

# The Relationship Between Discrimination and Substance Use Disorders Among Lesbian, Gay, and Bisexual Adults in the United States

Sean Esteban McCabe, PhD, MSW, Wendy B. Bostwick, PhD, MPH, Tonda L. Hughes, PhD, RN, Brady T. West, MA, and Carol J. Boyd, PhD, MSN

Substance use disorders have been shown to be more prevalent among lesbian, gay, and bisexual (LGB) adults than among heterosexual adults in the United States.<sup>1–6</sup> Despite this evidence, little empirical work has focused on why such differences exist between LGB and heterosexual adults. Many studies have posited that differences in rates of mental health problems and substance abuse are related to social stressors such as discrimination,<sup>7–11</sup> yet no large-scale national studies have examined the relationship between multiple types of discrimination and substance use disorders. Meyer's minority stress model posits that discrimination, internalized homophobia, and social stigma can create a hostile and stressful social environment for LGB adults that contributes to mental health problems, including substance use disorders.<sup>10,11</sup> An assumption of this model is that minority stress is unique and additive to general stressors that all people experience.

Meyer's model connects the literature demonstrating higher odds of mental health problems and substance use disorders among LGB populations with well-established social science research that demonstrates the link between stress or stressful life events and poor health outcomes.<sup>12–15</sup> Lesbian, gay, and bisexual adults experience discrimination at the structural and institutional level, such as in access to housing, employment, medical care, and basic civil rights,<sup>16,17</sup> as well as at the individual level in the form of harassment and violence.<sup>18–22</sup> Discriminatory experiences have been shown to operate as stressors in the lives of LGB people and, in turn, they are significantly associated with psychiatric disorders,<sup>9</sup> psychological distress,<sup>9,20,23</sup> and depressive symptoms.<sup>20,24</sup>

Although the minority stress model provides a useful theoretical framework for understanding health disparities among LGB adults, only a handful of studies have directly assessed discrimination among LGB populations, and

**Objectives.** We examined the associations between 3 types of discrimination (sexual orientation, race, and gender) and substance use disorders in a large national sample in the United States that included 577 lesbian, gay, and bisexual (LGB) adults.

**Methods.** Data were collected from wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions, which used structured diagnostic face-to-face interviews.

**Results.** More than two thirds of LGB adults reported at least 1 type of discrimination in their lifetimes. Multivariate analyses indicated that the odds of past-year substance use disorders were nearly 4 times greater among LGB adults who reported all 3 types of discrimination prior to the past year than for LGB adults who did not report discrimination (adjusted odds ratio=3.85; 95% confidence interval=1.71, 8.66).

**Conclusions.** Health professionals should consider the role multiple types of discrimination plays in the development and treatment of substance use disorders among LGB adults. (*Am J Public Health.* 2010;100:1946–1952. doi:10.2105/AJPH.2009.163147)

even fewer have examined the relationships between discrimination and health outcomes. Extant research on health outcomes related to discrimination has focused on blood pressure,<sup>17</sup> psychological distress,<sup>24,25</sup> mental health disorders,<sup>9</sup> and general psychological and physical health.<sup>26</sup> Given that exposure to both acute and chronic stress has long been associated with substance abuse and relapse in the general population,<sup>26,27</sup> research on the association between experiences of discrimination and substance use disorders among LGB adults is warranted.

In our investigation, we assumed that LGB adults are at heightened risk for substance use disorders as a consequence of cultural and environmental factors associated with being part of a stigmatized and marginalized population, not because of their sexual orientation. Building on previous work documenting the impact of multiple stigmatized statuses among sexual minority people<sup>11,28,29</sup> as well as the work of Krieger et al.,<sup>16</sup> we sought to examine the relationships between 3 types of discrimination (sexual orientation, race/ethnicity, and gender)

and substance use disorders. We used data from wave 2 of the 2004–2005 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) to test the hypothesis that LGB adults who reported more types of discrimination would be more likely to meet criteria for substance use disorders than would those who reported fewer types or who did not report discrimination.

## METHODS

The 2004–2005 NESARC (wave 2) surveyed a large nationally representative sample of 34 653 adults who reside in the United States. The target population for wave 2 was the civilian, noninstitutionalized population in the United States, aged 20 years and older (at wave 2); sampled adults were first interviewed in 2001 and 2002 (wave 1). Because questions related to sexual orientation and sexual orientation discrimination were not included in wave 1, our analyses focused on data from wave 2. The 2004–2005 NESARC collected data in face-to-face interviews conducted in

respondents' households. The United States Bureau of the Census trained interviewers in the use of the Alcohol Use Disorder and Associated Disabilities Interview Schedule IV (AUDADIS-IV)—*Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)*.<sup>30,31</sup> The response rate for wave 1 (2001–2002) was 81.0% and the response rate among those eligible for wave 2 (2004–2005) was 86.7%, resulting in a cumulative response rate of 70.2%. More details about the NESARC design and methods are reported elsewhere.<sup>32–34</sup> The US Census Bureau and the US Office of Budget and Management approved the NESARC research protocol. The University of Michigan institutional review board approved this study.

### Measures

Demographic and background characteristics included sex, age, race/ethnicity, and personal income. These variables were used to describe the sample and served as control variables in the multivariate analyses.

Sexual identity was assessed by showing respondents a preprinted response card and asking them to select the category that best described them. Response options included (1) heterosexual (straight), (2) gay or lesbian, (3) bisexual, or (4) not sure. Those who answered “not sure” were omitted from analysis.

Discrimination was measured by using questions derived from the Experiences of Discrimination scales developed by Krieger et al. to assess discrimination on the basis of sexual orientation, race/ethnicity, and gender.<sup>16,34,35–37</sup> The sexual orientation discrimination measure contained questions that asked LGB respondents to report how often they experienced discrimination because they were assumed to be gay, lesbian, or bisexual. Six types of sexual orientation discrimination were assessed: (1) ability to obtain health care or health insurance coverage; (2) health care treatment; (3) in public settings such as on the street, in stores, or in restaurants; (4) other situations such as obtaining a job or on the job, getting admitted to a school or training program, in the courts, or by the police; (5) verbal harassment; and (6) physical assault or threats of harm. Response options for each type of discrimination ranged from never=0 to very often=4. Consistent with

previous work, responses were dichotomized (any or none) and indices of any discrimination were created by summing responses to the 6 questions.<sup>16,36,37</sup> The racial/ethnic discrimination measure contained questions that paralleled those in the sexual orientation discrimination measure. The gender discrimination measure was also parallel except it excluded the sixth question about physical assault or threats of harm.<sup>34</sup> Questions asked about discrimination experiences in the past 12 months (past-year discrimination) and prior to the past 12 months (lifetime discrimination). Consistent with previous work,<sup>16</sup> we created a multiple discrimination variable that indicated whether participants reported experiencing 1, 2, or 3 types of discrimination on the basis of sexual orientation, race/ethnicity, and gender.

Substance use disorders were assessed with *DSM-IV* criteria from the AUDADIS-IV, which contains symptom questions used to operationalize *DSM-IV* abuse and dependence separately for 10 substances (alcohol, marijuana, cocaine, hallucinogens, inhalants, heroin, sedatives, tranquilizers, pain medications, and stimulants). A diagnosis of past-year substance abuse requires the absence of a diagnosis of dependence and the presence of at least 1 of 4 *DSM-IV* abuse criteria in the 12 months preceding the interview. A past-year substance dependence diagnosis is based on presence of at least 3 of the 7 *DSM-IV* dependence criteria in the 12 months preceding the interview. In these analyses, abuse and dependence were combined and a diagnosis of substance use disorder required that the *DSM-IV* abuse or dependence criteria be met for at least 1 of the 10 substances. Reliability and validity of *DSM-IV* diagnoses of substance use disorders based on AUDADIS-IV measures in the past 12 months have been established in numerous psychometric studies.<sup>38–48</sup> For example, the test–retest reliability of these diagnoses has been shown to be 0.76 (alcohol abuse and dependence), 0.78 (marijuana abuse and dependence), and 0.79 (any drug abuse and dependence).<sup>41</sup>

### Data Analysis

The NESARC used a complex multistage sample design featuring stratification and clustering of the target population to select the sample. Sampling weights for wave 2

respondents were computed to ensure that the weighted wave 2 sample remained representative of the noninstitutionalized US population aged 20 years and older after accounting for sample attrition since wave 1. All analytic techniques used in this study were design-based, using the sampling weights to calculate estimates of population parameters and specialized variance estimation techniques (e.g., Taylor Series Linearization) to accommodate the complex design features of the NESARC sample when estimating standard errors. We used the SUDAAN version 10.0.1 statistical software package (Research Triangle Institute, Research Triangle Park, NC), which has a suite of procedures available for design-based analysis of complex sample survey data, to perform all analyses.

We estimated the prevalence of discrimination and substance use disorders for the LGB subpopulation by using methods appropriate for subpopulation analysis of complex sample survey data, which included computing an indicator variable for LGB participants and analyzing the full data set.<sup>49</sup> We then examined relationships between substance use disorders and the independent variables measuring discrimination experiences, sexual identity, race, sex, age, and income with multivariate design-based logistic regression models. Specifically, we fit models that considered discrimination experiences on the basis of sexual orientation, race, and gender to determine whether various types of discrimination experiences were associated with greater risk for substance use disorders when adjusting for other demographic characteristics. We fit separate models for past-year and lifetime discrimination to prevent problems with model estimation because of possible multicollinearity of the past-year and lifetime measures as well as to examine stability of the relationships in the 2 time frames.

### RESULTS

After application of sampling weights, an estimated 2% (n=577) of the population self-identified as lesbian, gay, or bisexual. As indicated in Table 1, the demographic profiles for LGB and heterosexual adults were similar. The LGB subpopulation included slightly more women than men (approximately 51% women); about two thirds (72%) were White,

**TABLE 1—Weighted Estimates of Demographic Characteristics by Sexual Identity: National Epidemiologic Survey on Alcohol and Related Conditions, Wave 2, 2004–2005**

	Lesbian, Gay, or Bisexual (n = 577), % (SE)	Heterosexual (n = 33 598), % (SE)
Sex		
Male	48.7 (2.5)	48.0 (0.4)
Female	51.3 (2.5)	52.0 (0.4)
Age, y		
18–24	11.3 (1.8)	7.6 (0.2)
25–44	48.2 (2.4)	38.4 (0.4)
45–64	33.7 (2.0)	34.7 (0.3)
≥ 65	6.8 (1.1)	19.4 (0.4)
Race/ethnicity		
Non-Hispanic White	72.3 (2.5)	71.0 (1.5)
Non-Hispanic Black	10.7 (1.6)	11.0 (0.7)
Non-Hispanic American Indian	3.6 (1.0)	2.2 (0.2)
Non-Hispanic Asian/Pacific Islander	3.1 (1.1)	4.3 (0.5)
Hispanic	10.2 (1.5)	11.6 (1.2)
Personal income, \$		
0–19 999	37.1 (2.9)	42.1 (0.6)
20 000–34 999	24.2 (2.3)	23.1 (0.4)
35 000–69 999	27.2 (2.0)	24.3 (0.4)
≥ 70 000	11.5 (1.8)	10.5 (0.4)
Any past-year substance use disorders	27.6 (2.4)	10.5 (0.3)

11% were African American, 3% were Asian, 10% were Hispanic, and 4% were Native American or another race/ethnicity.

The prevalence of any past-year substance use disorders was more than twice as high among LGB adults as it was among heterosexual adults (27.6% versus 10.5%). The prevalence of any past-year substance use disorder was 25.8% (SE=4.4) for lesbian women, 24.3% (SE=4.4) for bisexual women, and 5.8% (SE=0.3) for heterosexual women ( $\chi^2_2=25.1$ ;  $P<.001$ ). The past-year prevalence rate was 31.4% (SE=3.8) for gay men, 27.6% (SE=5.7) for bisexual men, and 15.6% (SE=0.4) for heterosexual men ( $\chi^2_2=14.8$ ;  $P<.01$ ).

**Prevalence of Discrimination**

As shown in Table 2, about two thirds of LGB adults reported 1 or more types of discrimination during the past year (61.3%) and prior to the past year (67.6%). Nearly 87% of respondents who reported discrimination prior to the past year also reported discrimination during the past year. Sexual orientation discrimination was reported by more than one

third of LGB respondents during the past year (38.2%) and nearly one half prior to the past year (47.4%). Gender discrimination was reported by almost half of lesbian and bisexual women during the past year (48.0%) and about the same percentage prior to the past year (48.7%). Similarly, racial/ethnic discrimination

was reported by about one half of LGB racial/ethnic minority participants during the past year (49.5%) and prior to the past year (54.6%). Substantially fewer LGB respondents reported all 3 types of discrimination (sexual orientation, race/ethnicity, and gender): 10.6% during the past year and 14.7% prior to the past year.

Further, gender discrimination was reported by about one fifth of heterosexual women during the past year (18.0%; SE=0.4), and prior to the past year (21.2%; SE=0.5). Racial/ethnic discrimination was reported by about one third of heterosexual racial/ethnic minority participants during the past year (31.0%; SE=0.9) and by 35.1% (SE=1.0%) prior to the past year.

**Associations Between Discrimination and Substance Use Disorders**

As shown in Table 3, past-year substance use disorders tended to be more prevalent among LGB respondents who reported any discrimination than among those who reported no discrimination; prevalence was highest among respondents who experienced all 3 types of discrimination. For example, approximately 46.0% (SE=7.7) of LGB adults who reported all 3 types of lifetime discrimination met the criteria for any past-year substance use disorders, compared with 17.2% (SE=3.2) of those who reported no lifetime discrimination. The past-year prevalence of any substance use disorders among LGB adults who reported no lifetime discrimination was 17.0% (SE=5.3) among

**TABLE 2—Estimated Prevalence of Multiple Types of Discrimination Among Lesbian, Gay, and Bisexual Adults (n = 577): National Epidemiologic Survey on Alcohol and Related Conditions, Wave 2, 2004–2005**

Type of Discrimination	Past-Year Discrimination, % (SE)	Lifetime Discrimination, <sup>a</sup> % (SE)
No discrimination	38.7 (2.3)	32.4 (2.2)
Sexual orientation discrimination only	13.7 (2.1)	17.2 (2.1)
Race discrimination only	7.3 (1.4)	5.2 (1.0)
Gender discrimination only	9.9 (1.6)	8.6 (1.4)
Sexual orientation and race discrimination	6.0 (1.3)	7.7 (1.4)
Sexual orientation and gender discrimination	7.9 (1.4)	7.8 (1.5)
Gender and race discrimination	6.0 (1.2)	6.4 (1.3)
All 3 types of discrimination	10.6 (1.5)	14.7 (1.8)

<sup>a</sup>Lifetime discrimination refers to discrimination that occurred prior to the past 12 months.

**TABLE 3—Estimated Prevalence of Past-Year Substance Use Disorders by Discrimination Among Lesbian, Gay, and Bisexual Adults (n = 577): National Epidemiologic Survey on Alcohol and Related Conditions, Wave 2, 2004–2005**

	Any Past-Year Substance Use Disorders, <sup>a</sup> % (SE)	Design-adjusted $\chi^2_{71}$ ; P
Past-year discrimination		11.70; .13
No discrimination	18.4 (3.4)	
Sexual orientation discrimination only	30.7 (6.9)	
Race discrimination only	24.7 (8.6)	
Gender discrimination only	30.1 (7.6)	
Sexual orientation and race discrimination	34.9 (9.7)	
Sexual orientation and gender discrimination	34.2 (9.0)	
Gender and race discrimination	24.0 (9.6)	
All 3 types of discrimination	49.9 (8.0)	
Lifetime discrimination <sup>b</sup>		17.04; .03
No discrimination	17.2 (3.2)	
Sexual orientation discrimination only	24.1 (5.6)	
Race discrimination only	40.0 (10.2)	
Gender discrimination only	32.9 (8.5)	
Sexual orientation and race discrimination	24.8 (7.2)	
Sexual orientation and gender discrimination	36.8 (9.5)	
Gender and race discrimination	22.2 (11.4)	
All 3 types of discrimination	46.0 (7.7)	

<sup>a</sup>Any substance use disorders required that *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* abuse or dependence criteria be met for at least 1 of the following substances: alcohol, marijuana, sedatives, tranquilizers, stimulants, pain medications, cocaine, hallucinogens, inhalants, or heroin.

<sup>b</sup>Lifetime discrimination refers to discrimination that occurred prior to the past 12 months.

men and 17.3% (SE=4.3) among women. Although the associations between past-year substance use disorders and past-year discrimination were similar to those in the lifetime time frame, they were not statistically significant.

Table 4 presents estimates of the adjusted odds ratios (AORs) for any past-year substance use disorders as a function of lifetime and past-year discrimination on the basis of sexual orientation, race, and gender, after control for demographic characteristics. The odds of having any past-year substance use disorders for LGB adults who reported all 3 types of past-year discrimination were estimated to be 4 times greater than they were for LGB respondents who reported no discrimination in that time frame (AOR=4.12; 95% confidence interval[CI]=1.76, 9.63). Although the estimated odds of having any substance use disorders were greater among respondents who reported any other type of past-year

discrimination than for those who had never experienced discrimination, none of these AORs were statistically significant.

The odds of having any past-year substance use disorders among LGB adults who reported all 3 types of lifetime discrimination were nearly 4 times greater than they were among those who reported no experiences of discrimination (AOR=3.85; 95% CI=1.71, 8.66).

Those who reported lifetime racial discrimination only or both sexual orientation and gender discrimination had significantly greater odds of substance use disorders compared with those who reported none of the 3 types of discrimination. In addition, we conducted logistic regression analyses to determine whether correlates in the models for past-year substance use disorders varied by gender, and no significant gender interactions were found.

Finally, we used an alternative approach for examining the association between

discrimination and substance use disorders by adding the frequency of all 18 discrimination items from the 3 indices together (possible range=0–72). The relationships of the combined discrimination indices with the probability of having any substance use disorders during the past year were significant for both past-year discrimination (AOR=1.05; 95% CI=1.01, 1.10;  $P<.05$ ) and lifetime (prior to past year) discrimination (AOR=1.03; 95% CI=1.00, 1.07;  $P<.05$ ). In sum, these results support the findings from the analysis with dichotomized variables.

## DISCUSSION

This study is the first to examine relationships between multiple types of discrimination and substance use disorders among LGB adults in a large national sample. The findings offer preliminary support for the minority stress model, which asserts that discrimination can adversely affect the mental health of LGB adults and contribute to heightened risk for substance use disorders.<sup>10,11</sup> We found greater odds of substance use disorders among LGB adults who reported all 3 types of discrimination relative to those who did not report discrimination; in fact, nearly half of LGB adults who reported discrimination on the basis of gender, race/ethnicity, and sexual orientation in their lifetimes met the criteria for past-year substance use disorders compared with less than 1 in 5 of those who reported no discrimination. Of particular note is that LGB adults who reported none of the 3 types of discrimination in their lifetime had rates of past-year substance use disorders that were similar to those of heterosexual adults. This finding was most pronounced in the male sample.

The fact that about two thirds of LGB adults reported 1 or more types of discrimination during the past year underscores the pervasiveness of social stressors in the lives of LGB adults and the importance of considering multiple minority identities.<sup>11</sup> Although sexual orientation discrimination may contribute to additional stress for LGB adults beyond the general life stressors that all people experience,<sup>10,11,18,20,50</sup> we also found that gender and racial/ethnic discrimination were highly prevalent among LGB participants. One unexpected result was that there was no statistically significant relationship



**TABLE 4—Logistic Regression Results Examining Discrimination and Other Control Variables as Predictors of Past-Year Substance Use Disorders Among Lesbian, Gay, and Bisexual Adults (n = 577): National Epidemiologic Survey on Alcohol and Related Conditions, Wave 2, 2004–2005**

	Any Substance Use Disorders in the Past Year, <sup>a</sup> AOR <sup>b</sup> (95% CI)	$F_{14,65}$ ; $P$
Past-year discrimination		2.97; <.01
No discrimination (Ref)	1.00	
Sexual orientation discrimination only	1.72 (0.79, 3.73)	
Race discrimination only	1.34 (0.48, 3.80)	
Gender discrimination only	1.76 (0.75, 4.10)	
Sexual orientation and race discrimination	1.87 (0.61, 5.74)	
Sexual orientation and gender discrimination	2.24 (0.82, 6.14)	
Gender and race discrimination	1.48 (0.53, 4.14)	
All 3 types of discrimination	4.12 (1.76, 9.63)	
Lifetime discrimination <sup>c</sup>		2.83; <.01
No discrimination (Ref)	1.00	
Sexual orientation discrimination only	1.30 (0.57, 3.01)	
Race discrimination only	3.22 (1.23, 8.40)	
Gender discrimination only	2.23 (0.93, 5.38)	
Sexual orientation and race discrimination	1.23 (0.45, 3.40)	
Sexual orientation and gender discrimination	2.33 (1.00, 5.45)	
Gender and race discrimination	1.56 (0.39, 6.17)	
All 3 types of discrimination	3.85 (1.71, 8.66)	

Notes. AOR = adjusted odds ratio; CI = confidence interval.

<sup>a</sup>Any substance use disorder required that *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* abuse or dependence criteria be met for at least 1 of the following substances: alcohol, marijuana, sedatives, tranquilizers, stimulants, pain medications, cocaine, hallucinogens, inhalants, or heroin.

<sup>b</sup>Adjusted OR indicates odds ratios adjusted for sex, race, age, personal income, and sexual identity; the results for these variables are not shown.

<sup>c</sup>Lifetime discrimination refers to discrimination that occurred prior to the past 12 months.

between substance use disorders and sexual orientation discrimination alone in the final regression models. Given the putative relationships among discrimination, stress, substance use, and mental health disorders posited in the minority stress model, this finding was surprising.<sup>11</sup> One explanation for this is the manner in which the discrimination categories were constructed. For instance, those who reported only 1 type of discrimination were considered separately from those who had experienced multiple types; therefore, the overall association was attenuated. Although sexual orientation discrimination alone was not significantly associated with substance use disorders, we found that sexual orientation discrimination in combination with racial/ethnic or gender discrimination—and racial/ethnic discrimination alone—was associated with greater

odds of substance use disorders. These findings provide support for the potential multiplicative or interactive effects of multiple types of discrimination in associations between discrimination and health.

Beyond the potential for discrimination to contribute to increased risk for substance use disorders as a function of the stress it creates, discrimination within a health care setting is likely an important contributing factor to health disparities among LGB groups. For example, gay men in the NESARC reported the highest rates of all forms of sexual orientation discrimination, including discrimination related to their health care (data not shown). This could be a function of gay men's greater likelihood of disclosing their sexual identity (relative to lesbian women and bisexual adults), or

AIDS-related stigma.<sup>18,51</sup> Notably, several types of discrimination tended to be more prevalent among LGB adults than among heterosexual adults (data not shown). Health care providers need to be aware of the potential adverse effects of discrimination within and outside the health care arena. Policies aimed at eliminating all forms of discrimination are critical to addressing health disparities among LGB individuals.

Longitudinal research is needed to examine the temporal order of discrimination and substance use disorders with consideration of the possibility that LGB adults who have substance use disorders may be more subject to discrimination, or more likely to perceive that actions were discriminatory, than those without such disorders. Although the association between discrimination and substance use disorders in this study is apparent, it is also important to point out that the majority of LGB adults who reported experiences of discrimination did not meet criteria for substance use disorders. More research is needed to identify factors that enhance coping and resilience among the subgroup of LGB adults who experience discrimination—even multiple types of discrimination—but do not develop substance use or other mental health disorders. More research is also needed to examine whether similarities in prevalence rates for past year and lifetime (prior to the past year) discrimination observed in the present study are attributable to recall bias or the persistence of discrimination despite public education and policy efforts. Future research should more thoroughly explore experiences of discrimination and include measures of daily hassles in addition to life events, increase sample sizes of LGB subgroups, and consider other social stressors and protective factors unique to sexual orientation that may impact substance use disorders.

This investigation has a number of important strengths. Most notably, the NESARC includes the largest US national probability sample of LGB-identified adults. In addition, the NESARC assessed multiple forms of discrimination (including sexual orientation-specific measures, race, and gender) and substance use disorders based on *DSM-IV* criteria. Despite these and other notable strengths, there are some important limitations that should be considered when evaluating the results and comparing

them with those of other studies. Notably, we relied on cross-sectional data, which makes causality difficult to determine. In addition, NESARC questions did not assess factors believed to be more proximally associated with sexual minority stress, such as expectations of stressful events and conditions, internalization of negative societal attitudes about homosexuality (i.e., internalized homophobia), history of sexual identity development (e.g., how recently the respondent “came out”), or level of disclosure of sexual orientation.<sup>11,16,24</sup> The survey did not include questions about physical assault or threats of harm associated with gender discrimination. The survey also did not assess the frequency or intensity of discrimination experiences or the level of perceived stress associated with discrimination experiences. Some respondents who reported only 1 or 2 types of discrimination may have had those experiences multiple times, or may have had higher levels of stress associated with a particular experience.

Because LGB people continue to be stigmatized, the possibility of underreporting minority sexual identity and sensitive behaviors must be considered, especially in face-to-face interviews such as those used to collect the NESARC data. Replication of these findings based on self-administered modes of survey data collection including computer-based approaches, which have proven to result in more accurate reporting of socially sensitive behaviors,<sup>52–56</sup> would be a welcome contribution to the literature. The prevalence rates of LGB adults in the NESARC are slightly lower than previous national probability-based studies in the United States,<sup>3,9,57</sup> and the substance use rates in the NESARC are generally lower<sup>58</sup>; these differences deserve further consideration. Another concern was that because of the small sample sizes of LGB subgroups, standard errors associated with many estimates were relatively large and some analyses were limited. For example, there were too few racial/ethnic minority respondents to permit separation of the 3 major racial/ethnic groups; racial/ethnic minority LGB respondents were combined into a single racial category. Future research is needed to examine racial/ethnic differences in the associations between discrimination and adverse mental health outcomes among LGB adults.

In conclusion, the results of this study provide support for the hypothesis that

discrimination is associated with substance use disorders among LGB adults. The findings regarding multiple types of discrimination were consistent with the minority stress model and demonstrate how important it is for researchers, health care providers, and policymakers to consider forms of discrimination that are unique to sexual orientation in addition to other forms of discrimination such as gender and racial discrimination. ■

#### About the Authors

Sean Esteban McCabe is with the Substance Abuse Research Center and the Institute for Research on Women and Gender, University of Michigan, Ann Arbor. Wendy B. Bostwick is with the Public Health and Health Education Program, Northern Illinois University, DeKalb. Tonda L. Hughes is with the College of Nursing and the National Center of Excellence in Women's Health, University of Illinois at Chicago. Brady T. West is with the Center for Statistical Consultation and Research, University of Michigan. Carol J. Boyd is with the Substance Abuse Research Center, Institute for Research on Women and Gender, Nursing, and Women's Studies, University of Michigan.

Correspondence should be sent to Sean Esteban McCabe, PhD, MSW, Substance Abuse Research Center, University of Michigan, 1111 E Catherine St, 4th Floor, Ann Arbor, MI, 48105 (e-mail: plus@umich.edu). Reprints can be ordered at <http://www.ajph.org> by clicking the “Reprints/Eprints” link.

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#### Contributions

S.E. McCabe was the lead investigator, designed the investigation, and managed the literature searches and summaries of previous related work. S.E. McCabe and B.T. West undertook the statistical analysis, and S.E. McCabe, with input from all collaborating authors, wrote the first draft of the article. All authors materially participated in designing the investigation, contributing to and reviewing drafts of the article, and approving the final article.

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#### Human Participant Protection

The US Census Bureau and the US Office of Budget and Management approved the NESARC research protocol. The University of Michigan institutional review board approved the current study.

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