.

second reason was an increase in the correlation between IHN (when excluding item 12) and ATLG scale (scale for criterion validity). A third reason was an increase in the overall internal consistency with its removal. The present study reinforces the suggestion of the removal of item 12 from the scale owing to low factor loading and problems of internal consistency in its factor. The item 12, which refers to homoerotic interaction, differs in content from the remaining five items of its factor, which deal with the cognitive aspect of acceptance of own homoerotic feelings and desires. It should be noted that the internal consistency of HFD continues being acceptable even removing item 12; and the convergent validity continues being also somewhat weak since the AVE higher than 0.40, but lower than 0.50, is not compensated by a composite reliability greater than 0.80. This result coincides with that of the validation study recently carried out by Valle and Moral (2018); nevertheless, HFD did present a good internal consistency in the original study of IHN-16 (Moral and Valle, 2013). It should also be noted that item 12 is a negatively-keyed item and contains an adverb of denial (not). By reading the item quickly, one might not see this adverb and mistake the answer. If this error appears in several respondents, it generates a problem of consistency in the responses to the item, as has been observed. Therefore, the writing of this item is another possible cause of its internal consistency problem.

Owing to its distribution properties (bell-shaped profile), clear discriminability, and high internal consistency in the scale, item 11 ("I do not feel uncomfortable in gay bars") seems a valuable element. It is in the set of the six indicators composing PMH where it presents problems. Its weak internal consistency in the factor cannot be attributed to its content since it is very similar to item 9 ("I often feel intimidated while at gay venues") and it is coherent with the other items. The problem could be in the specific place of interaction, gay bars, since in the city of Monterrey, in recent decades, these places have become fashionable and are visited by young people of all sexual orientations (Reyes and Muñiz, 2005). A

problem that is detected regarding the writing of the item is that the behaviour of flirting is different from the behaviour of responding to a flirting. Therefore, the content of the item includes two different aspects that can generate ambiguity and confusion when responding. This could be another explanation of its internal consistency problem.

In the study recently carried out by Valle and Moral (2018), it was also suggested to remove item 2 from PMH in order to improve construct validity. Nevertheless, in the present study with the four-factor model, item 2 was a good indicator of PMH. It should be noted that PMH lost item 11, but item 20 ("if a gay man/lesbian started talking to me in public, I would not be worried about what others could think") was added to PMH in spite of the fact that this item was originally designed to assess the new factor named FIN. Item 20 is similar in content to item 4 ("I do not mind being seen in public with an obviously gay man/lesbian"); its inclusion in this factor reinforces the convergent validity without generating problems of discriminant validity, and seems to favor the inclusion of item 2. This factor had, as in previous studies (Moral and Valle, 2013; Valle and Moral, 2018), high internal consistency, as well as convergent and discriminant validity.

The proposed five new items were retained on the scale, four of them as indicators of FIN, and one of them (item 20) as an indicator of PMH. Item 20 differs from the rest of the items composing the factor in that it expresses a specific reason for the suspicion of being a non-heterosexual person, and this content places it in the field related to the public manifestation of homosexuality. Therefore, the new factor expresses a general fear with no specific reason to be identified as a non-heterosexual person. This new factor, which is composed of four indicators, is consistent, presents convergent and discriminant validity, and broadens the semantic field that is being assessed.

PII was, as in previous studies, reproduced with its original four indicators (Moral and Valle, 2013; Valle and Moral, 2018). This factor showed discriminant validity and

acceptable internal consistency. Nevertheless, its convergent validity was somewhat weak since the AVE lower than 0.50, but greater than 0.40, was not compensated by a composite reliability higher than 0.80. This factor has shown both internal consistency and convergent validity somewhat weak in Currie's original study (Currie et al., 2004) as well as in the studies carried out with IHN-16 scale by Moral and Valle (2013) and Valle and Moral (2018).

The third objective was to describe the distribution of the total score of the IHN-21 scale and its factors. It was hypothesized that these distributions would fit to a normal curve and, in case of violation of the assumption of normality, it would be owing to a bias towards acceptance values, in agreement with previous research (Moral and Valle, 2013; Valle and Moral, 2018). According to the expectation, the total score of IHN-21 scale and the scores of three out of its four factors followed a normal distribution; likewise, the scores of PMH showed skewed distribution, with a long tail to the right and higher number of cases above the arithmetic mean than below. Notwithstanding this slight positive skewness, the distribution of the scores of PMH showed mesocurtosis and a bell-shaped profile, so that it approached a normal distribution. This type of distribution is typical of attitudes or socially adaptive traits (Lyon, 2012).

The fourth objective was to compare the means between the factors and to interpret these values of central tendency. The expectation of finding a neutral (neither acceptance nor rejection) average attitude was met in relation to the total score and the scores of three out of four factors. Only the mean in the scores of PMH reflected an attitude of acceptance, and this mean was significantly lower than the ones of the other factors. The means in HFD, PII, and FIN were statistically equivalent. The contents of these three factors refer to the non-public or internal side and subtle aspects of internalized homonegativity. Notwithstanding that public policy and modern values are aimed at eradicating flagrant discrimination against non-heterosexual persons, subtle or symbolic forms of rejection still persist (Consejo et al., 2018; Kite and Bryant-Lees, 2016; Krolikowski et al., 2015). Thus, it is understandable that the lowest mean score and an attitude of acceptance emerge in PMH, but not in the other three factors.

The fifth objective aimed at comparing the results of this study with the results of a study carried out in 2013 in the same population of health sciences students (Moral and Valle, 2013). When comparing the means in total scores of IHN-19 and IHN-16, as well as the means in the scores of the three homologous factors (all scores ranged from 1 to 9), the means in IHN-19 total scores and in the PMH scores from the present study were significantly lower. Nevertheless, these differences did not arise when comparing the same version of the scale (IHN-16), and they did arise, even in HFD, when comparing the two versions of the scale in the present sample. Therefore,

the trend in internalized homonegativity has not changed in recent years within the population of medical students, but the mean on the scale has slightly decreased owing to the changes done in the scale. These changes were the following ones: replacement of item 11 belonging to PMH by one of the five new items designed for FIN, removal of item 12 belonging to HFD, and incorporation of the new factor FIN composed of four indicators. Taking into account that there is a greater acceptance of the manifest or external aspects of homosexuality than of the subtle or internal aspects (Kite and Bryant-Lees, 2016), especially among people who define themselves as heterosexual (Fisher et al., 2017), this could indicate that the changes done on the scale increase more the contents related to aspects of manifest or external rejection than the ones related to aspects of the subtle or internal rejection.

The sixth objective was to assess the relationship of the IHN total score and its factors with the socio-demographic variables of sex and age. A greater internalized homonegativity level was expected among men than among women owing to the still prevalent cultural homophobia (Berg et al., 2017). This hypothesis was confirmed with the finding of a higher mean on the IHN-19 total scores among men, with a small effect size of sex on scale, as well as a higher mean on PMH scores among men, with a close-to-medium effect size of sex on the factor. Therefore, the contents of rejection towards the public manifestation of homosexuality seem to motive this difference. In the subtle aspect of labelling non-heterosexual men as incapable of intimacy, there is also a greater tendency to rejection among men, probably due to a greater internalization of the sexual stereotype (Herek et al., 2015). However there is no difference in the acceptance of homoerotic desires and the fear of being identified as non-heterosexual, since these two aspects are core components of identity, affecting both men and women equally (Toomey et al., 2016).

On the other hand, the expectation was to find a greater level of rejection among younger people owing to a lower personal maturity, which implies less critical judgment with regard to social prejudices (Krolikowski et al., 2015). This hypothesis was also confirmed regarding the IHN-19 total score as well as with the scores of PII and FIN. Thus, as the young people mature, it seems that they are less concerned regarding others seeing them as effeminate and seem also less prejudiced regarding the supposed promiscuity and lack of commitment of non-heterosexual persons.

The seventh objective was to prove the convergent validity of IHN-19 taking into account two criterion variables: sexual orientation (KSO scale) and attitude towards lesbians and gay men (ATLG scale). According to the expectations of construct validity (Krolikowski et al., 2015; Moral and Valle, 2015), IHN-19 and its four factors presented negative correlations with sexual orientation. In these correlations, the internal or more subtle aspects of

the attitude seem to have a greater influence (Moral and Valle, 2011), since the factor with the highest correlation, with a very strong strength of association, was HFD, followed by PII, with a strong strength of association; on the contrary, PMH and FIN had lower correlations.

Likewise, the correlations of the IHN-19 total scores with the ATLG total scores and ATLG factor scores were positive and strong, which provide evidence of concurrent construct validity for the scale. Among IHN-19 factors, PMH had the highest correlations, and the new factor named FIN showed the lowest correlations. These differences in strength of association can be understood by the content shared between both scales of attitude. The ATLG scale is more focused on overt or public rejection and does not takes into account the fear of being identified as a non-heterosexual person by others.

Limitations

A first limitation of this study is the use of a non-probability sample of medical students; therefore, conclusions must be taken with due caution. Nevertheless, the sampling percentage was large, covering more than one fifth of the students. A second limitation is the ex post facto design; thus, the data do not allow estimating the temporal reliability of the scores or the temporal stability of the factor structure. A third limitation is that the confirmatory factor analysis had an exploratory character since it was performed in the same sample as the exploratory factor analysis; a confirmatory test itself requires an independent sample. It is noteworthy that the age range was very narrow, and almost all students were at the end of adolescence and the beginning of youths, which is a limitation to find relationships with age.

Conclusion

It is concluded that, among the medical students enrolled in the present study, the items composing IHN-21 scale presented good properties of discriminability and internal consistency, except for item 11. This last item showed low factor loading and problems of internal consistency in both the scale and its factor. Item 12 had no internal consistency problems in the scale, but it showed weak internal consistency in its factor. After removing the items 11 and 12, the four factors showed discriminant validity and internal consistency. PMH and FIN had also convergent validity; the other two factors showed a relatively weak convergent validity since their AVEs, which showed a values between 0.40 and 0.50, were not compensated by a composite reliability higher than 0.80. The overall internal consistency of the scale was excellent. Consequently, the four-correlated factor model was valid. The IHN-19 total score and the scores of three out of its four factors followed a normal distribution.

The distribution of PMH presented mild positive skewness and mesocurtosis. Therefore, the scale and its factors could be standardized by means of T-scores (based on the arithmetic mean and standard deviation). The means of factor scores were not statistically equivalent. The greatest level of internalized homonegativity was expressed through HFD, with an ambiguous average attitude, and the lowest level of internalized homonegativity was expressed through PMH, with an average attitude of acceptance. The average attitude in IHN-19 total scores was ambiguous. Compared with a previous study that was carried out in 2013, the level of internalized homonegativity found in the two studies was statically equivalent. Taking into account the means in IHN-19 total scores and PMH scores, men showed a greater level of internalized homonegativity than women; this finding was concordant with the hypothesis of the cultural homonegativity, which is more pervasive among men than among women. A younger age was associated with greater level of internalized homonegativity, in accordance with the hypothesis of the relationship between personal maturity and critical thinking towards social prejudices. The IHN-19 scale showed concurrent construct validity in relation to sexual orientation and the ATLG scale (criterion variables).

RECOMMENDATIONS

The use of the IHN-19 scale, which is composed of four factors, is suggested for the assessment and study of internalized homonegativity in university contexts. It is recommended to study the stability of the scores through test-retest correlation, as well as the stability of the factor structure, through a multi-group confirmatory factor analysis. Additional evidence of construct validity could be provided by verifying the existence of a strong correlation with internalized heterosexism.

It is worth asking whether this new factor should be included in other measures of internalized homonegativity widely used in exclusively non-heterosexual population, such as the Mayfield's Internalized Homonegativity Inventory (Berg et al., 2016). The factors of personal homonegativity, gay affirmation, and moral aspects presenting in other measures do not include contents regarding FIN. Thus, in order to measure the construct in a more complete way, it is proposed to broaden their factor structures. New items for assessing fear of being identified as homosexual could emerge from qualitative research, for instance, studies based on focus groups or personal interviews. It would also be important to evaluate the content validity of the scale through an expert judgment.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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Annex Table 1. Internalized Homonegativity Scale composed of 21 items (IHN-21).

Please, rate your level of agreement or disagreement with the statements shown below, using the following response options: SD = Strongly disagree, D = Disagree, A/D = Neither agree nor disagree, A = Agree, and SA = Strongly agree.					
	SD	**D**	**A/D**	**A**	**SA**
1. It would not bother me if other people knew that I have or have had homoerotic feelings (I)	9	7	5	3	1
2. I feel comfortable talking about homosexuality in public situations (I)	9	7	5	3	1
3. If I were gay, I would not change my sexual orientation even if I could (I)	9	7	5	3	1
4. I do not mind being seen in public with an obviously gay man/lesbian (I)	9	7	5	3	1
5. Most gay cannot sustain a long-term committed relationship	1	3	5	7	9
6. Most gay prefer anonymous sexual encounters	1	3	5	7	9
7. Gay tend to flaunt their sexuality inappropriately	1	3	5	7	9
8. Gay are generally more promiscuous than straight women or men	1	3	5	7	9
9. I often feel intimidated while at gay venues	1	3	5	7	9
10. Social situations with gay men/lesbians make me feel uncomfortable	1	3	5	7	9
11. I do not feel uncomfortable in gay bars (I)	9	7	5	3	1
12. Making or responding to gay flirting would be very difficult for me	1	3	5	7	9
13. I feel that being a gay man/lesbian would be a disadvantage for me	1	3	5	7	9
14. I feel it is best to avoid personal or social interaction with gay men/lesbians	1	3	5	7	9
15. I would seek professional help if I came to realize that I harbour homoerotic feelings	1	3	5	7	9
16. I would feel upset, alienated from myself, if I came to realize that I harbour homoerotic feelings	1	3	5	7	9
17. I would be very upset if anyone thought that I am gay	1	3	5	7	9
18. I am careful not to do things that might make others think that I am or could be gay	1	3	5	7	9
19. I would not be upset if someone questioned my sexual orientation	1	3	5	7	9
20. If a gay started talking to me in public, I would not be concerned about what others might think (I)	9	7	5	3	1
21. I would be very ashamed if someone I knew thought I was gay	1	3	5	7	9

Note. The way to score each item with odd values from 1 to 9 is indicated. I = inverse item.