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Michiyo Hirai

*The University of Texas Rio Grande Valley*, [michiyo.hirai@utrgv.edu](mailto:michiyo.hirai@utrgv.edu)

Serkan Dolma

*Pamukkale University, Turkey*

Jason R. Popan

*The University of Texas Rio Grande Valley*

Mark H. Winkel

*The University of Texas Rio Grande Valley*

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Machismo Predicts Prejudice toward Lesbian and Gay Individuals: Testing a Mediating Role of  
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Michiyo Hirai

University of Texas Rio Grande Valley

Serkan Dolma

Pamukkale University

Jason R. Popan

University of Texas Rio Grande Valley

&

Mark H. Winkel

University of Texas Rio Grande Valley

Corresponding Author:

Michiyo Hirai

Department of Psychological Science

University of Texas Rio Grande Valley

1201 W. University Drive

Edinburg, TX 78539

E-mail: [michiyo.hirai@utrgv.edu](mailto:michiyo.hirai@utrgv.edu)

Phone: (956) 665-2638; Fax: (956) 665-3333

### Abstract

This study examined the relationship between traditional machismo and prejudice toward lesbian and gay individuals as mediated by contact in a Latino college sample. Gender was examined as a potential moderator. Undergraduate students from a public university in South Texas (128 males and 447 females; mean age = 22.1.  $SD = 4.75$ ) completed online measures of prejudice toward lesbian and gay individuals, machismo, and contact experience with lesbian and gay individuals. Contact significantly mediated the relationship between machismo and anti-gay prejudice, yet this indirect effect was relatively small. Significant direct and indirect effects of machismo on prejudiced attitudes toward lesbian and gay individuals were found. Gender did not moderate the relationship between machismo and contact. Our findings suggest that efforts to reduce Latinos' prejudice toward gay men and lesbian women should take cultural views toward gender roles into consideration. Increased positive contact experience with lesbian and gay individuals may be a possible avenue to decrease anti-gay prejudice that stems from heightened traditional machismo.

Keywords: prejudice, homosexual individuals, Latinos, machismo, contact

## Machismo Predicts Prejudice toward Lesbian and Gay Individuals: Testing a Mediating Role of Contact

Previous research has identified predictors of negative attitudes toward lesbian women and gay men. Predictors of anti-gay prejudice include gender role beliefs (Brown & Henriquez, 2008; Keiller, 2010; Kite & Whitley, 1998; Parrott & Gallagher, 2008; Whitley, 2001) and gender itself. Theoretical and empirical evidence exists to support gender belief theory (Kite & Whitley, 1998) as a possible foundation for explaining prejudiced attitudes toward lesbian women and gay men. Specifically, this theory suggests perceived gender role violation of lesbian women and gay men as an eliciting factor of prejudice towards lesbian and gay individuals. More empirical studies provide converging evidence for gender role beliefs as a potential source of anti-gay prejudice (Brown & Henriquez, 2008; Keiller, 2010; Parrott & Gallagher, 2008). These findings support the claim that anti-gay prejudice may be stronger among individuals who tend to maintain traditional gender role beliefs (for an exception see Cullen, Wright, & Alessandri, 2002).

Consistent with this assertion, a recent study with a Latino sample identified machismo, the expectation and expression of masculine behavior among Latin American men (Arciniega, Anderson, Tovar-Blank, & Tracey, 2008), as a strong predictor of negative attitudes toward lesbian women and gay men (Hirai, Winkel, & Popan, 2014). According to these authors, machismo contributed to anti-gay prejudice equally in Latinas and Latinos. Because machismo is considered a culturally shaped and maintained gender role belief among Latinos (Arciniega et al., 2008), it may be a sensible indicator of gender role beliefs among Latinos, which is linked to anti-gay prejudice. The potential impact of machismo on anti-gay prejudice is of growing importance because of the increased focus on issues relevant to gay men and lesbian women in

the United States (e.g., same-sex marriage) and the growth of the Latino population in the U.S. by nearly 10% in the first decade of this century (Ennis, Rios-Vargas, & Albert, 2011).

A possible protective variable against prejudice toward lesbian women and gay men is contact experience with them. According to intergroup contact theory (Allport, 1954), under positive conditions, increased contact will increase positive attitudes toward diverse groups. Tests of the relationship between heterosexual individuals' contact with and prejudice towards lesbian and gay individuals have shown that more contact is associated with more positive attitudes and less prejudice towards these individuals. For instance, Herek and Glunt (1993) demonstrated that contact was a predictor of heterosexuals' positive attitudes towards gay men and lesbian women in a U.S. national sample. In a longitudinal study, Herek and Capitanio (1996) showed that the frequency and closeness of heterosexuals' contact with gay men and lesbian women was associated with an increase in favorable attitudes over time. Pettigrew and Tropp (2006) conducted a meta-analysis of over 500 studies that examined intergroup contact's relationship with prejudice in a wide variety of intergroup contexts (e.g., racial groups, religious groups, and sexual orientation groups). Overall, they found that contact and prejudice have a small but statistically significant inverse relationship, whereby higher levels of intergroup contact are associated with less prejudice, even under conditions where the contact situation was not chosen or self-selected by the individuals engaging in contact. As compared to other intergroup contexts, the inverse contact-prejudice relationship was stronger for studies that investigated the contact of heterosexuals with lesbian women and gay men. Experimental manipulations of heterosexuals' contact with gay men and lesbian women have been linked to reductions of prejudice (see Smith, Axelton, & Saucier, 2009). These previous findings provide

support for the expectation that more contact with lesbian and gay individuals will lead to more favorable attitudes towards them.

Machismo is a potential source of low levels of contact with lesbian and gay individuals. According to similarity-attraction theory (Berscheid & Walster, 1969; Byrne, 1971), people are attracted to others who have similar attitudes with theirs, particularly when such attitudes are important. Further, Rosenbaum (1986) argued that attitudinal dissimilarities lead to repulsion and would reduce further contact. Based on these models, it seems likely that one perceives contact with the other person as negative when he/she sees dissimilarities. Individuals with high machismo whose gender role beliefs are incompatible to a group's gender characteristics are expected not to seek contact with groups that deviate from their gender role beliefs.

Alternatively, less traditional gender role beliefs would make individuals more willing to contact lesbian and gay individuals. Effects of machismo on contact, in turn, may explain attitudes toward homosexuals. In other words, the relationship between machismo and prejudice is expected to be mediated by contact experience. Along these lines, given that males tend to maintain heightened traditional gender role beliefs, such as machismo, compared to females (e.g., Gibbons, Wilson, & Rufener, 2006), the negative relationship between machismo and contact is expected to be stronger among males than among females.

Gender has been found to play a role in attitudes toward lesbian and gay individuals. The vast majority of previous studies have reported that females tend to show favorable attitudes toward homosexuals, and gay men in particular, compared to males, in college student samples (e.g., Ahrold & Meston, 2010; Hinrichs & Rosenberg, 2002) as well as in community samples (e.g., Herek, 2002). Yet, a recent study with a Latino student sample reported no gender differences on levels of anti-gay prejudice between men and women (Hirai et al., 2014), which is

in contrast to the results from a Latino community study that reported significantly stronger negative attitudes toward gay men among men than among women (Herek & Gonzalez-Rivera, 2006). Further, Hirai et al (2014) reported that gender did not influence magnitudes of the relationship between machismo and prejudice. These somewhat discrepant results seem to suggest a presence of another variable, possibly contact, differentiating gender effects on prejudice. Females' more favorable attitudes toward lesbian women and gay men might be attributed partially to the possibility that females have more contact with gay men and lesbian women than males. Lack of gender effects in some studies might be explained in part by similar levels of contact with lesbian and gay individuals across male and female participants in the studies. In fact, Hirai et al. (2014) suggested that contact be investigated as a potential mediator for the relationship between machismo and anti-gay prejudice.

Overall, theoretical and empirical findings suggest the importance of testing a model that addresses a complex relationship among machismo, contact, and gender in relation to anti-gay prejudice. To date, no research study has investigated these variables together in a Latino sample. The current study examined the moderated mediation model of prejudiced attitudes toward lesbian women and gay men (Figure 1) in a Latino sample, a historically underrepresented cultural group in research. In this model, contact was hypothesized as a mediator for the relationship between machismo and prejudice. Gender was expected to moderate the relationships between machismo and contact, where specifically, the relationship between machismo and contact was expected to be stronger among males than females.

## **Method**

### **Participants**

Participants were 575 undergraduates who self-identified as Latino/Hispanic, 128 males

(22%) and 447 females (78%), at a state university in South Texas. The initial number of participants was 619, and of the 619, 44 participants had at least one missing value. The current study includes 575 participants who had no missing data. The university is located in a county where 91% of the residents are Latina/o and the median household income in the county was \$33,218 (US Census Bureau, 2012). The mean age for males was 22.3 ( $SD = 5.03$ ), and for females was 22.0 ( $SD = 4.67$ ),  $t(573) = .65$ ,  $p = .52$ . The majority ( $n = 493$ , 85.7%) were second generation Americans or higher, and the majority ( $n = 523$ , 91%) held U.S. citizenship. The majority of females ( $n = 263$ , 58.8%) were in their junior or upper year of college. Approximately half of the male participants ( $n = 63$ , 49%) were in their junior or upper year of college. The majority of the participants majored in Psychology ( $n = 232$ ; 40.3%) followed by Biology ( $n = 85$ ; 14.8%), and Nursing ( $n = 58$ , 10.1%). The remaining group (34.8%) consisted of a variety of majors, such as Criminal Justice, Rehabilitation, Social Work, Kinesiology, English, Chemistry, Fine Arts, and Business.

## Measures

A *demographics questionnaire* included gender, age, ethnicity, country of citizenship, year of education, and major.

*Machismo Scale* (MS; Arciniega et al., 2008). The MS is a 20-item, Likert-type scale that assesses traditional machismo and caballerismo found to make up the larger construct of machismo. Accordingly, it contains two subscales, each with 10 items. Traditional machismo describes hypermasculinity and caballerismo focuses on emotional connectedness. Example items from the Traditional Machismo scale are “*Men are superior to women,*” and “*It would be shameful for a man to cry in front of his children.*” Example items from the Caballerismo scale are “*The family is more important than the individual,*” and “*Men should respect their elders.*”

The current study used the Traditional Machismo subscale to focus on strong gender role beliefs, which was relevant as a theorized predictor of the current model. Respondents were instructed to rate statements on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). Higher scores suggest higher levels of traditional machismo. Satisfactory internal consistency reliability estimates ( $\alpha = .84-.85$  for Traditional Machismo) were reported in previous research (Arciniega et al., 2008). The coefficient alpha for the present sample was .77.

*Attitudes toward Lesbians and Gay Men Scale* (ALGM; Herek, 1988). The ALGM contains 20 items in a 5-point Likert-type format (1 = *strongly disagree*, 5 = *strongly agree*). The scale is composed of two 10-item subscales: The ALGM Lesbians subscale (e.g., “*Lesbians just can’t fit into our society*,” “*Lesbians are sick*.”) and ALGM Gay Men subscale (e.g., “*I think male homosexuals are disgusting*,” “*The idea of male homosexual marriages seems ridiculous to me*.”). Higher scores indicate more negative attitudes towards these groups. Previously reported internal consistency reliability estimates for the total, lesbians scale, and gay men scale were .95, .90, and .91, respectively (Herek, 1988). The current study used total scores to assess levels of anti-gay prejudice, and total scores resulted in an alpha score of .96 for the current sample.

*Contact*. Frequencies of intergroup contact with lesbian and gay individuals were estimated by the respondent based on a 5-point Likert-type format (1 = *never*, 5 = *all the time*) for five different settings and situations, specifically at school, in neighborhoods, at work situations, through social media, and in other in-person social situations. Participants were asked, “In a typical week, how often do you have contact with gay and lesbian people...” Items were adapted from a measure of intergroup contact developed by Islam and Hewstone (1993). The coefficient alpha for the present sample was .77.

## Procedure

This study was part of a larger online assessment of intergroup attitudes, being conducted from the fall of 2014 to the summer of 2015. The platform of the online survey was Qualtrics (Qualtrics, Provo, UT). Participants were recruited from the subject pool of the psychology department in the university. Participants who agreed to the online consent statement completed the survey anonymously. The average duration to complete the entire survey was 36.1 minutes ( $SD = 15.8$ ). Participants received extra course credit as compensation. The study was approved by the institutional review board of the university.

## Results

The values of skewness and kurtosis were smaller than 0.9 across genders and were within the cutoff scores of 2.0 for skewness and 7.0 for kurtosis suggested by Curran, West, and Finch (1996). Means and standard deviations are presented by gender for the MS Traditional Machismo subscale, ALGM total scale, and contact in Table 1. ALGM total scale was used for the model, because the two subscales were highly correlated to each other ( $r = .96$  for gay men;  $r = .92$  for lesbians) and produced nearly identical results. Results of gender comparisons on these measures ( $t$ -tests and effect sizes) are also presented in Table 1. Females reported significantly more contact than males. Males had significantly higher traditional machismo scores than females. Based on Cohen's criteria (1988) effect size for traditional machismo scores, comparing males and females, was large, while the effect size for contact scores was relatively small. No other significant gender differences were found.

Correlation coefficients between all of the variables of interest by gender are presented in Table 2. Machismo and prejudice toward lesbian and gay individuals were significantly, positively correlated with each other in both genders. Higher traditional machismo levels were

significantly correlated with less frequent contact with lesbian and gay individuals only in females. There was also a significant inverse relationship between contact frequency and levels of prejudice in both genders.

In addition, bivariate correlations between the key study variables and age, country of citizenship, year of education, and college major were examined. Country of citizenship was dummy-coded: U.S. citizen was coded as 1 and non-U.S. citizen was as 0. Because there were a wide variety of majors with a wide range of subsamples in each major (e.g., 3 participants in engineering, 232 participants in psychology), majors were categorized into the social, behavioral, and health sciences group, which consisted of disciplines that likely expose students to topics related to prejudice within coursework (e.g., psychology, sociology, nursing, rehabilitation), whose dummy code was 1 ( $n = 407$ ) and the remaining group (e.g., biology, engineering, finance) whose dummy code was 0 ( $n = 168$ ). For the dummy-coded demographic variables, point-biserial correlations were examined. Neither age nor year of education had a significant relationship with machismo ( $-.063 < r < -.015, p's > .05$ ), contact ( $-.014 < r < .036, p's > .05$ ), or prejudice toward gay and lesbian people ( $-.014 < r < .022, p's > .05$ ). Neither country of origin nor major was significantly correlated with machismo ( $-.005 < r_{pb} < .079, p's > .05$ ), contact ( $-.040 < r_{pb} < -.041, p's > .05$ ), or prejudice ( $-.056 < r_{pb} < .022, p's > .05$ ). Because of the absence of any meaningful relationship between the demographic variables and our key study variables, demographic covariates were, therefore, not included in the subsequent analyses.

To test the moderated mediation hypotheses (see Figure 1), conditional process analyses were performed using PROCESS for IBM SPSS (Hayes, 2012). PROCESS (Hayes, 2012) is a macro for SPSS and SAS that performs various types of mediation and moderation analyses. Machismo was mean-centered and then entered in the equations. Results are presented in Table

3. Although gender was expected to moderate the relationship between machismo and contact, gender turned out to be non-significant moderator ( $p = .076$ ). The standardized coefficient for the indirect effect of machismo on prejudice was 0.062 (95% CI of the indirect effect [0.030, 0.095]). Machismo and contact together accounted for 27.5% of the variability in prejudice toward lesbian and gay individuals. Machismo explained a relatively small yet significant amount of variability in contact. Based on the model, the majority of the total effect of machismo on prejudice was due to its direct effect ( $B = 0.949, \beta = 0.337$ ) compared to its indirect effect ( $B = 0.175, \beta = 0.062$ ).

### **Discussion**

This study examined the relationship between traditional machismo and attitudes toward lesbian and gay individuals in a Latino college sample. It also investigated contact as a mediator for the relationship between machismo and anti-gay prejudice. The hypothesized direct and indirect roles of machismo and the mediating role of contact on prejudice were supported. More specifically, contact was a partial mediator for the relationship between machismo and prejudice toward homosexuals. As opposed to the hypothesis, gender did not moderate the relationship between machismo and prejudice. Machismo and contact together accounted for a relatively large amount of the variance in prejudice. The majority of the total effect of machismo on prejudice was due to its direct effect. Although machismo did exhibit a statistically significant relationship with contact, the relationship was relatively weak; therefore, resulting in a relatively weak indirect effect on prejudice.

Machismo remained a strong direct predictor of prejudice toward homosexuals, which is consistent with the conceptualization of anti-gay prejudice based on gender belief theory and related empirical findings (e.g., Brown & Henriquez, 2008; Keiller, 2010; Parrott & Gallagher,

2008) as well as the recent findings with a Latino sample (Hirai et al., 2014). The current results suggest that Latinos with high traditional gender role beliefs (i.e., traditional machismo) may view gay men and lesbian women negatively because of conflict with gender role beliefs. However, the small effect of machismo on contact was unexpected, because one's traditional gender role beliefs would likely influence quantity of contact with homosexuals. It is possible that the current sample, consisting of college students, may have encountered lesbian and gay individuals through school events and social occasions, regardless of their willingness to contact the group. It is also possible that well-educated college students may control their avoidance behaviors toward homosexuals, regardless of their machismo levels. Because, to our knowledge, no other study to date has investigated machismo as a variable preceding contact with lesbian and gay individuals, further research on this relationship is warranted.

Contact was found to play a small yet important role in the relationship between machismo and prejudice. Furthermore, the relationship between quantity of contact and anti-gay prejudice was significant. These results point to the importance of promoting contact in order to reduce negative attitudes of Latinos toward lesbian and gay individuals, but also indicate that machismo may play an important role in the avoidance of potentially prejudice reducing contact.

The results suggest that interventions designed to affect machismo may reduce prejudice toward lesbians and gay men among Latinos; however, traditional gender role beliefs might be valued and thus may be difficult to change. Given the relatively small magnitude of the relationship between machismo and contact, individuals reporting higher levels of machismo may not be very avoidant of contact with gays and lesbians. Positive contact situations between individuals holding traditional gender norms may have the potential to decrease anti-gay prejudice, but when such contact is encouraged, efforts should be taken to support a positive

contact environment. Such contact is perhaps most likely to occur in settings where individuals work together, have common goals, and come to know each other on a personal level (Allport, 1954).

In addition to testing the moderated mediation model of prejudiced attitudes toward lesbian women and gay men, gender effects on prejudice were explored. Gender differences in levels of prejudice toward lesbian and gay individuals were not found. This is consistent with a recent finding with a Latino student sample (Hirai et al., 2014) and is in contrast to past studies reporting elevated prejudiced attitudes toward lesbian and gay individuals among males compared to females in community samples (e.g., Herek, 2002; Herek et al., 2006) and in predominantly Caucasian student samples (Ahrold & Meston, 2010; Hinrichs & Rosenberg, 2002). An initial conjecture about the discrepancy between the two Latino student studies and other studies was that Latinas and Latinos may have contacted lesbian and gay individuals similarly, while non-Latino males and females may have had differential contact frequencies. However, the current study revealed that females reported more contact than males. The discrepancy, thus, might be attributed to other variables, such as sample characteristics, including education, ethnicity, and age. The similar levels of anti-gay prejudice reported by males and females in the current sample may be due to the use of a college student sample, where each gender would likely encounter similar socialization with regard to accepting the sexual preferences of others. Furthermore, gender imbalance (128 males and 447 females) might have masked potential gender differences on levels of negative attitudes toward lesbian and gay individuals. In addition, changes of legal status (e.g., same sex marriage) and social climates toward lesbian women and gay men over years may have contributed to improving prejudiced

attitudes toward homosexual individuals among younger generations, which may have minimized gender differences in levels of anti-gay prejudice in the generations.

The current results can have several important implications. The replicated finding that machismo showed a strong direct effect suggests that machismo may be an important target of intervention, as machismo is likely one of the strong sources of prejudice toward lesbian women and gay men in Latinos. Intervention attempts would need to handle the challenge of addressing traditional beliefs, which might be tenacious and resistant to change. However, the current findings suggest that promoting contact would likely produce positive effects on attitudes toward lesbian women and gay men even among those with higher machismo. Providing various opportunities for Latinos to interact with lesbian women and gay men may reduce prejudice toward these individuals that stem from their traditional machismo beliefs. In addition, the current study found results, such as no gender effects on prejudice levels, that were different from past findings obtained from predominant White samples. This discrepancy points to the importance of allowing for cultural effects on variables influencing one's attitudes toward prejudiced groups. These differences also revealed limited generalizability of past findings to specific populations, such as Latino college students, suggesting the importance of becoming aware of diverse attitudes toward lesbian and gay individuals among people with different backgrounds.

The current findings obtained from college students are of particular importance in light of the impacts of anti-gay prejudice on mental health and academic performance among gay and lesbian students. A recent study reported that negative reactions to sexual minority students on campus (e.g., harassment) were associated with academic disengagement in sexual minority students, which affected academic performance in them. Further, higher levels of mental health

issues in sexual minority students than heterosexual students have been found (e.g., Oswalt & Wyatt, 2011; Przedworski, VanKim, Eisenberg, McAlpine, Lust, & Laska, 2015), and such mental health issues, in turn, affected academic performance of sexual minority students (Oswalt & Wyatt, 2011). These findings suggest the preventive and interventional efforts described above appear particularly relevant to improving psychological well-being and academic achievement in sexual minority individuals including Latino gay and lesbian students.

It should be noted that this study has several limitations. The current findings were from Latino college students and thus have limited generalizability to individuals from communities with different cultural backgrounds and education levels. Further, while due to the location of the university, the majority of the participants are likely to be of Mexican descent, their ancestral origin of country was not obtained. Also the duration of time residing in the U.S. was not obtained. Thus, potential variability of the identified relationship across Latinos with a different country of origin and/or with different levels of acculturation cannot be investigated, but is an important variable for future investigations. The gender imbalance in the current sample exists, with a larger proportion of female participants. The gender imbalance may limit generalizability of the findings to both genders. Interestingly, even though machismo is a male gender role concept, both males and female participants showed a significant correlation between machismo and prejudiced attitudes toward lesbian women and gay men, suggesting that machismo likely be a gender-independent contributor to anti-gay prejudice. Although the contact variable was adapted from the established contact variable and thus a valid construct, it did not assess quality and depth of contact to the respondent, and thus the effects of these aspects of contact on prejudiced attitudes toward lesbian and gay individuals remain to be investigated. The variables the current model tested were necessarily limited and unassessed variables, such as the

respondent's sexual orientation and religious beliefs, may have affected the current findings. Although these limitations exist, the fact that the model was largely supported by a convenience sample of college students justifies more focused investigations in diverse samples. In future research, more complex models including the variables listed above should be examined with a larger number of participants from different Latino national origins and with a similar sample size from both genders. Interaction effects are generally small and difficult to detect without large sample sizes (Cohen, Cohen, West, & Aiken, 2003). Moreover, given the correlational and cross-sectional nature of the study design, causal claims are not warranted. Additionally, a possible discrepancy between self-reported and actual attitudes cannot be ruled out. In future research, more complex longitudinal models or experimental interventions involving contact and traditional general role beliefs should be examined. Such attempts would help to establish a more comprehensive picture of machismo, contact, and anti-gay prejudice in Latinos.

Despite the above limitations, the current model was developed based on recent empirical findings as well as theoretical models, offering a potential platform for future investigations in prejudice toward lesbian women and gay men in Latinos. The study was conducted in a unique and appropriate setting to study machismo. The replication of machismo as a strong contributor to anti-gay prejudice in Latinos postulates that machismo is a culturally grounded reliable predictor for the negative attitudes towards lesbians and gay men, and that interventions designed to promote positive experiences and reduced prejudice towards lesbians and gay men should take into account the potential for traditional gender roles to lead to reluctance to engage in such contact, especially among Latinos with machismo views of gender roles.

## **Compliance with Ethical Standards**

### **Disclosure of potential conflicts of interest**

We have no potential conflict of interest.

### **Research involving human participants and/or animals (Ethical Approval)**

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

### **Informed consent**

Informed consent was electronically obtained from all individual participants included in the study.

## References

- Allport, G. W. (1954). *The nature of prejudice*. Reading, MA: Addison-Wesley.
- Ahrold, T. K., & Meston, C. M. (2010). Ethnic differences in sexual attitudes of U.S. college students: Gender, acculturation, and religiosity factors. *Archives of Sexual Behavior, 39*(1), 190-202. doi:10.1007/s10508-008-9406-1
- Arciniega, G., Anderson, T. C., Tovar-Blank, Z. G., & Tracey, T. G. (2008). Toward a fuller conception of Machismo: Development of a traditional Machismo and Caballerismo Scale. *Journal of Counseling Psychology, 55*(1), 19-33. doi:10.1037/0022-0167.55.1.19
- Berscheid, E., & Walster, E.H. (1978) *Interpersonal Attraction*, Reading, MA: Addison-Wesley
- Brown, M. J., & Henriquez, E. (2008). Socio-demographic predictors of attitudes towards gays and lesbians. *Individual Differences Research, 6*(3), 193-202.
- Byrne, D. (1971). *The Attraction Paradigm*. New York: Academic Press
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). New Jersey: Lawrence Erlbaum Associates.
- Cohen, J., Cohen, P., West, S., and Aiken, L. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences*. Lawrence Erlbaum: Mahwah, NJ.
- Cullen, J. M., Wright, L. r., & Alessandri, M. (2002). The personality variable Openness to Experience as it relates to homophobia. *Journal of Homosexuality, 42*(4), 119-134. doi:10.1300/J082v42n04\_08
- Curran, P. J., West, S. G., & Finch, J. F. (1996). The robustness of test statistics to nonnormality and specification error in confirmatory factor analysis. *Psychological Methods, 1*(1), 16-29. doi:10.1037/1082-989X.1.1.16

- Ennis, S. R., Rios-Vargas, M., & Albert, N. G. (2011). The Hispanic population: 2010. 2010 U.S Census Briefs. Retrieved from <http://www.census.gov/prod/cen2010/briefs/c2010br-04.pdf>
- Gibbons, J. L., Wilson, S. L., & Rufener, C. A. (2006). Gender Attitudes Mediate Gender Differences in Attitudes Toward Adoption in Guatemala. *Sex Roles, 54*(1-2), 139-145. doi:10.1007/s11199-005-8875-0
- Hayes, A. (2012). PROCESS. [www.afhayse.com](http://www.afhayse.com)
- Herek, G. M. (1988). Heterosexuals' attitudes toward lesbian women and gay men: Correlates and gender differences. *Journal of Sex Research, 25*, 451– 477. doi:10.1080/00224498809551476
- Herek, G. M. (2002). Gender gaps in public opinion about lesbians and gay men. *Public Opinion Quarterly, 66*(1), 40-66. doi:10.1086/338409
- Herek, G. M., & Capitano, J. P. (1996). 'Some of my best friends': Intergroup contact, concealable stigma, and heterosexuals' attitudes toward gay men and lesbians. *Personality and Social Psychology Bulletin, 22*(4), 412-424. doi:10.1177/0146167296224007
- Herek, G. M., & Glunt, E. K. (1993). Interpersonal contact and heterosexuals' attitudes toward gay men: Results from a national survey. *Journal of Sex Research, 30*(3), 239-244. doi:10.1080/00224499309551707
- Herek, G. M., & Gonzalez-Rivera, M. (2006). Attitudes toward Homosexuality Among U.S. Residents of Mexican Descent. *Journal of Sex Research, 43*(2), 122-135. doi:10.1080/00224490609552307

- Hinrichs, D. W., & Rosenberg, P. J. (2002). Attitudes toward gay, lesbian and bisexual persons among heterosexual liberal arts college students. *Journal of Homosexuality, 43*(1), 61-84. doi:10.1300/J082v43n01\_04
- Hirai, M., Winkel, M. H., & Popan, J. R. (2014). The role of machismo in prejudice toward lesbians and gay men: Personality traits as moderators. *Personality and Individual Differences, 70*105-110. doi:10.1016/j.paid.2014.06.028
- Islam, M. R., & Hewstone, M. (1993). Dimensions of contact as predictors of intergroup anxiety, perceived out-group variability, and out-group attitude: An integrative model. *Personality and Social Psychology Bulletin, 19*(6), 700-710. doi:10.1177/0146167293196005
- Keiller, S. W. (2010). Masculine norms as correlates of heterosexual men's attitudes toward gay men and lesbian women. *Psychology of Men & Masculinity, 11*(1), 38-52. doi:10.1037/a0017540
- Kite, M. E., & Whitley, B. E. (1998). Do heterosexual women and men differ in their attitudes toward homosexuality? A conceptual and methodological analysis. In G. M. Herek (Ed.) *Stigma and sexual orientation: Understanding prejudice against lesbians, gay men, and bisexuals* (pp. 39–61). Newbury Park, CA: Sage.
- Oswalt, S. B., & Wyatt, T. J. (2011). Sexual orientation and differences in mental health, stress, and academic performance in a national sample of U.S. College students. *Journal of Homosexuality, 58*(9), 1255-1280. doi:10.1080/00918369.2011.605738
- Parrott, D. J., & Gallagher, K. E. (2008). What accounts for heterosexual women's negative emotional responses to lesbians?: Examination of traditional gender role beliefs and sexual prejudice. *Sex Roles, 59*(3-4), 229-239. doi:10.1007/s11199-008-9436-0

- Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology, 90*(5), 751-783. doi:10.1037/0022-3514.90.5.751
- Przedworski, J. M., VanKim, N. A., Eisenberg, M. E., McAlpine, D. D., Lust, K. A., & Laska, M. N. (2015). Self-reported mental disorders and distress by sexual orientation: Results of the Minnesota College Student Health Survey. *American Journal of Preventive Medicine, 49*(1), 29-40. doi:10.1016/j.amepre.2015.01.024
- Rosenbaum, M. E. (1986). The repulsion hypothesis: On the nondevelopment of relationships. *Journal of Personality and Social Psychology, 51*(6), 1156-1166. doi:10.1037/0022-3514.51.6.1156
- Smith, S. J., Axelton, A. M., & Saucier, D. A. (2009). The effects of contact on sexual prejudice: A meta-analysis. *Sex Roles, 61*(3-4), 178-191. doi:10.1007/s11199-009-9627-3
- Qualtrics, Provo, UT, USA. <http://www.qualtrics.com>
- U.S. Census Bureau. (2010). Retrieved from [http:// www.census.gov](http://www.census.gov).
- Whitley, B. R. (2001). Gender-role variables and attitudes toward homosexuality. *Sex Roles, 45*(11-12), 691-721. doi:10.1023/A:1015640318045

Table 1.

*Means, Standard Deviations, t-tests, and Effect Sizes for Gender Comparisons*

Measure	Male ( <i>n</i> = 128)		Female ( <i>n</i> = 447)		<i>t</i>	<i>Cohen's d</i>
	<i>M</i> ( <i>SD</i> )	<i>alpha</i>	<i>M</i> ( <i>SD</i> )	<i>alpha</i>		
Traditional Machismo	26.6 (7.49)	.95	21.4 (5.56)	.96	7.24 ( <i>p</i> < .001)	0.86
Anti-Gay prejudice	42.6 (16.58)	.83	42.5 (18.68)	.70	0.09 ( <i>p</i> = .93)	0.01
Contact	6.66 (4.78)	.81	8.88 (5.01)	.76	-4.47 ( <i>p</i> < .001)	-0.45

Table 2.

*Correlations between Study Variables*

	Anti-Gay Prejudice	Traditional Machismo	Contact
Anti-Gay prejudice		.535**	-.333**
Traditional Machismo	.388**		-.027
Contact	-.434**	-.161**	

Coefficients above the diagonal are for males ( $n = 128$ ). Correlation coefficients below the diagonal are for females ( $n = 447$ ). \*\* $p < .01$ .

Table 3.

*Relationship between Traditional Machismo and Prejudice Mediated by Contact: Gender as a Moderator*

Predictors	Criterion Variables					
	Contact			Anti-gay prejudice		
	B	$\beta$	<i>p</i>	B	$\beta$	<i>p</i>
Traditional Machismo	-0.145	-0.184	0.001	0.949	0.337	<.001
Contact	-			-1.263	-0.349	<.001
Gender	-1.985	-0.394	<.001	-	-	
Traditional Machismo x Gender	0.127	0.162	0.076	-	-	
Constant	8.711	0.065	0.168	53.102	0.000	
	$R^2 = 0.054$ ( $p < .001$ )			$R^2 = 0.275$ ( $p < .001$ )		

B = unstandardized regression coefficient.  $\beta$  = standardized regression coefficient; CI = confidence interval.

*Figure 1.* Moderated mediation model of prejudiced attitudes toward lesbian women and gay men

