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FROM BIAS TO BISEXUAL HEALTH DISPARITIES: ATTITUDES TOWARD BISEXUAL MEN AND WOMEN IN THE UNITED STATES

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Abstract

PUROPSE—A newly emergent literature suggest that bisexual men and women face profound health disparities in comparison to both heterosexual and homosexual individuals. Additionally, bisexual individuals often experience prejudice, stigma, and discrimination from both gay/lesbian and straight communities, termed “biphobia.” However, only limited research exists that

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empirically tests the extent and predictors of this double discrimination. The Bisexualities: Indiana Attitudes Survey (BIAS) was developed to test associations between biphobia and sexual identity.

METHODS—Using standard techniques, we developed and administered a scale to a purposive online sample of adults from a wide range of social networking websites. We conducted exploratory factor analysis to refine scales assessing attitudes toward bisexual men and bisexual women, respectively. Using generalized linear modeling, we assessed relationships between BIAS scores and sexual identity, adjusting for covariates.

RESULTS—Two separately gendered scales were developed, administered, and refined: BIAS-m (n=645), focusing on attitudes toward bisexual men; and BIAS-f (n=631), focusing on attitudes toward bisexual women. Across scales, sexual identity significantly predicted response variance. Lesbian/gay respondents had lower levels of bi-negative attitudes than their heterosexual counterparts (all p-values <.05); bisexual respondents had lower levels of bi-negative attitudes than their straight counterparts (all p-values <.001); and bisexual respondents had lower levels of bi-negative attitudes than their lesbian/gay counterparts (all p-values <.05). Within racial/ethnic minority respondents, biracial/multiracial status was associated with lower bi-negativity scores (all p-values <.05).

CONCLUSION—This study provides important quantitative support for theories related to biphobia and double discrimination. Our findings provide strong evidence for understanding how stereotypes and stigma may lead to dramatic disparities in depression, anxiety, stress, and other health outcomes among bisexual individuals in comparison to their heterosexual and homosexual counterparts. Our results yield valuable data for informing social awareness and intervention efforts that aim to decrease bi-negative attitudes within both straight and gay/lesbian communities, with the ultimate goal of alleviating health disparities among bisexual men and women.

Keywords

Bisexuality; attitudes; bisexual men; bisexual women; stigma

PURPOSE

Data from the 2010 National Survey of Sexual Health and Behavior (NSSHB) demonstrate that 2.6% of adult men and 3.6% of adult women in the United States (U.S.) self-identify as bisexual, as do 1.5% of male and 8.4% of female adolescents ages 14 to 17.¹ These data also show that far more women and men have engaged in sex with both women and men than identify as bisexual. Research on both self-identified and behaviorally bisexual men and women has illuminated numerous and profound differences in physical, mental, sexual and other health outcomes when compared with exclusively homosexual and/or heterosexual men and women in North America. Bisexual health disparities may be found in psychosocial health issues, such as depression, anxiety, substance use, violence victimization, and suicidality; health risk behavior issues, such as unprotected sex, sex work engagement, higher number of sexual partners, frequent use of emergency contraception and pregnancy termination; and biomedical health issues, including disproportionate rates of HIV and other sexually transmitted infections (STI), as well as lower health-related quality of life.²⁻¹⁴ These findings suggest that bisexual men and women are enmeshed in a web of synergistic epidemics (syndemics), in which such disparities interact with one another in a chain

reaction of negative health outcomes propelled by early life adversities including stigma, discrimination, and trauma.^{15–17}

However, many of these disparities and their outcomes have been shown to be buffered by protective factors that increase resiliency, especially social support mechanisms offered by minority community and community-at-large attachments.^{18, 19} Bisexual individuals have been found to have lower levels of these protective factors both within and outside of sexual minority communities, and have reported feeling socially isolated, invisible, and marginalized.^{19–24} Lack of community attachment, reluctance to disclose sexual identity to health care providers, and a tendency for HIV prevention/care delivery to focus on gay communities or “men who have sex with men” (MSM) without appropriate outreach likely limit bisexual men’s uptake of HIV/STI service. Unique barriers to disclosure specific to bisexuality have been linked to concerns of perceived or felt stigma from both heterosexual and homosexual counterparts (i.e., biphobia).^{25–27} Similarly, recent research has shown that young bisexual women are less likely to disclose their sexual orientation to health care providers and that internalized biphobia and sexuality-related stigma appear to be linked to eating disorder symptomatology and other health concerns among bisexual women.^{28–30} Further, HIV prevention and other sexual health services that specifically target bisexual men and women are virtually non-existent.

Important formative work has been conducted that aims to understand the concept of bisexuality in the consciousness of the general population. One study, using a feeling thermometer technique, found that bisexual men and women were viewed less favorably than all other comparison populations provided (including religious, racial, political and sexuality groups), save for injection drug users.³¹ At least two previous scales focusing on perceptions and feelings on the concept of bisexuality have been developed, refined, and tested.^{32–35} Analyses of these scales have demonstrated that men are more likely to have negative attitudes toward bisexuality than women do, and that male bisexuality is more stigmatized than female bisexuality.^{33, 34} However, little work has been done to test how strong these associations are when controlling for other important demographic variables, such as age, race/ethnicity, and income. Previous studies have explored perceptions of the concept of “bisexuality” in both straight and gay/lesbian samples, not necessarily attitudes toward bisexual men and women. This “double discrimination” is critical in helping explain the myriad of health disparities that bisexual men and women face relative to their heterosexual and homosexual peers.²² It is also not known whether, or to what extent, heterosexual and homosexual men and women convey higher biphobic attitudes relative to bisexual men and women themselves.

In order to address these gaps in the literature, we tested how sexual identification affects bias toward bisexual men and women. To do this, we developed and refined a new scale [Bisexualities: Indiana Attitudes Scale (BIAS)] assessing attitudes toward bisexual men and women. We examined findings in a large and diverse sample of participants in the United States recruited by a variety of convenience sampling techniques. We used two variations of this scale (one to assess attitudes toward bisexual women; the other to assess attitudes toward bisexual men) to answer the following research questions. First, what are the differences between self-identified bisexual individuals and heterosexual individuals in

attitudes toward bisexual men and women? Second, what are the differences between self-identified lesbian/gay and heterosexual individuals in attitudes toward bisexual men and women? Third, what are the differences between self-identified bisexual and lesbian/gay individuals in attitudes toward bisexual men and women? Finally, do findings from this scale mirror findings from previously developed scales measuring biphobia? As research has demonstrated pathways between homophobia and adverse health (i.e., “minority stress”) among gay and lesbian individuals, a better understanding of the prevalence and nature of biphobia will assist with identifying ways in which to alleviate associated health disparities among bisexual men and women.

METHODS

Item elicitation

Classroom surveys were conducted with 300 undergraduate students at Indiana University – Bloomington in July 2010. In addition to demographic information, participants provided open-ended responses to a series of questions assessing descriptive information related to attitudes toward bisexuality (generally), as well as toward bisexual men and women separately. These data were collected, organized, and analyzed thematically in order to assist with constructing scale items to be used in a subsequent survey. Open-ended questions are included in Appendix 1.

Scale development and survey

Based on the item elicitation, the study team used these responses to construct two slightly different 33-item measures entitled Bisexualities: Indiana Attitudes Scale (BIAS) to explore respondents’ attitudes toward bisexual men (BIAS-m) and toward bisexual women (BIAS-f). Items were reviewed by an expert panel of 3 doctoral-level researchers to ensure consensus on quality and integrity (particularly translating item elicitation themes into questions). Using convenience sampling over a wide range of general interest websites and listservs, we launched a brief online survey [Qualtrics] in June 2011 including the BIAS, as well as a variety of sociodemographic characteristics, including race/ethnicity, age, income, and sexual identity. Participants were given the opportunity to self-identify their sexual orientation as heterosexual, gay/lesbian, bisexual, other (specify), or none. Respondents were asked to complete one set of both BIAS-f and BIAS-m surveys (presented in random order), with a 5-item Likert response pattern. After completing the online survey, participants were able to register separately for an ePrize “lottery” for a chance to win 1 of 10 \$25 Visa gift cards. A total of 1421 consented to taking part in the study and, although response rates to individual items vary, approximately 91% completed the entire survey. All study protocols were approved by the authors’ respective Institutional Review Boards. We recoded the items with positive directionality (6 items in each scale) and summed responses for all participants who completed each scale, subtracting the total number of items.

Statistical analysis

For each of the BIAS-m and BIAS-f scales, we performed an exploratory factor analysis with orthogonal rotation on a Pearson correlation matrix on to determine the extent to which each item contributed to the overall variance in response, and to determine an ideal number

of factors described by the items. We then refined both BIAS-m and -f surveys, eliminating items that did not load on factors at $>.30$ or higher. We then summed BIAS-m and BIAS-f scores to develop a total BIAS scale score among participants completing both surveys in full. We conducted generalized linear modeling with gamma distributions, as a result of the right-skewness of scale response distributions, to analyze associations between BIAS scores and sexual identity, controlling for female gender, annual income less than \$25,000, minority race/ethnicity, and age greater than 25. For each of the three scales, we conducted pairwise contrasts by sexual identity to compare the effect of heterosexual, homosexual, and bisexual identity on scale scores. (Given the small number of participants who self-identified their sexual orientation as “other” or “none,” and the resulting lack of statistical power, “other/none”-identified individuals were removed from further analyses.) After computing a variable indicating identification as biracial, mixed race, or multiracial, we conducted generalized linear modeling within the racial/ethnic minority group to test whether biracial/multiracial status was associated with lower BIAS-m and BIAS-f scores, adjusting for sociodemographics above and for sexual minority identity. To test whether bias against bisexual men was greater than bias against bisexual women, we produced the mean score for each test subject and used pairwise t-tests and Wilcoxon signed rank sum tests to compare continuous scores between respondents completing both BIAS-m and BIAS-f scales. To test for differences in attitudes toward individual negative questions, we dichotomized responses (strongly agree/agree vs. all others) and performed multivariate logistic regressions, controlling for the sociodemographics above. Analyses were performed using SPSS v.20.

RESULTS

Item elicitation and survey refinement

Responses to the initial open-ended survey directly informed the construction of 33 items for BIAS-m and 32 items for BIAS-f assessing attitudes toward bisexual men and women. Participants provided a variety of responses to the open-ended questions, including (for example): *What are the first 3 words that come to mind when you hear the word ‘bisexual?’* Gender-related differences were readily apparent, confirming the need for separate survey sub-scales exploring attitudes toward bisexual men and bisexual women.

Exploratory factor analysis

Post-hoc discussion between 3 doctoral-level researchers revealed that 5 items could be classified as potentially bivalent (i.e., having both positive and negative attributes). These items were excluded from the dataset. 645 people completed the 28-item, 5-category Likert scale for BIAS-m; 631 people completed the 27-item, 5-category Likert scale for BIAS-f. Exploratory factor analysis was performed on each scale using a principal axis factoring extraction method with orthogonal rotation on a Pearson correlation matrix. BIAS-m included 6 positively- and 22 negatively-worded items; BIAS-f included 7 positively- and 20 negatively-worded items.

The first factor, which explained 38.2% of the variance of items in BIAS-m and 40% of the variance for BIAS-f, measured perceptions of bisexual confusion and related attributes of hypersexuality and danger. It was measured by 23 items in BIAS-m and 22 items in BIAS-f.

Factor loadings ranged from .395 to .794 for BIAS-m and .437 to .793 for BIAS-f. The second factor, which explained 7.2% of the variance of items for BIAS-m and 7.5% of the variance of items for BIAS-f measured sexual appeal (5 items each). The factor loadings ranged from .322 to .510 for BIAS-m and .430 to .580 for BIAS-f. Two items for BIAS-m (“Compared to other men, bisexual men have a lot more sexual partners” and “bisexual men are very sexy”) and two items for bisexual women (“Compared to other women, bisexual women have a lot more sexual partners” and “bisexual women are just experimenting with their sexuality”) loaded on both factors, but unequally (see Table 1). The communalities in each scale were all above .30, except for 2 items in BIAS-m. The items, “Compared to other men, I think bisexual men are more open to new sexual experiences” and “Compared to other men, bisexual men are less constrained by social norms,” had the lowest communalities at .290 and .187, respectively. The two factors were not significantly correlated (.054) and were eliminated from the scale in survey results analysis. For the BIAS-m scale as a whole (26 items), Cronbach’s alpha was .937; for the BIAS-f scale as a whole (27 items), Cronbach’s alpha was .920 (see Appendices for scale items and response patterns).

Survey results

A total of 645 people fully completed the 26-item BIAS-m scale on attitudes toward bisexual men. The median age was 18–24 (range 18–73: mean=32.1; s.d.=11.7). 50.3% of the sample was male; 48.8% were female; 0.9% identified as transgender or gender-queer. The vast majority identified as white (85.8%); 2.7% as Black; 2.3% as Hispanic; and 4.8% as biracial/multiracial. Over half of the participants (58.7%) identified themselves as heterosexual; 28.7% as bisexual; 8.9% as gay/lesbian; and 3.7% as either “uncertain” of their sexual orientation or used the term “other.” 39.8% reported making less than \$25,000 annually. 631 people fully completed the 27-item BIAS-f scale on attitudes toward bisexual women. The median age was 25–34. 47.9% of the sample was male; 50.6% female; and 1.4% transgender or gender-queer. The majority identified as white (89.0%); 2.3% as Black; 3.2% as Hispanic; and 3.9% as biracial/multiracial. 38.9% reported making less than \$25,000 annually (see Table 2).

After recoding positive items to negative counts, summing participants’ scores, and subtracting the total number of retained items (26) from the sum, the mean BIAS-m score was 29.0 (s.d.=+–15.65). In this instrument, higher scores indicated greater negative perceptions of bisexual men. Table 3 shows that female gender was significantly associated with lower BIAS scores toward bisexual men ($B = -.215, P < .001$). Racial/ethnic minority status was marginally associated with higher BIAS scores toward bisexual men in Model 1 ($B = .112, P < .10$). Income and age, respectively, were not associated with significantly different BIAS scores.

Table 4 shows that gay/lesbian respondents had significantly lower BIAS-m scores than heterosexual respondents (24.53 vs. 34.23, $P < .001$); bisexual respondents had significantly lower BIAS-m scores than heterosexual respondents (19.61 vs. 34.23, $P < .001$); and bisexual respondents had significantly lower BIAS-m scores than their gay/lesbian counterparts (19.61 vs. 24.53, $P < .05$). In a model that regressed sexual identity on BIAS-m scores within

racial/ethnic minorities, lower scores were significantly associated with income over \$25,000 ($B = -.331$; $P < .05$), female gender ($B = -.362$; $P < .001$), homosexual/bisexual identity ($B = -.493$; $P < .001$), and biracial/multiracial status ($B = -.259$; $P < .05$) (data not shown).

After recoding positive items to negative counts, summing participants' scores, and subtracting the total number of retained items (27) from the sum, the mean BIAS-f score was 26.5 (s.d.=+13.85). In this instrument, higher scores indicated greater negative perceptions of bisexual women. Table 3 shows that being female was significantly associated with lower BIAS scores toward bisexual women ($B = -.139$, $P < .01$). Racial/ethnic minority status was associated with higher BIAS scores toward bisexual women ($B = .137$, $P < .05$). Age and income were not associated with significantly different BIAS-f scores. Table 4 shows that homosexual respondents had significantly lower BIAS-f scores than heterosexual respondents (25.51 vs. 30.63, $P < .05$); bisexual respondents had significantly lower BIAS-f scores than heterosexual respondents (18.98 vs. 30.63, $P < .001$); and bisexual respondents had significantly lower BIAS-f scores than their lesbian/gay counterparts (18.98 vs. 25.51, $P < .01$). In a model that regressed sexual identity on BIAS-f scores within racial/ethnic minorities, lower scores were significantly associated with income over \$25,000 ($B = -.210$; $P < .01$), homosexual/bisexual identity ($B = -.188$; $P < .01$), and biracial/multiracial status ($B = -.412$; $P < .05$) (data not shown).

Further, 548 people completed attitudes to both bisexual men and bisexual women (see Table 3). Scores were highly correlated (.84 correlation; Pearson's two-tailed: $p < .001$). Table 3 shows that being female was significantly associated with lower total BIAS scores toward bisexual individuals ($B = -.163$, $P < .001$). Age, racial/ethnic minority status, and income were not associated with higher total BIAS scores. Table 4 shows that homosexual respondents had significantly lower total BIAS scores than heterosexual respondents (50.72 vs. 64.95, $P < .01$); bisexual respondents had significantly lower total BIAS scores than heterosexual respondents (38.14 vs. 64.95, $P < .001$); and bisexual respondents had significantly lower total BIAS scores than their homosexual counterparts (38.14 vs. 50.72, $P < .01$).

We computed a score for each participant on each scale, taking into account the number of questions asked (Men/26; Fem/27) and compared attitudes to each gender of bisexual individuals among these 548 participants. Using a paired sample t-test, we found that participants had significantly higher negative attitudes toward bisexual men than toward bisexual women ($p < .001$), by 2.5% (mean difference=0.114; standard error mean=0.014; $t = -8.177$); this was confirmed by a Wilcoxon signed rank sum test ($z = -7.976$, $p < .001$) (data not shown). Overall, 14.4% of respondents did not endorse bisexuality for men or women as a legitimate sexual orientation. Straight males were significantly more likely than other sexuality/gender groups to disagree or disagree strongly that bisexuality was a legitimate sexual orientation in a model controlling for income, race/ethnicity, and age (AOR=3.0; 95% CI: 1.8, 4.8) for BIAS-f; (AOR=3.0; 95% CI: 1.7, 5.3) for BIAS-m (data not shown).

CONCLUSION

Numerous health disparities exist among bisexual men and women in comparison to their exclusively heterosexual and homosexual counterparts. Previous researchers have posited that these differences are due, in part, to the unique “double discrimination” experienced by bisexual individuals from both straight and gay/lesbian individuals. Previous research has examined gender and racial/ethnic differences in perceptions on the concept of “bisexuality.” This study has confirmed these earlier findings using a different scaling process. In addition, by demonstrating that, even controlling for race/ethnicity and gender, bisexual men and women face significantly more negative attitudes from both heterosexual and gay/lesbian-identified individuals relative to bisexually-identified individuals, our findings indicate that perceptions of double discrimination are grounded in reality. Our results suggest that biphobia is a phenomenon distinct from homophobia, and appears to be slightly amplified when directed to bisexual men relative to women, confirming previous theory.³⁶

While gay/lesbian-identified individuals responded with less bias toward both bisexual men and women than do heterosexually-identified individuals, our findings that they are less accepting than bisexually-identified individuals are of concern, and indicate that nominally inclusive “LGBT” support mechanisms may not be as relevant to bisexual individuals as they are to gay men and lesbian women. Our results demonstrating that biracial/multiracial individuals reported significantly lower bias toward bisexual individuals than other racial/ethnic minorities is compelling. This suggests that an identification that incorporates one liminal social space creates a higher acceptance of others who occupy other liminal social spaces, “between two worlds,” perhaps due to a shared understanding the pressures related to dual identity.³⁷

In view of the results from this study, we strongly recommend that interventions developed to reduce stigma be designed and/or adapted to address bisexual men and women and be targeted toward both heterosexual and gay/lesbian individuals and communities. Reducing levels of perceived and endured stigma will likely lead to increased disclosure of bisexual behavior and identity to families, peers, partners, and medical and mental health care providers. Increased disclosure of bisexuality will ideally in turn lead to lower levels of isolation and higher levels of social support, as has been demonstrated in the “gay liberation” movement by gay men and lesbian women. Facilitating mechanisms to meaningfully increase social support from both heterosexual and gay/lesbian communities is critical to reducing the profound syndemic health disparities among bisexual men and women. Such interventions have the potential to bring about greater feelings of attachment and belonging – which could diminish disparities including depression, anxiety and substance use. If they are able to impact disclosure rates to health care providers, interventions will contribute to higher uptake of relevant services, including HIV prevention, testing, and treatment for at-risk bisexual men and women. In short, by diminishing pervasive negative attitudes toward bisexual individuals in both gay and straight communities, interventions focused on increasing social awareness and acceptance of bisexuality as a legitimate and valid sexual orientation will likely have a major impact on the

“dual minority stress” experienced by bisexual men and women in the United States and, thus, over time lead to lower rates of adverse mental health issues.

For healthcare providers who work outside the context of intervention development and delivery, the findings from our study have implications for meeting the specific health needs of bisexual men and women. Clinical practitioners should be aware of the possibility that their bisexual patients and clients may face unique stressors that may place them at elevated risk for health concerns, particularly in terms of mental health, and be equipped to deal with them accordingly. If practitioners are not comfortable or confident in their ability to work with bisexual men and women in pragmatic and nonjudgmental ways, they should have the resources to refer bisexual clients to places where they can receive appropriate evaluation, treatment, and care. Health policy advocates who work to provide relevant and accessible healthcare to lesbian, gay, bisexual, and transgender (LGBT) populations should ensure that resources are available to specifically address and meet the needs of bisexual men and women.

This study has several important limitations. First, the item elicitation phase for this scale was based on responses from a convenience sample of undergraduate students at one Midwestern university, and may not fully represent the attitudes of people who are older or who reside in other geographical areas. The survey itself utilized an Internet-based convenience sample that relied on social marketing websites for recruitment. This sampling strategy had the benefit of recruiting large numbers of bisexually-identified men and women, allowing us to compare them with heterosexual and gay/lesbian individuals. However, the respondents were also predominately young and white, compared to the U.S. general population. Correlation between survey responses toward bisexual men and women were so strong that it may not be appropriate statistically to conjoin them and compare responses toward bisexual individuals as a whole. However, our findings are externally consistent with other quantitative and qualitative research on stigma faced by bisexual men and women; and they are internally consistent, with sexual identity a highly significant predictor of bias toward bisexual individuals in each of the two sub-scales. The concept of “bisexuality,” in general, has been critiqued in that it inherently assumes a “binary” view of gender and does not take into account diverse forms of gender expression that are not limited to “male” or “female.” Future research would benefit from exploring attitudes toward bisexual transgender, gender-queer, and other groups of individuals who may not identify as male or female. Additionally, as in other surveys, a small number of individuals self-identified their sexual orientation as “other” and, due to the inability to meaningfully compare their responses in this study, these individuals were removed from analyses. An interesting aim for future research could be to explore attitudes toward bisexuality among individuals who do not self-identify their sexual orientation with “traditional” labels, or who do not label themselves at all. Lastly, although it was not the aim of our study to explore previously established health disparities among bisexual men and women, the pervasive prevalence of negative attitudes toward bisexual men and women is likely one of a number of other complex factors that continue to exacerbate higher rates of negative health outcomes among bisexual men and women. After documenting the widespread existence of negative attitudes toward bisexual men and women among heterosexual and gay/lesbian communities, we encourage future research which explores aforementioned intervention

opportunities for assessing and eliminating biphobia – for example, among clinicians and other service providers – and determining how health disparities among bisexual men and women can be directly alleviated.

The findings presented herein are exploratory and formative. Further research must be performed on these scales with larger, probability-based samples in order to derive information that is generalizable to the U.S. population. Nonetheless, these results and the rapidly growing body of bisexual health disparities research indicate that the design, implementation, and evaluation of interventions devoted toward reducing double discrimination are long overdue. To diminish stigma toward bisexuality in both gay/lesbian and straight communities-at-large, we can envision the development and testing of social marketing interventions using established frameworks (similar, for example, to Acceptance Journeys, a campaign piloted in Wisconsin to reduce sexuality-related stigma in the African American community).³⁸ Our results strongly suggest that bisexual-specific stigma reduction efforts would be targeted most effectively at heterosexual males, gay/lesbian communities, and racial/ethnic minority communities-at-large. Further, examining the utility of a reworded BIAS scale to predict variance in internalized biphobia would help evaluate the effectiveness of such interventions on the self-acceptance among bisexual men and women themselves.

It is clear that bisexual men and women face behavioral, psychosocial, and biomedical consequences of marginalization and isolation from both heterosexual and homosexual individuals and communities. Based on the successes of the gay/lesbian community in gaining visibility and acceptance from the community-at-large, we remain hopeful that further efforts aimed at reducing stigma toward and increasing acceptance of bisexuality will diminish the burden of health disparities experienced by bisexual men and women.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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REFERENCES

1. Herbenick D, Reece M, Schick V, et al. An event-level analysis of the sexual characteristics and composition among adults ages 18 to 59: Results from a national probability sample in the United States. *J Sex Med.* 2010; 7:346–361. [PubMed: 21029390]
2. Goodenow C, Netherland J, Szalacha L. AIDS-related risk among adolescent males who have sex with males, females, or both: evidence from a statewide survey. *Am J Pub Health.* 2002; 92:203–210. [PubMed: 11818292]
3. Pathela P, Schillinger JA. Sexual behaviors and sexual violence: Adolescents with opposite-, same-, or both-sex partners. *Pediatrics.* 2010; 126:879–886. [PubMed: 20974791]

4. Dodge, B.; Sandfort, TG. A review of mental health research on bisexual individuals when compared to homosexual and heterosexual individuals. In: Firestein, BA., editor. *Becoming Visible: Counseling Bisexuals Across the Lifespan*. New York: Columbia University Press; 2007. p. 28-51.
5. Friedman MR, Kurtz SP, Buttram ME, et al. HIV risk among substance-using men who have sex with men and women (MSMW): Findings from south Florida. *AIDS Behav.* 2013;1-9. [PubMed: 23054037]
6. Dodge B, Schnarrs PW, Goncalves G, et al. The significance of privacy, trust, and comfort in providing health-related services to behaviorally bisexual men. *AIDS Educ Prev.* 2012; 24:242-256. [PubMed: 22676463]
7. Conron KJ, Mimiaga MJ, Landers SJ. A population-based study of sexual orientation identity and gender differences in adult health. *Am J Pub Health.* 2010; 100:1953-1960. [PubMed: 20516373]
8. Fredriksen-Goldsen KI, Kim H-J, et al. Disparities in health-related quality of life: A comparison of lesbians and bisexual women. *Am J Pub Health.* 2010; 100:2255-2261. [PubMed: 20864722]
9. Kerr DL, Ding K, Thompson AJ. A comparison of lesbian, bisexual, and heterosexual female college undergraduate students on selected reproductive health screenings and sexual behaviors. *Women's Health Issues.* 2013; 23:e347-e355. [PubMed: 24183409]
10. Herrick A, Kuhns L, Kinsky S, et al. Demographic, psychosocial, and contextual Factors associated with sexual risk behaviors among young sexual minority women. *J Am Psychiatr Nurses Assoc.* 2013; 19:345-355.
11. Matthews AK, Cho YI, Hughes T, et al. The Relationships of sexual identity, hazardous drinking, and drinking expectancies with risky sexual behaviors in a community sample of lesbian and bisexual women. *J Am Psychiatr Nurses Assoc.* 2013; 19:259-270.
12. Tornello SL, Riskind RG, Patterson CJ. Sexual orientation and sexual and reproductive health among adolescent young women in the United States. *J Adolesc Health.* 2014; 54:160-168. [PubMed: 24157195]
13. Friedman MS, Marshal MP, Guadamuz TE, et al. A meta-analysis of disparities in childhood sexual abuse, parental physical abuse, and peer victimization among sexual minority and sexual nonminority individuals. *Am J Pub Health.* 2011; 101:1481. [PubMed: 21680921]
14. Walters, ML.; Chen, J.; Breiding, MJ. *The National Intimate Partner and Sexual Violence Survey (NISVS): 2010 findings on victimization by sexual orientation*. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention; 2013.
15. Stall, R.; Friedman, M.; Catania, JA. Interacting epidemics and gay men's health: A theory of syndemic production among urban gay men. In: Wolitski, RJ.; Stall, R.; Valdiserri, RO., editors. *Unequal opportunity: Health disparities affecting gay and bisexual men in the United States*. Oxford: Oxford University Press; 2008. p. 251-274.
16. Herrick AL, Lim SH, Plankey MW, et al. Adversity and syndemic production among men participating in the Multicenter AIDS Cohort Study: a life-course approach. *Am J Pub Health.* 2013; 103:79-85. [PubMed: 23153154]
17. Operario D, Nemoto T. HIV in transgender communities: syndemic dynamics and a need for multicomponent interventions. *JAIDS.* 2010; 55(1999):S91. [PubMed: 21406995]
18. Herrick AL, Lim SH, Wei C, et al. Resilience as an untapped resource in behavioral intervention design for gay men. *AIDS Behav.* 2011; 15:25-29.
19. Saewyc EM, Homma Y, Skay CL, et al. Protective factors in the lives of bisexual adolescents in North America. *Am J Pub Health.* 2009; 99:110-117. [PubMed: 19008523]
20. Dodge B, Schnarrs PW, Reece M, et al. Community involvement among behaviourally bisexual men in the Midwestern USA: experiences and perceptions across communities. *Cult Sex Health.* 2012; 14:1095-1110.
21. Mulé NJ, Ross LE, Deeprose B, et al. Promoting health and wellbeing through inclusive policy development. *Int J Equity Health.* 2009; 8:18. [PubMed: 19442315]
22. Ochs, R. Biphobia: It goes more than two ways. In: Firestein, BA., editor. *Bisexuality: The psychology and politics of an invisible minority*. Thousand Oaks, CA: Sage; 1996. p. 217-239.
23. Schick V, Rosenberger JG, Herbenick D, et al. Bidentity: Sexual behavior/identity congruence and women's sexual, physical, and mental well-being. *J Bisex.* 2012; 12:178-197.

24. Udis-Kessler, A. Bisexuality in an essentialist world: Toward an understanding of biphobia. In: Geller, T., editor. *Bisexuality: A Reader and Sourcebook*. Ojai, CA: Times Change Press; 1990. p. 51-63.
25. Bernstein KT, Liu KL, Begier EM, et al. Same-sex attraction disclosure to health care providers among New York City men who have sex with men: implications for HIV testing approaches. *Arch Int Med*. 2008; 168:1458–1464. [PubMed: 18625927]
26. Miller, M.; Andre, A.; Ebin, J., et al. *Bisexual Health: An Introduction and Model Practices For HIV/STI Prevention Programming*. New York, New York: National Gay and Lesbian Task Force; 2007.
27. Shoptaw S, Weiss RE, Munjas B, et al. Homonegativity, substance use, sexual risk behaviors, and HIV status in poor and ethnic men who have sex with men in Los Angeles. *J Urban Health*. 2009; 86(Suppl 1):77–92. [PubMed: 19526346]
28. Meckler GD, Elliott MN, Kanouse DE, et al. Nondisclosure of sexual orientation to a physician among a sample of gay, lesbian, and bisexual youth. *Arch Ped Adolesc Med*. 2006; 160:1248.
29. Polek CA, Hardie TL, Crowley EM. Lesbians' disclosure of sexual orientation and satisfaction with care. *J Transcult Nurs*. 2008; 19:243–249. [PubMed: 18445760]
30. Brewster ME, Velez BL, Esposito J, et al. moving beyond the binary with disordered eating research: A test and extension of objectification theory with bisexual women. *J Couns Psych*. 2014; 61:50–62.
31. Herek GM. Heterosexuals' attitudes toward bisexual men and women in the United States. *J Sex Res*. 2002; 39:264–274. [PubMed: 12545409]
32. Mulick PS, Wright LW Jr. Examining the existence of biphobia in the heterosexual and homosexual populations. *J Bisex*. 2002; 2:45–64.
33. Mulick PS, Wright LW Jr. The biphobia scale a decade later: Reflections and additions. *J Bisex*. 2011; 11:453–457.
34. Yost MR, Thomas GD. Gender and binegativity: Men's and women's attitudes toward male and female bisexuals. *Arch Sex Behav*. 2012; 41:691–702. [PubMed: 21597943]
35. Mohr JJ, Rochlen AB. Measuring attitudes regarding bisexuality in lesbian, gay male, and heterosexual populations. *J Couns Psych*. 1999; 46:353.
36. Arndt M, De Bruin G. Attitudes toward lesbians and gay men relations with gender, race and religion among university students. *Psych in Soc*. 2006; 33:16–30.
37. Dworkin SH. Biracial, bicultural, bisexual: Bisexuality and multiple identities. *J Bisex*. 2002; 2:93–107.
38. Hull SJ, Gasiorowicz M, Hollander G, Short K. Using theory to inform practice the role of formative research in the construction and implementation of the acceptance journeys social marketing campaign to reduce homophobia. *Soc Mar Q*. 2013; 19:139–155.

TABLE 1

Factor pattern matrix of Bisexualities: Indiana Attitudes Scale-Males (BIAS-m).

	Factor		H-squared
	Sexual confusion and related social risks	Sexual appeal to others	
Can't make up their minds	.794		.657
Confused about sexuality	.775		.633
Slutty	.719		.529
Untruthful	.717		.533
Unsure of sexual attractions	.716		.540
Strange	.714		.546
Actually gay	.711		.584
Hypersexual	.707		.515
Trying to be trendy with sexuality	.698		.482
Incapable of being faithful	.697		.525
Immoral	.688		.484
Likely to cheat on partner	.684		.505
Present STD risks	.669		.464
Legitimate sexual orientation	.667		.536
Incapable of loving one person	.639		.442
Just a phase	.634		.397
Just experimenting with sexuality	.621		.377
Like to have group sex	.595		.430
Have a lot more sexual partners	.541	.317	.360
Remind one of HIV	.534		.289
Actually straight	.518		.286
Very feminine	.510		.280
Fall in love with men and women	.395		.155
Sexually appealing	.432	.514	.427
Sexual expertise		.494	.197
Heterosexual women want to date		.425	.211

* Factors loading below .30 were suppressed from table.

TABLE 2

Sociodemographics of participants completing BIAS-m and BIAS-f scales

Sociodemographics		N(BIAS-m)=645	N (BIAS-f)=631
Age			
	18–24	217	202
	25–34	202	210
	35–44	117	114
	45–54	72	66
	55 and over	35	37
Gender			
	Male	324	302
	Female	314	319
	Transgender/gender-queer	6	9
Race			
	American Indian	1	1
	Asian	15	8
	Black/African American	17	14
	Hispanic or Latino	26	20
	Hawaiian/Pacific Islander	1	1
	White/Caucasian/European	550	551
	More than one race	31	24
Sexual identity			
	Heterosexual	370	354
	Bisexual	181	182
	Homosexual	56	50
	Uncertain/Other	23	26
Annual income (USD, after taxes)			
	<\$25,000	255	244
	\$25,000–\$49,999	152	158
	\$50,000–\$74,999	98	95
	>\$75,000	135	130

TABLE 3
 Associations between sexual identity and BIAS scores, adjusted for income, gender, age, racial/ethnic minority status.

Variable	Model 1: BIAS-m			Model 2: BIAS-f			Model 3: Total BIAS		
	Beta	s.e.	P	Beta	s.e.	P	Beta	s.e.	P
Intercept	3.083	.0668	.000	3.012	.0658	.000	3.831	.0932	.000
Income >\$25,000	-.025	.0548	.645	-.055	.0531	.300	-.036	.0557	.518
Female	-.215	.0438	.000	-.139	.0427	.001	-.163	.0452	.000
<25 years old	-.007	.0551	.901	.066	.0538	.220	.042	.0561	.458
Racial or ethnic minority	.112	.0590	.058	.137	.0650	.035	.098	.0996	.324
Sexual identity									
Heterosexual	.557	.0465	.000	.479	.0455	.000	.532	.0473	.000
Homosexual	.224	.0798	.005	.296	.0807	.000	.285	.0831	.001
Uncertain	.236	.1117	.035	.351	.0064	.001	.306	.1184	.010
Bisexual (REFERENT)	--	--	--	--	--	--	--	--	--

Table 4

Estimated mean differences in BIAS scores: contrasts by sexual identity of respondents*

	Heterosexual	Homosexual	Bisexual	Mean difference	S.E. (mean difference)	P-value
BIAS-m score	34.23	24.53	--	9.70	1.92	.000
	34.23	--	19.61	14.62	1.17	.000
	--	24.53	19.61	4.93	1.87	.025
BIAS-f score	30.63	25.51	--	5.12	1.99	.030
	30.63	--	18.98	11.65	1.07	.000
	--	25.51	18.98	6.53	1.96	.004
Total BIAS score	64.95	50.72	--	14.23	4.08	.002
	64.95	--	38.14	26.81	2.29	.000
	--	50.72	38.14	12.58	4.00	.007

* Model adjusted for age, income, race/ethnicity, and gender.