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ESTABLISHMENT OF HOMOSEXUALITY ATTITUDE AND STEREOTYPE (HAS) SCALE

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This study designed a tool to measure attitudes toward and stereotypes related to homosexuality and examined the reliability and validity of this tool in acquiring information on such attitudes and stereotypes among university students. The designed Homosexuality Attitude and Stereotype Scale (HAS Scale) contains 31 items and is divided into the following three subscales: demythicizing homosexuality, acceptance of homosexuality, and "familiarity with homosexuality. Among 823 participants recruited from four universities in midwestern Taiwan, 412 were randomly selected as a modeling sample to examine whether the measurement model can be adapted to empirical data. The other 411 participants were randomly selected as a verification sample to verify the adaptability of the model. The confirmatory factor analysis results showed that the model has good adaptability, reliability, and validity. In addition, this paper offers suggestions and advice for sex and gender education professionals and researchers regarding the current questionnaire and further research.

Keywords: Attitude toward homosexuality; Demythicize; Stereotype; Familiarity; Confirmatory factor analysis.

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The concept of gender equality has gradually gained acceptance in Taiwan and worldwide. The Taiwanese people have become aware of the momentousness of gender equality and understand that it has become an unstoppable trend. The 18th (October 31, 2020) Taiwan lesbian, gay, bisexual, and transgender (LGBT) Pride, the biggest LGBT Pride in East Asia, took place in the former Civic Plaza of the Taipei City Government. The theme of this year's event was "Beauty, My own way." The organizer "Taiwan Rainbow Civil Action Association" emphasized that the sexual diversity community (lesbian, gay, bisexual, transgender, intersex, questioning and asexual and others [LGBTIQA+]) not only needs to be "seen," but should be truly understood and respected. Nonetheless, some people still hold traditional and conventional views of gender, such as stereotypes about sexual orientation. In Taiwan, many people hold stereotypes about homosexuality that originated from the media but do not actually understand homosexuality. They judge homosexual people from sparse and simplified or systematized information and may even use defa-

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matory language to repudiate and ostracize them (e.g., Burke et al. 2015; Matharu et al., 2012; Ng et al. 2013). Baird (2002), Ng et al. (2013), and Matharu et al. (2012) found that homosexual stereotypes include: homosexuality is a disease; homosexual people have AIDS; homosexual people have complicated sexual relationships; homosexuality subverts religion and violates morality; homosexuality impacts social stability and jeopardizes the propagation of the human race; and homosexual people pose a threat to children. Leck (1993) observed other stereotypes about homosexuality, including straight people can produce a new generation but homosexual people cannot and homosexuality is disgusting and abnormal, and he also found that people have linked AIDS and homosexuality. Esses, Haddock, and Zanna (1993) asserted that people often use stereotypes to judge others and to help them cope with information overload and a complex world. Stereotypes are essentially the same as other cognitive processes. Stereotypes can even allow people to make the most sense out of information quickly and are therefore not entirely negative or worthless. However, when people oversimplify information because of stereotypes, they can unconsciously form misconceptions. The public have more negative than positive impressions of homosexuality. Even today, homosexual people are not readily accepted by people with traditional concepts of morality.

In recent years, the legality of same-sex marriages has been debated worldwide, as it has been in Taiwan. The proponents and opponents have used various arguments to support their perspective. On May 17, 2019, this Constitutional interpretation made Taiwan the first nation in Asia to legalize same-sex marriages. Previous studies have estimated that homosexual people comprise roughly 7-20% of the population. However, because of social constraints, they are often unable to freely admit their attraction to or love for another individual. In addition, homosexual people may feel that they are not understood or misunderstood by their teachers, peers, and society, which can increase their own confusion and bewilderment. Even though the school environment is relatively uncomplicated, students are often in the stages of their lives when they form gender or sexual orientation identities. Therefore, they often form diverse thoughts about sexual issues depending on their own conflicts with their environments (Chen et al., 2006). In 2000 in Taiwan, a ninth grader with feminine characteristics died as a result of being assaulted on campus. This exposed the seriousness of sexual orientation-based bullying on campuses. After numerous gender-related incidents on campuses, the Taiwanese government passed the Gender Equity Education Act, which states in Article 12 that “The school shall provide a gender-fair learning environment, respect and give due consideration to students, faculty, and staff with different gender, gender temperaments, gender identity, and sexual orientation. Moreover, it shall establish a safe campus environment.” The Gender Equity Education Act was enacted and has been actively implemented in campuses at all levels of education for over 16 years. Whether this advocacy for gender equality awareness has eliminated gender-based stereotypes, and whether it has created more tolerant attitudes toward homosexuality, or eradicated stigmatization of homosexual people, deserve further investigation.

Reviewing past research results on homosexuality, there are already many scales available to understand people’s attitudes toward homosexuality. This research not only aims to understand the attitudes to homosexuality, but more importantly, it wants to explore the cognitive, emotional, and behavioral issues. Callender (2015), in addition, used the cognitive-affective-behavioral (C-A-B) model of attitudes for research. This research is based on the concept proposed by Callender as the theory of questionnaire compilation. In the previous studies, the C-A-B model was usually applied in the field of business psychology, but it is relatively rare to use this model in psychology research on homosexual issues. The C-A-B theory is defined as: C (stereotypes): descriptive, prescription violating; A (sexual prejudice): explicit, aversive; B (antigay discrimination): overt, subtle. The scale developed in this research will be able to understand the myth and cognition of homosexuality, the attitude of interpersonal interaction with homosexuals, and the

related knowledge about homosexuality. This scale can provide future gender educators, counselors, and educational policymakers with an understanding of the attitudes and stereotypes toward homosexuality on university campuses. Homosexuality is the major population in LGBTIQA+ minority gender group, so there should be a new specific scale to understand the university students' attitude toward homosexuality. It also requires a set of prudent and rigorous measuring tools to determine the reliability and effectiveness of the measurement. So this study attempts to develop a verified scale of the C-A-B model of attitude in the field of homosexual research.

Literature Review

The term "homosexual" first appeared in 1869 as medical terminology in an article by the Hungarian physician Karl Maria Kertbeny. After the 1920s, it was commonly used to describe a psychological or psychopathological condition. It often had a medical clinical implication, representing one dimension of an individual's expression of lust. In the past 150 years, the origin of sexual orientation has been debated continuously in both western and eastern medicine. So far, no definite and consistent explanation has been formed for the causes of homosexuality. In reality, the causes are affected by numerous complex factors. Currently, proven explanations of homosexuality include biology, family and social determinism theories, psychodynamics theory, social learning theory, and interaction theory.

In 1973, the American Psychiatric Association (APA) officially removed homosexuality from the Diagnostic and Statistical Manual of Mental Disorders (DSM). In 1980, the book included a new diagnosis: gender identity disorder. This change clearly specifies a differentiation between sexuality and gender (Rottnek, 1999). Although the medical field no longer views homosexuality as a mental disorder, the word has become deeply rooted in people's minds. A worthwhile discussion is that in the value judgments of a heterosexual world, homophobia is still an issue. The term homophobia first appeared in Weinberg's 1972 book "Society and the Healthy Homosexual." In this work, homophobia was defined as a fear of contact with homosexual people, often linking the disease with the person. Homophobia refers not only to the fear of homosexual people, but also to the fear that a person will become homosexual. Even today, the public holds many stereotypes about homosexual people. This has led to negative judgments about homosexuals and even labeling straight people as homosexual. In short, anyone with homosexual tendencies or behaviors is labeled by society (Lin, 2004).

Stereotypes refer to the belief that certain qualities or characteristics are shared by all members of a group (Chen et al., 2006; Kassin et al., 2020). Because of this belief, a person may hold unique stereotypes about a specific group; for example, a person may hold homosexual stereotypes about homosexual people. Studies about homosexual stereotypes often begin with gender roles. Chen (2010) found that people with strong stereotypes about homosexuality are often less accepting of homosexuality, and have more stubborn ideas about the gender characteristics of homosexuals. Chen also found that people are less accepting of homosexual family members than of homosexual friends. Blashill and Powlishta (2009) found that gays were viewed as more feminine and less masculine. In addition, Clarke et al. (2012) performed a retrospective study of LGBT studies and found similar results: straight people held the stereotype that feminine characteristics were common in gays and had more negative attitudes about male homosexuals that had feminine characteristics. In addition, feminine characteristics were one of the causes of homophobia. Madon (1997) examined the content and strength of stereotypes about gays among university students. Results of this study showed that the contents of stereotypes included, for example, "looks like artists," "anal sex,"

"gentle and kind," "wears earrings," "stylish," "good dresser," and "theatrical." Additional findings from this study showed that negative stereotypes were stronger than positive stereotypes. Therefore, Madon suggested that future research could focus on how to change stereotypes.

Bosson et al. (2004) studied both heterosexual and homosexual males to examine whether the activation of sexual orientation affects the behaviors and performance among gays caring for children. In the past, the stereotype of harming children was often linked to gays. Therefore, when the gay identity is activated, gays have inferior interactions with children. Compared to the activated group, the inactivated group's interactions with children did not differ from those of straight males. These findings show that gays are affected by the threat of associated negative stereotypes, and that they tend to behave in consistency with the stereotypes of gays. Stereotypes held by and formed by members of society and their social values are not the only things that have a negative impact on gays. Broadcast media also plays an important role. Shin (2007) asserted that the media could alleviate stress among homosexual people by providing fair and objective LGBT information. This assertion supports the finding that the media is a source of stress for homosexual people, gained from a previous study into the stresses faced by Taiwanese homosexual people. These studies show that stereotypes can have a negative impact on many levels and that people, whether the general public or individuals in the helping professions, have misconceptions of and hold strong negative stereotypes about gays.

Several nations have studied university students, including American students (e.g., Burke et al., 2015; Matharu et al., 2012), Australian students (e.g., Lyons, 2015), Turkish students (e.g., Engstrom & Sedlacek, 1997; Saraç, 2015), Portugal students (e.g., Costa et al., 2014), and Irish students (e.g., Morrison et al., 2009) to examine their attitudes toward homosexuality. Gender differences in attitudes were found. Engstrom and Sedlacek (1997) found that Turkish students had negative attitudes toward both gays and lesbians, but attitudes toward lesbians were less negative than attitudes toward gays. In addition, compared to male students, female students were more supportive of homosexual people. Herek (1998) found that compared with straight women, straight men were more hostile toward homosexual people, particularly toward gays. Straight men always held more negative attitudes than did heterosexual women. Chang et al. (2013) found that men were more willing to accept lesbians than gays as friends. In contrast, women were equally willing to accept gays and lesbians as friends. Furthermore, this acceptance of homosexual friends was higher among women than among men. Studies by Engstrom and Sedlacek (1997) found that university campuses are relatively unfriendly toward gays and lesbians, and male students are significantly more unfriendly than are female students toward homosexual people. Nierman et al. (2007) investigated Chilean and American university students and found that male students were more negative toward homosexual people than were female students, particularly toward gays. Furthermore, encounters with homosexual people can affect an individual's attitudes toward homosexual people. West and Hewstone (2012) asserted that contact with homosexual people is a key factor in changing the public attitude toward homosexual people. Contact can decrease prejudices against all homosexual people and is one of the best ways to eliminate prejudices against them. To summarize, gender, an understanding of homosexuality, and misconceptions or prejudices regarding homosexuality are all key factors that can influence people's attitudes toward homosexuality.

The development of each scale must be based on a theoretical framework (Ye & Chen, 2006). Callender (2015) divides the attitude into three parts on the C-A-B model of attitude: cognitive means people's beliefs about the incident, including facts, knowledge, and beliefs; affective means personal feeling that contains a positive and negative evaluation of the event (the positive feeling to keep a positive attitude for the individual event; the negative feeling to keep a negative attitude for the individual event); behavioral

means personal behavior or behavioral intention toward the event, it is divided into accepted behavior and exclusion. Homosexuality attitude scales can help us understand how university students feel about homosexual people. For example, Kite and Deaux (1986) created the Homosexuality Attitude Scale using 21 items on a Likert scale to understand people's stereotypes, misunderstandings, and anxiety regarding homosexuality. Subsequently, to differentiate university students' attitudes toward gays and lesbians, Herek (1998) proposed the Attitudes toward Lesbians and Gay Men Scale. The scale was administered to straight American adults and comprises 20 items in two subscales. The attitudes toward gay men (ATG) subscale contains 10 statements that describe gays (e.g., gays are deviants) and the attitudes toward lesbians (ATL) subscale contains 10 statements that describe lesbians (e.g., lesbians are sick). This homosexuality attitude scale has been used frequently. Many instruments used to measure homosexuality attitudes do so in three constructs: thoughts, feelings, and behaviors (Chang, 2009; Chen et al., 2006; Hu, 2006).

In addition to these three constructs, many scales examine other dimensions. Hu (2006) and Liu (2008) also examined attitudes about and acceptance of gays and lesbians. Engstrom and Sedlacek (1997), Clift (1988), and Herek (1998) surveyed university students about their attitudes toward homosexuality. Their research examined items other than the three constructs of beliefs, feelings, and behaviors. The survey used by Engstrom and Sedlacek (1997) also examined demographic variables (e.g., sex, age, monthly income, place of residence, and religion), sexual behaviors (e.g., single or in a relationship, discussing sexual behaviors with others, sexual experience, current sex life, premarital sex), and homosexuality (e.g., discussing homosexuality with others, knowing homosexual people). In addition, Clift's (1988) survey contained speech used to express straight people's attitudes toward homosexual people (homosexuality is completely normal), feelings about gays (sex between two men is disgusting), feelings about lesbians (in general, lesbians experience more stress than they should), and education (junior high school course content is biased against lesbians and gays).

The previous studies mainly investigated people's stereotypes about homosexuality. Although this research also started from the stereotypes, we would like to know more. Therefore, we tried to construct a scale, in addition to measuring the stereotype attitude towards homosexuality, this scale can be used to understand demythicizing homosexuality, acceptance of homosexuality, and familiarity with homosexuality among university students. The three subscales in this study were based on the C-A-B model and was renamed as the ABC model: affect is the demythicizing homosexuality subscale (8 items); behavior is the acceptance of homosexuality subscale (15 items); cognition is the familiarity with homosexuality subscale (8 items). The reason for using college students as the survey subjects is that they are more mature and may have more opportunities to come into contact with homosexuals.

METHOD

Participants

Our sample comprised students from four universities in central Taiwan, chosen via purposive sampling. Testing was conducted in group settings one class at a time. The entire process was implemented by a professionally trained research assistant. To improve reliability, the research assistant scanned all responses and removed invalid responses before numbering the valid responses. A response was considered invalid if: a) at least half of the items were unanswered, or b) if six or more items in a row had the same answers because some items were reverse-worded (coding of reverse-worded items requires a transforma-

tion of the responses from 1 to 7, from 2 to 6, etc.). After removing invalid responses, the sample size was 1,073. We used listwise deletion in data analysis, that is, if any item on the scale was unanswered, the entire response was discarded. The final sample that was formally analyzed contained 823 participants.

Research Instruments

This research constructed the scale items to understand the primary causes of homosexual stereotypes from three aspects: demythicizing, acceptance, familiarity. The researchers reviewed past related homosexual survey tools, designed survey questions based on literature and theories, and asked two professors with years of gender research experience to conduct expert analysis on the validity of the scale. This scale is called the Homosexual Attitudes and Stereotype (HAS) Scale. The scale was self-reported and scored on a 7-point Likert scale.

The HAS Scale contains 31 items in three subscales. The first subscale is demythicizing homosexuality (8 items); the second subscale is acceptance of homosexuality (15 items); and the third subscale is familiarity with homosexuality (8 items). Participants were asked to circle a number on a 7-point scale that best matched their actual experiences or true opinions. The responses ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). Eleven of the items were reverse-worded: Items 2, 3, and 7 in the first subscale; Items 14, 15, 17, 19, 21, 25, and 35 in the second subscale; and Item 29 in the third subscale. In the demythicizing homosexuality subscale, a higher score represents fewer misconceptions and less stigmatization of homosexuality. In the acceptance of homosexuality subscale, a higher score represents greater acceptance and goodwill toward homosexuality and homosexual people. In the familiarity with homosexuality subscale, a higher score represents more accurate knowledge of facts about homosexuality.

Our objective was to examine whether people of different sexual orientations had different attitudes and negative stereotypes about homosexuality. Therefore, the last item on the scale was "Your current sexual orientation is . . . ." To improve the veracity of the responses and to protect the privacy of the participant, we took measures to ensure that this response could not be seen by neighboring classmates or during the collection process. We designed a label that enabled the participant to seal the completed questionnaire, indicating "You can decide whether or not to answer this

question. Regardless of your decision, please fold the questionnaire in half along the marked line, remove the backing from the double-sided tape, and seal your questionnaire."

RESULTS

Descriptive Statistical Analysis

The final sample in this study comprised 823 participants. Mean for individual subscales and dimensions ranged from 3.86 to 5.46; the standard deviations for the subscale and dimension scores ranged from 0.98 to 1.44. Results from the descriptive statistical analysis showed that the skewness of these average scores ranged from −.578 to .273; the kurtosis ranged from −.437 to .186. The skewness and kurtosis values support the hypothesis that the scores fit a normal distribution. Therefore, we used the maximum likelihood method to estimate parameters for testing the validity of factors of the scale and for determining

the model's goodness-of-fit statistics. Results of the descriptive statistical analysis of the three subscales and the overall scale are shown in Table 1.

TABLE 1
Descriptive statistical analysis of the three subscales and the overall scale (N = 823)

Subscale/Dimension	Mean	Standard deviation	Skewness	Kurtosis
Demythicizing homosexuality (8 items)	5.26	1.19	–.507	.131
Acceptance of homosexuality (15 items)	5.07	1.14	–.241	–.229
Acceptance of intimate relationships (6 items)	4.36	1.44	–.017	–.437
Acceptance of social relationships (5 items)	5.40	1.19	–.578	.186
Acceptance of interpersonal relationships (4 items)	5.46	1.20	–.467	–.068
Familiarity with homosexuality (8 items)	4.30	1.05	.273	.130
Understanding of categories (5 items)	3.86	1.32	.129	–.158
Understanding of definitions (3 items)	5.04	1.17	–.159	–.282
Overall scale (31 items)	4.92	0.98	–.082	–.348

Analysis of Internal Consistency Reliability

Table 2 shows the internal consistency reliability of each subscale and the overall scale. Cronbach's α for the three subscales and their dimensions ranged from .51 to .93; the Cronbach's α for the overall scale was .94. Standardized Cronbach's α for the three subscales and their dimensions ranged from .51 to .93; the standardized Cronbach's α for the overall scale was .94. Overall, the instrument showed good internal consistency reliability.

TABLE 2
Internal consistency reliability of the three subscales and the overall scale (N = 823)

Subscale	Cronbach's α	Standardized Cronbach's α	Number of items
Demythicizing homosexuality (8 items)	.89	.89	8
Acceptance of homosexuality (15 items)	.93	.93	15
Acceptance of intimate relationships (6 items)	.86	.86	5
Acceptance of social relationships (5 items)	.87	.87	6
Acceptance of interpersonal relationships (4 items)	.82	.82	4
Familiarity with homosexuality (8 items)	.72	.71	8
Understanding of categories (5 items)	.72	.72	5
Understanding of definitions (3 items)	.51	.51	3
Overall scale (31 items)	.94	.94	31

Testing Internal Validity

Table 3 presents a matrix of correlation coefficients for the three subscales, all dimensions, and the overall scale. The coefficients ranged from .230 to .953 and all were statistically significant ($p < .001$). This indicated excellent internal validity.

TABLE 3
Summary of correlations ($N = 823$)

	2	2.1	2.2	2.3	3	3.1	3.2	4
1 Demythicizing homosexuality	.841***	.715***	.830***	.680***	.421***	.262***	.521***	.899***
2 Acceptance of homosexuality	-	.903***	.913***	.843***	.471***	.302***	.566***	.953***
2.1 Intimate relationships		-	.714***	.650***	.448***	.312***	.492***	.853***
2.2 Social relationships			-	.688***	.392***	.230***	.510***	.879***
2.3 Interpersonal relationships				-	.420***	.264***	.516***	.801***
3 Familiarity with homosexuality					-	.920***	.676***	.672***
3.1 Understanding of categories						-	.335***	.506***
3.2 Understanding of definitions							-	.666***
4 Overall scale								-

***$p < .001$.

Confirmatory Factor Analysis

Confirmatory factor analysis was used to calculate the reliability and construct validity of the HAS Scale. In this stage, all 823 participants were randomly assigned to one of two groups: the calibration sample, comprising 412 participants, or the validation sample, comprising 411 participants. Confirmatory factor analysis was performed using LISREL v. 8.80. In addition, the maximum likelihood method was used to estimate parameters for testing the validity of factors of the scale. In this study, the 31 items on the HAS Scale were defined as observable variables. Model validation for each of the three subscales is detailed separately below.

For the demythicizing of homosexuality subscale, results showed that the overall goodness-of-fit statistics for both the calibration and validation samples were ideal. The χ^2 to degrees of freedom ratio was 1.37 for the calibration sample and 1.57 for the validation sample. The χ^2 to degrees of freedom ratio is also called the normed χ^2; in general, when this value is less than 2 or 3, the model has an ideal goodness of fit (Chiu, 2011). Next, because Hu and Bentler (1999) asserted that the comparative fit index (CFI) and the root mean square error of approximation (RMSEA) must be reported in studies, we computed these statistics. For the calibration sample, CFI = 1.00; RMSEA = .030; and the root mean square residual (SRMR) = .019. For the validation sample, the CFI = 1.00; RMSEA = .038; and SRMR = .018. Because both CFI values were higher than .90 and all RMSEA and SRMR values were lower than .50, the model has a reasonable goodness of fit. In addition, goodness-of-fit index (GFI) values closer to 1 indicate better goodness of fit. However, GFI values decrease as degrees of freedom increase. The GFIs of both the calibration and validation samples were .99. In general, GFI values higher than .90 represent the ratio of observed data that can be explained by the proposed model. MacCallum and Hong (1997) suggested that the acceptable ad-

justed goodness-of-fit index (AGFI) value could be lowered to .80. The AGFI values of both the calibration and validation samples were .97, this value is acceptable. Critical N (CN) is used to evaluate the sample size. The CN of the calibration sample was 618.04 and the CN of the validation sample was 544.25; these values indicated that the model was ideal for the validation sample. For cross-validation, LISREL provides the expected cross-validation index (EVCI) as a measurement of a model's validity and goodness of fit when it is applied to two samples of the same size that are extracted from the same parent population (Yu, 2006). No fixed reference values for ECVI exist. Instead, the ECVI of a given model should be compared to the ECVIs of the independence model and the saturated model. It should be as low as possible and ideally should be lower than the ECVIs of the independence and saturated models. For the calibration sample, the ECVI was 0.15, 90% confidence interval (CI) [0.14, 0.19]; the ECVI of the independence model was 7.09; the ECVI of the saturated model was 0.19. For the validation sample, the ECVI was 0.16, 90% CI [0.14, 0.20]; the ECVI of the independence model was 7.70; the ECVI of the saturated model was 0.18. For both samples, the EVCI values were lower than those for the saturated models and substantially lower than those for the independence models. Therefore, the proposed model had acceptable cross-validation.

For the acceptance of homosexuality subscale, results showed that the overall goodness-of-fit statistics for both the calibration and validation samples were ideal. The χ^2 to degrees of freedom ratio was 1.87 for the calibration sample and 2.80 for the validation sample. Next, for the calibration sample, the CFI = 0.99; RMSEA = .046; and the SRMR = .033. For the validation sample, the CFI = 0.98; RMSEA = .066; and SRMR = .040. The GFI of the calibration sample was .95 and the GFI of the validation sample was .93. The adjusted goodness of fit index (AGFI) of the calibration sample was .93 and the AGFI of the validation sample was .90; these values are both acceptable. CN is used to evaluate the sample size. The CN of the calibration sample was 303.49 and the CN of the validation sample was 203.63; these values indicated that the model was ideal for the validation sample. In cross-validation, the ECVI of the calibration sample was 0.56, 90% CI [0.48, 0.65]; the ECVI of the independence model was 21.86; the ECVI of the saturated model was 0.58. For the validation sample, the ECVI was 0.75, 90% CI [0.64, 0.87]; the ECVI of the independence model was 26.13; the ECVI of the saturated model was 0.59. Although the validation sample's ECVI was not lower than that of the saturated model, it was far lower than the ECVI of the independence model. Therefore, the proposed model has acceptable cross-validation.

For the familiarity with homosexuality subscale, results showed that the overall goodness-of-fit statistics for both the calibration and validation samples were ideal. The χ^2 to degrees of freedom ratio was 1.80 for the calibration sample and 1.88 for the validation sample. Next, for the calibration sample, the CFI = 0.98; RMSEA = .044; and the SRMR = .042. For the validation sample, the CFI = 0.98; RMSEA = .046; and SRMR = .035. The GFIs of both the calibration and validation samples were .98. In general, GFI values greater than .90 represent the ratio of observed data that can be explained by the proposed model. The AGFI values of both the calibration and validation samples were .96, which is within an acceptable range. CN is used to evaluate the sample size. The CN of the calibration sample was 431.51 and the CN of the validation sample was 430.00; these values indicated that the model was ideal for the validation sample. In cross-validation, the ECVI of the calibration sample was 0.17, 90% CI [0.14, 0.22]; the ECVI of the independence model was 1.66; the ECVI of the saturated model was 0.18. For the validation sample, the ECVI was 0.17, 90% CI [0.14, 0.22]; the ECVI of the independence model was 2.24; the ECVI of the saturated model was 0.18. For both samples, the EVCI values were lower than those for the saturated models and considerably lower than those for the independence models. Therefore, the proposed model should have acceptable cross-validation.

Next, we discuss the factor loadings (i.e., fully standardized estimated values) of observable variables on individual latent variables in the three subscales. In the demythicizing of homosexuality subscale, loading factors of the calibration sample ranged between .60 and .82, which conforms to the standard of higher than .50 and lower than .95. The *t*-statistics were all higher than 1.96. This indicated that every observable variable reached the significance level of .05, which in turn indicated that the ability of observable variables to reflect the latent variables of the construct was valid. The composite reliability was .895. Because the composite reliability was larger than the standard .60 and even .70, this indicated that the ability of observable variables to reflect the latent variables of the construct was highly systematic. The average variance extracted value was .517, which was larger than the standard .50. In the acceptance of homosexuality subscale, loading factors of the calibration sample ranged between .59 and .86, which conforms to the standard of higher than .50 and lower than .95. The *t*-statistics were all higher than 1.96. The composite reliability was .939.. The average variance extracted value was .510, which was larger than the standard .50. In the familiarity with homosexuality subscale, loading factors of the calibration sample ranged between .45 and .75. Although these values do not entirely conform to the standard of higher than .50 and lower than .95, the *t*-statistics were all higher than 1.96. The composite reliability was .775. The average variance extracted value was .306, which did not conform to the standard of .50.

The factor loadings of observable variables on individual latent variables in the validation samples of the three subscales are as follows: In the demythicizing of homosexuality subscale, loading factors ranged between .52 and .84, which conforms to the standard of higher than .50 and lower than .95. The *t* values were all higher than 1.96. The composite reliability was .899. The average variance extracted value was .533, which was larger than the standard .50. In the acceptance of homosexuality subscale, loading factors ranged between .59 and .84, which conforms to the standard of higher than .50 and lower than .95. The *t*-statistics were all higher than 1.96. The composite reliability was .949. The average variance extracted value was .558, which was larger than the standard .50. In the familiarity with homosexuality subscale, loading factors of the calibration sample ranged between .34 and .75. Although these values do not entirely conform to the standard of higher than .50 and lower than .95, the *t*-statistics were all higher than 1.96. The composite reliability was .783. The average variance extracted value was .319, which did not conform to the standard of > .50. Detailed loading factor and reliability and validity statistics for both samples in the three subscales are listed in Tables 4, 5, and 6. Overall, the results showed that both the calibration and validation samples had appropriate goodness of fit. This implies that the observable variables adequately reflect the model of latent variables that we constructed.

Conclusion and Suggestions

Studies about homosexuality attitude surveys are abundant. Most studies about stereotypes mainly focus on issues of sexual awareness, whereas relatively few studies focus solely on surveying homosexual stereotypes. Furthermore, these studies have typically used self-constructed survey instruments, which may not necessarily have excellent reliability and validity. Therefore, we referenced theoretical constructs and integrated past studies of homosexual stereotypes to more exhaustively and extensively, but also simply and briefly, describe the stereotypes that university students hold about homosexual people.

After compiling relevant literature, we constructed a preliminary version of the HAS Scale. The steps of this construction process include: pretesting, item analysis, exploratory factor analysis, reliability analysis, revising the preliminary version, and finally formal testing. After confirmatory factor analysis as well as reliability and validity testing of the construct, the final version of the HAS Scale was completed.

TABLE 4

Factor loading and reliability and validity statistics for the calibration and validation samples in the demythicizing of homosexuality subscale (calibration sample N = 412; validation sample N = 411)

Item	Fully standardized factor loading		Cronbach's α		Measurement error	
	cali	vali	cali	vali	cali	vali
1. Homosexuality is not a psychological abnormality	.63	.57	.40	.32	.60	.67
2. Homosexual sex is loveless (reverse-worded)	.70	.52	.49	.27	.51	.73
3. Homosexuality violates the natural order (because they cannot procreate) and should not exist (reverse-worded)	.72	.82	.52	.67	.48	.33
4. Homosexuality is a normal and natural relationship of love	.74	.83	.55	.69	.45	.31
5. There is no difference between the mental health of heterosexuals and homosexuals	.82	.77	.67	.59	.33	.41
6. Two homosexual people who truly love each other can stay together all their lives	.76	.69	.58	.48	.43	.53
7. Being in love with someone of the same sex is abnormal (reverse-worded)	.76	.84	.58	.71	.43	.30
10. Acceptance of homosexuality is beneficial to our society	.60	.73	.36	.53	.64	.46
Fitness criteria	> .50 and < .95		> .50		< .50	
Composite reliability (cali/vali)	.895	.899	Standard acceptable values: > .60			
Average variance extracted (cali/vali)	.517	.533	Standard acceptable values: > .50			

Note. cali = calibration; vali = validation.

The scale comprises 31 items in three subscales: demythicizing homosexuality, acceptance of homosexuality, and familiarity with homosexuality. Average scores on the subscales ranged from 3.86 to 5.46; the standard deviation ranged from 1.05 to 1.44. In addition, the scale developed in this study possessed excellent internal reliability consistency and internal validity. These results conformed to the original intent of the scale. In addition, the confirmatory factor analysis results showed that for individual variables, the reliability, the composite reliability with latent variables, and the average variance extracted all reached ideal standards. The composite reliabilities of the three latent variables ranged between .78 and .94. All were above the criterion of .60, indicating that the ability of observable variables to reflect the latent variables of the construct was highly systematic. Next, the goodness of fit of the validation sample was tested using the various statistics described above; results all showed that the model had a good fit. Taken together, all of the findings show that the constructed theoretical model possessed excellent reliability and validity.

The HAS Scale developed in this study is a reliable and valid research tool for studying homosexual stereotypes. It is well suited to administration by educators in gender studies or by counselors. If the results of the scale were used appropriately by teachers or counselors, they could improve teaching methods and attitudes regarding homosexuality or gender studies. The scale can help teachers identify students' inaccurate understanding in LGBTQ studies, or help students identify their own misconceptions or

TABLE 5
Factor loading and reliability and validity statistics for the calibration and validation samples in the acceptance of homosexuality subscale

Item	Fully standardized factor loading		Cronbach's α		Measurement error	
Intimate relationships	cali	vali	cali	vali	cali	vali
13. Homosexual couples should have the same rights to child adoption as heterosexual couples do	.61	.61	.37	.37	.63	.63
14. An increase in the number of homosexual people indicates moral decay in society (reverse-worded)	.78	.80	.61	.64	.39	.37
15. Homosexual people who have AIDS deserve it (reverse-worded)	.67	.65	.45	.42	.55	.58
16. Homosexual people should have the same rights to legal marriages as heterosexual people do	.74	.79	.55	.62	.45	.38
21. I cannot accept the thought of lesbians (reverse-worded)	.70	.76	.49	.58	.51	.42
25. Homosexual people are not suited to being teachers (reverse-worded)	.74	.72	.55	.52	.46	.48
Social relationships						
17. I cannot accept the thought of gays (reverse-worded)	.86	.81	.74	.66	.26	.35
18. I can accept intimate interactions (for example, holding hands, hugging, or kissing) between two men	.69	.69	.48	.48	.53	.52
19. I cannot accept sexual activity between two men (reverse-worded)	.67	.73	.45	.53	.55	.46
30. I can accept having a homosexual family member	.67	.78	.45	.61	.55	.39
35. Displays of affection from homosexual couples are more disgusting than displays of affection from heterosexual couples (reverse-worded)	.76	.79	.58	.62	.43	.37
Interpersonal relationships						
26. I am willing to be friends with homosexual people	.77	.83	.59	.69	.41	.32
27. I do not mind letting other people know that I have homosexual friends	.59	.59	.35	.35	.65	.65
31. I would go shopping with a homosexual friend	.67	.84	.45	.71	.55	.29
33. I am willing to learn more about things related to homosexuality	.74	.76	.55	.58	.45	.42
Fitness criteria	> .50 and < .95		> .50		< .50	
Composite reliability (cali/vali)	.939	.949	Standard acceptable values: > .60			
Average variance extracted (cali/vali)	.510	.558	Standard acceptable values: > .50			

Note. cali = calibration; vali = validation.

TABLE 6
Factor loading and reliability and validity statistics for the calibration and validation samples in the familiarity with homosexuality subscale

Item	Fully standardized factor loading		Cronbach's α		Measurement error	
Understanding of categories	cali	vali	cali	vali	cali	vali
40. I know the term "straight people" refers to heterosexual people	.54	.55	.29	.30	.71	.70
43. I know the rainbow flag that symbolizes homosexuality is made up of six colors	.53	.56	.28	.31	.72	.68
45. I know that LGBT is short for lesbian, homosexual, bisexual, and transgender	.75	.77	.56	.59	.44	.40
46. I know that "twink" refers to smaller gays and "bear" refers to stronger gays	.52	.57	.27	.32	.73	.67
47. I know that the term "homosexual" includes homosexual, bisexual, and transgender groups	.48	.46	.23	.21	.77	.79
Understanding of definitions						
29. Homosexual people can turn straight through professional counseling (reverse-worded)	.49	.34	.24	.12	.82	.89
30. I know that homosexuality has long been excluded as a mental illness	.63	.62	.40	.38	.60	.61
42. I know that the term "come out" refers to a homosexual person declaring his or her sexual orientation to others	.45	.56	.20	.31	.80	.69
Fitness criteria	> .50 and < .95		> .50		< .50	
Composite reliability (cali/vali)	.775	.783	Standard acceptable values: > .60			
Average variance extracted (cali/vali)	.306	.319	Standard acceptable values: > .50			

Note. cali = calibration; vali = validation.

myths about homosexual people. In the present study, the scale was administered to university students, but it is suitable for use by junior high school or high school students. In the future, we plan to examine the feasibility of adopting this scale to different populations. Gender studies should be taught from a young age, but LGBTQ issues are relatively unique and any discussions should be appropriate to the students' ages to allow them to fully understand and avoid inaccurate beliefs. Of course, educators must also constantly self-evaluate to determine whether they have stopped believing in misconceptions or stereotypes to avoid transmitting inaccurate information to the next generation.

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