

# Risk of Psychiatric Disorders Among Individuals Reporting Same-Sex Sexual Partners in the National Comorbidity Survey

## ABSTRACT

**Objectives.** This study examined the risk of psychiatric disorders among individuals with same-sex sexual partners.

**Methods.** Data are from the National Comorbidity Survey, a nationally representative household survey. Respondents were asked the number of women and men with whom they had sexual intercourse in the past 5 years. Psychiatric disorders according to *Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition (DSM-III-R)* criteria were assessed with a modified version of the Composite International Diagnostic Interview.

**Results.** A total of 2.1% of men and 1.5% of women reported 1 or more same-sex sexual partners in the past 5 years. These respondents had higher 12-month prevalences of anxiety, mood, and substance use disorders and of suicidal thoughts and plans than did respondents with opposite-sex partners only. Decomposition showed that the elevated same-sex 12-month prevalences were largely due to higher lifetime prevalences. Ages at onset and persistence of disorders did not differ between the same-sex and opposite-sex subsamples.

**Conclusions.** Homosexual orientation, defined as having same-sex sexual partners, is associated with a general elevation of risk for anxiety, mood, and substance use disorders and for suicidal thoughts and plans. Further research is needed to replicate and explore the causal mechanisms underlying this association. (*Am J Public Health.* 2001; 91:933-939)

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Because homosexuality is widely stigmatized in America,<sup>1,2</sup> homosexuals are frequently exposed to discrimination and victimization.<sup>3-5</sup> There is clear evidence from research on racial and other forms of discrimination that exposure to discriminatory behavior is associated with psychologic distress and mental disorders.<sup>6-9</sup> All else being equal, then, one would expect to find elevated rates of mental illness among homosexuals. The results of surveys that have compared the mental health of homosexuals and heterosexuals are generally consistent with this expectation. Several surveys have found elevated rates of some anxiety disorders, mood disorders, and substance use disorders among homosexuals,<sup>10-20</sup> although the exact disorders found to be elevated differ from one study to the next. A number of surveys have also found elevated rates of suicidal thoughts and attempts among homosexuals.<sup>4,16-19,21-25</sup>

Early studies in this area are limited by the use of volunteer samples that may not be representative of the general population, whereas both early and recent studies can be criticized for their use of brief screening scales rather than comprehensive diagnostic assessments of mental disorders. This report presents data, based on a large nationally representative general population survey that is free of these limitations, on the relationship between homosexuality and mental disorders.

## Methods

### Sample

Data come from the National Comorbidity Survey (NCS), a nationally representative household survey of people aged 15 to 54 years carried out from 1990 through 1992. Verbal informed consent was obtained from all respondents and also from the parents of minors before the interviews began. The response rate was 82.4%. The interviews were carried out in 2 parts. Part I was administered to all respon-

dents (n=8098) and focused on the assessment of disorders defined in *Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition (DSM-III-R)*.<sup>26</sup> All respondents who screened positive for a lifetime disorder, plus a random subsample of other respondents, were administered the part II interview (n=5877), which consisted largely of questions about risk factors and consequences of the disorders assessed in part I. The sexual activity questions were included in the part II interview. The data for these respondents were weighted to correct for differential probabilities of selection.<sup>27</sup> Comparisons of NCS demographic distributions with census data show that the weighted part II sample is representative of the US population on a wide range of sociodemographic variables. More details about the NCS design and data collection methods are reported elsewhere.<sup>28,29</sup>

### Measures

Homosexually and exclusively heterosexually active respondents were identified by responses to 2 questions that asked the number of women and, separately, the number of men

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with whom the respondent had had sexual intercourse in the preceding 5 years. Responses to these 2 questions were used to classify respondents into categories of those who reported any same-sex sexual partners (same-sex subsample; 74 males and 51 females), those who reported exclusively opposite-sex sexual partners (opposite-sex subsample; 2310 males and 2475 females), and those who reported not having sexual intercourse at all (439 males and 528 females). The same-sex subsample included 77 respondents (41 males and 36 females) with both same-sex and opposite-sex partners and 48 respondents (33 males and 15 females) with exclusively same-sex partners. Respondents not reporting any sexual partners were excluded from the analyses reported below.

Psychiatric disorders based on *DSM-III-R* criteria were assessed with a modified version of the Composite International Diagnostic Interview (CIDI),<sup>30</sup> a fully structured diagnostic interview designed to be used by trained interviewers who are not clinicians. World Health Organization field trials<sup>31</sup> and NCS clinical reappraisal studies<sup>32</sup> both documented good reliability and validity of the 12 CIDI diagnoses reported here, including mood disorders (major depression and dysthymia), anxiety disorders (panic disorder, generalized anxiety disorder, simple phobia, social phobia, agoraphobia, and posttraumatic stress disorder), and substance use disorders (alcohol and drug abuse and dependence). Diagnoses were made without diagnostic hierarchy rules,<sup>33</sup> meaning that individuals could meet criteria for any disorder regardless of the presence of other disorders. Separate questions were also asked about lifetime and 12-month prevalences of suicidal thoughts, plans, and attempts.<sup>34,35</sup>

*Analysis Procedures*

We examined differences in the 12-month prevalence of *DSM-III-R* disorders between the same-sex and opposite-sex subsamples by using simple cross-tabulations. We then estimated the associations of same-sex partners vs opposite-sex partners with both lifetime risk and age at onset of the disorders by using discrete time-survival analysis based on retrospective age-at-onset reports.<sup>36</sup> Finally, we estimated the associations of same-sex partners vs opposite-sex partners with the 12-month persistence of disorders by using logistic regression. All regression models included controls for sociodemographics (age, race/ethnicity, household income, and marital status, which was categorized as married, cohabiting, or other) and were estimated separately for women and men. We tested for differences in odds ratios between males and females by estimating regression models for the entire sample that included a sex-by-same-sex interaction term. Survival and logistic regression coefficients were exponentiated and are reported in the form of odds ratios with 95% confidence intervals. The Taylor series linearization method was used to adjust significance tests for the sampling design of the NCS.<sup>37</sup> Statistical significance was evaluated with .05-level 2-sided tests.

**Results**

*Characteristics of the Sample*

Approximately 1.8% (SE=0.2%) of the total sample reported a same-sex sexual partner (n=125) in the 5 years before the inter-

view, including 2.1% (SE=0.4%) of men and 1.5% (SE=0.2%) of women. The difference by sex in the proportion of respondents in the same-sex and opposite-sex subsamples was not statistically significant ( $\chi^2_1=1.9, P=.17$ ). Furthermore, there were no statistically significant differences between the same-sex and opposite-sex subsamples in the distributions of age, education, income, or race/ethnicity (Table 1). The heterosexual marriage rate was significantly lower in the same-sex subsample (27.0%) than in the opposite-sex subsample (58.7%;  $\chi^2_1=27.9, P<.001$ ), but the rate of cohabitation was significantly higher (23.0% vs 6.6%;  $\chi^2_1=8.7, P<.01$ ).

*Twelve-Month Prevalences of DSM-III-R Disorders*

Sex-specific 12-month disorder prevalences are reported separately in Table 2 for the same-sex and opposite-sex subsamples. Women in the same-sex subsample had higher 12-month prevalences of 11 of the 12 disorders assessed than did women in the opposite-sex subsample; in 3 instances (major depression, simple phobia, and posttraumatic stress disorder), the differences were statistically significant. Women in the same-sex subsample were also significantly more likely to meet *DSM-III-R* criteria for at least 1 disorder than were women in the opposite-sex subsample. In contrast, we did not observe a pattern of higher prevalence across the individual disorders for the same-sex subsample of men; however, men in the same-sex subsample appeared more likely than men in the opposite-sex subsample to have any anxiety, mood, or substance disorder as well as at least 1 NCS disorder.

**TABLE 1—Demographic Characteristics of Sexually Active Men and Women, by Sex of Sexual Partners: National Comorbidity Survey**

	Men				Women			
	Any Same-Sex Partner (n=74) <sup>a</sup>		Opposite-Sex Partner(s) Only (n=2310) <sup>a</sup>		Any Same-Sex Partner (n=51) <sup>a</sup>		Opposite-Sex Partner(s) Only (n=2475) <sup>a</sup>	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age, y	34.0	8.5	33.5	10.1	32.7	8.1	33.9	9.9
Educational attainment, y	12.3	2.3	13.0	2.6	13.3	1.8	13.0	2.1
Household income, \$	34379.3	19281.6	43095.8	26432.4	32636.4	22352.6	38907.6	25086.4
	%	SE	%	SE	%	SE	%	SE
Race/ethnicity								
Non-Hispanic White	71.3	8.4	78.2	2.4	73.2	6.0	76.1	2.1
Non-Hispanic Black	12.1	5.0	10.1	1.3	14.5	5.2	13.3	1.4
Hispanic	12.5	5.5	8.6	1.5	11.7	4.3	8.0	1.5
Other	4.1	2.9	3.0	0.7	0.6	0.6	2.5	0.6
Marital status*								
Married	31.2	9.9	57.3	1.5	21.0	8.4	60.0	1.6
Cohabiting	22.7	7.0	5.7	0.7	23.3	7.6	7.6	0.8
Other	46.1	7.5	37.0	1.5	55.7	10.4	32.3	1.4

<sup>a</sup>Sexual partners in the 5 years prior to interview.

\**P*<.05; significance level corresponds to the contrast between same-sex and opposite-sex partners.

**TABLE 2—Twelve-Month Prevalence of Psychiatric Disorders Among Men and Women, by Sex of Sexual Partners: National Comorbidity Survey (NCS)**

	Men				Women			
	Any Same-Sex Partner (n=74) <sup>a</sup>		Opposite-Sex Partner(s) Only (n=2310) <sup>a</sup>		Any Same-Sex Partner (n=51) <sup>a</sup>		Opposite-Sex Partner(s) Only (n=2475) <sup>a</sup>	
	%	SE	%	SE	%	SE	%	SE
<b>Anxiety disorders</b>								
Agoraphobia	0.4	0.4	1.5	0.2	7.0	5.8	3.8	0.4
GAD	0.9	0.7	1.9	0.4	13.5	6.1	4.0	0.4
Panic	1.0	0.7	1.4	0.3	5.9	4.3	3.0	0.5
Social phobia	8.8	4.6	6.3	0.5	10.4	5.6	9.1	0.7
Simple phobia	8.3	3.1	4.7	0.5	25.0*	5.0	13.3	0.9
PTSD	1.3	0.9	2.2	0.3	20.9*	6.5	5.9	0.6
Any anxiety disorder	15.0	5.6	11.6	0.7	40.0*	7.6	22.4	1.1
<b>Mood disorders</b>								
Major depression	10.3	3.4	7.2	0.7	34.5*	7.8	12.9	0.9
Dysthymia	1.9	1.1	2.0	0.3	5.7	3.9	3.2	0.5
Any mood disorder	11.7	3.4	8.0	0.7	35.1*	7.9	13.9	1.0
<b>Substance use disorders</b>								
Alcohol abuse	12.9	4.9	12.0	0.7	13.3	5.2	4.6	0.5
Alcohol dependence	12.1	3.9	11.6	0.8	15.3	6.2	4.1	0.4
Drug abuse	10.7	4.6	4.4	0.4	1.2	0.8	1.8	0.3
Drug dependence	9.2	3.1	4.0	0.4	4.1	3.0	2.1	0.3
Any substance disorder	20.0	5.8	17.2	0.7	19.5	7.8	7.2	0.5
Any NCS disorder	36.8	7.3	28.2	1.0	55.5*	7.9	31.8	1.4
<b>Suicide symptoms</b>								
Thoughts	1.9	0.8	2.2	0.4	13.9	7.1	3.9	0.5
Plans	4.7	1.8	2.9	0.4	15.2	5.7	4.8	0.6
Attempts	1.5	1.5	0.6	0.2	0.6	0.6	1.0	0.3

Note. GAD=generalized anxiety disorder; PTSD=posttraumatic stress disorder.

<sup>a</sup>Sexual partners in the 5 years prior to interview.

\* $P < .05$ ; significance level corresponds to the contrast between same-sex and opposite-sex partners.

The last 3 rows of Table 2 show the 12-month prevalence of suicidal thoughts, plans, and attempts. No significant differences were observed between the same-sex and opposite-sex subsamples; however, among women, the prevalence of suicidal thoughts and plans was higher in the same-sex than in the opposite-sex subsample, and among men, the prevalence of suicidal plans and attempts was higher in the same-sex than in the opposite-sex subsample.

#### Onset, Course, and Persistence of DSM-III-R Disorders

Twelve-month prevalence is a joint function of lifetime prevalence, age at onset, and persistence. As a result, elevation in any 1 or more of these 3 statistics could explain the higher 12-month prevalences associated with having same-sex sexual partners. An evaluation of these 3 components of 12-month prevalence is presented in Table 3. The first set of columns shows the results of survival analyses in which a dummy variable coded 1 for same sex and 0 for opposite sex was used to predict the odds of each DSM-III-R disorder, with control for time at risk, education, income, race/ethnicity, and marital status. Among men, 11 of the 12 disorder-specific odds ratios are greater

than 1.0, and 2 odds ratios (drug abuse and drug dependence) are statistically significant. Among women, all 12 odds ratios are greater than 1.0, and 5 odds ratios (generalized anxiety disorder, simple phobia, posttraumatic stress disorder, major depression, and drug abuse) are statistically significant. No statistically significant difference between the sexes was found in any of these odds ratios.

The remainder of Table 3 presents the results of 2 sets of models carried out in subsamples of respondents with a positive lifetime history of each of the focal disorders and with an onset occurring at least 12 months before the interview (24 months in the case of generalized anxiety disorder and 36 months in the case of dysthymia). The first set is survival models to predict age at onset, and the second is logistic regression models to predict the 12-month persistence of disorders. Both sets of models controlled for the same sociodemographics as in the lifetime risk models, while the persistence models also controlled for age at onset and time since onset. There was no consistent pattern of associations between same-sex vs opposite-sex partners and the age at onset of disorders among men; however, women with same-sex partners had an earlier onset of alcohol use disorders than women with

opposite-sex partners. There was no consistent pattern of associations between same-sex vs opposite-sex partners and the persistence of disorders among both men and women.

We evaluated the consistency of the results in Table 3 by testing for interactions between same-sex partners and the sociodemographic variables. Only 1 of the demographic variables, marital status, had a consistent pattern of significant (.05 level) interactions. Further analysis showed that this pattern was actually due to the number of sexual partners rather than to marital status. Specifically, the significant effects of same-sex partners shown in Table 3 were largely confined to the subsample of respondents who reported having only 1 sexual partner during the past 5 years (14.9% and 13.6% of men and women in the same-sex subsample, respectively, compared with 57.2% and 70.0% of men and women in the opposite-sex subsample). Because of the small numbers of respondents involved in this specification, replication in other surveys should be attempted before this pattern is interpreted.

We also investigated the possibility that self-reported HIV serostatus is involved in the elevated rates of psychiatric disorder found in the same-sex subsample. As one would expect, self-reported HIV-positive serostatus was

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**TABLE 3—Adjusted Odds Ratios for Lifetime Psychiatric Disorders Associated With Reporting Same-Sex Sexual Partners<sup>a</sup>: National Comorbidity Survey (NCS)**

	Lifetime Risk <sup>b</sup>				Age at Onset <sup>c</sup>				Persistence <sup>d</sup>			
	Men		Women		Men		Women		Men		Women	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
<b>Anxiety disorders</b>												
Agoraphobia	1.1	0.3, 3.9	1.1	0.2, 5.9	0.2	0.0, 1.8	3.0	0.9, 9.8	0.3	0.0, 3.4	7.8	0.3, 223.1
GAD	2.8	1.0, 8.0	3.2*	1.4, 7.3	2.1	0.8, 5.6	1.8	0.8, 3.7	0.0*	0.0, 0.2	2.9	0.6, 14.1
Panic	1.2	0.2, 6.5	2.6	0.9, 7.7	0.1	0.0, 59.0	2.0	0.9, 4.4	0.6	0.0, 14.7	1.1	0.1, 9.9
Social phobia	1.6	0.7, 3.5	1.5	0.7, 3.3	0.7	0.3, 1.4	1.5	1.0, 2.4	0.8	0.3, 2.5	0.5	0.1, 1.9
Simple phobia	1.0	0.4, 2.5	1.8*	1.2, 2.9	0.6*	0.3, 0.9	0.5	0.2, 1.0	...	...	2.5	0.3, 23.1
PTSD	1.1	0.5, 2.5	2.7*	1.2, 6.1	1.6	0.9, 2.9	0.8	0.5, 1.5	0.1	0.0, 1.1	1.2	0.2, 7.3
Any anxiety disorder	1.3	0.8, 2.4	1.8*	1.2, 2.8	0.7	0.5, 1.1	1.0	0.6, 1.7	1.2	0.4, 4.0	1.4	0.5, 4.0
<b>Mood disorders</b>												
Major depression	1.5	0.7, 3.0	1.9*	1.0, 3.3	1.9*	1.3, 2.9	1.0	0.6, 1.6	1.6	0.5, 5.4	3.1	0.7, 14.3
Dysthymia	1.1	0.4, 2.8	1.9	0.8, 4.4	0.8	0.3, 2.2	1.7	0.9, 3.3	0.2	0.0, 3.0	1.2	0.2, 9.1
Any mood disorder	1.7	0.9, 3.0	2.0*	1.1, 3.5	1.5	1.0, 2.1	1.1	0.7, 1.9	0.8	0.2, 2.7	2.0	0.6, 7.4
<b>Substance use disorders</b>												
Alcohol abuse	1.2	0.7, 2.3	1.8	0.7, 4.5	1.1	0.8, 1.7	1.7*	1.1, 2.6	0.7	0.3, 1.8	1.5	0.5, 3.9
Alcohol dependence	1.4	0.6, 3.0	2.2	0.9, 5.6	1.4	0.9, 2.2	2.4*	1.3, 4.7	0.6	0.2, 1.6	6.1*	1.7, 22.6
Drug abuse	2.8*	1.6, 5.1	4.4*	2.4, 8.1	0.9	0.6, 1.5	1.7	0.9, 3.3	1.1	0.4, 3.4	0.1*	0.0, 0.5
Drug dependence	2.4*	1.2, 4.8	1.7	0.5, 5.5	1.2	0.7, 2.4	0.8	0.4, 1.5	0.6	0.2, 2.0	0.8	0.2, 2.7
Any substance disorder	1.5	0.8, 2.8	2.4*	1.3, 4.4	1.1	0.7, 1.5	1.7*	1.1, 2.9	0.6	0.3, 1.2	1.5	0.4, 6.8
Any NCS disorder	1.4	0.8, 2.4	1.8*	1.1, 2.9	1.0	0.7, 1.3	1.4*	1.1, 1.8	0.8	0.4, 1.7	1.7	0.5, 5.4

Note. OR=odds ratio; CI=confidence interval; GAD=generalized anxiety disorder; PTSD=posttraumatic stress disorder.

<sup>a</sup>Controlling for age, educational attainment, household income, race/ethnicity, and marital status.

<sup>b</sup>Discrete time-survival models in the entire sample, estimated separately by sex.

<sup>c</sup>Discrete time-survival models among subjects with the outcome disorder, estimated separately by sex.

<sup>d</sup>Logistic regression models, estimated separately by sex, predicting 12-month disorders among lifetime cases, additionally controlling for age at onset and time since onset.

<sup>e</sup>Unable to estimate.

\*P<.05.

higher in the same-sex subsample (2.3%) than in the opposite-sex subsample (0.2%) and, among respondents with same-sex sexual partners, higher among men (4.0%) than among women (0.0%). Furthermore, consistent with previous research,<sup>38,39</sup> HIV-positive serostatus was positively and significantly associated with anxiety, mood, and substance disorders (results not shown). However, this did not explain the elevated rates of disorder among respondents in the same-sex subsample in Table 3. Indeed, statistical adjustment for HIV-

positive serostatus had virtually no effect on the magnitude of the odds ratios in Table 3 (results not shown).

*Histories of Suicide Symptoms*

Finally, we examined differences between the same-sex and opposite-sex subsamples in suicidal thoughts, plans, and attempts (Table 4). Odds ratios for lifetime risk and age at onset of suicidal thoughts and suicide plans and attempts were greater than 1.0 for both women

and men in the same-sex subsamples, with the exception of suicide attempts among women. These odds ratios were statistically significant for lifetime risk of suicidal thoughts among women and men and for lifetime risk and age at onset of suicide plans among women.

**Discussion**

There are several important limitations of the current study. Sexual orientation was de-

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**TABLE 4—Odds Ratios for Lifetime Suicide Symptoms Associated With Reporting Same-Sex Sexual Partners<sup>a</sup>: National Comorbidity Survey**

	Lifetime Risk <sup>b</sup>				Age at Onset <sup>c</sup>			
	Men		Women		Men		Women	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Thought about suicide	2.2*	1.2, 4.2	2.0*	1.0, 3.9	1.2	0.7, 2.0	1.2	0.7, 2.0
Made a plan for committing suicide	1.6	0.6, 4.3	2.6	1.0, 6.9	1.3	0.3, 4.8	2.0*	1.1, 3.8
Attempted suicide	2.4	1.0, 5.8	1.5	0.7, 3.4	1.5	0.7, 3.0	0.7	0.4, 1.2

Note. OR=odds ratio; CI=confidence interval.

<sup>a</sup>Controlling for age, educational attainment, household income, race/ethnicity, and marital status, with models estimated separately for men and women.

<sup>b</sup>Discrete time-survival models in the entire sample.

<sup>c</sup>Discrete time-survival models among subjects with the outcome disorder.

\*P<.05.

defined behaviorally; therefore, respondents who were not sexually active in the 5 years before the interview were excluded from this study. In addition, using a behavioral definition of sexual orientation meant that we could not assess the role of sexual identity as a risk or protective factor for psychiatric disorders. This is a limitation in that sexual identity might be as important, or more important, for mental health than sexual behavior. Whereas empiric research shows that the vast majority of people who self-identify as homosexual or bisexual report involvement in sexual behaviors with members of the same sex, it is also true that some people who engage in such behaviors do not define themselves as either homosexual or bisexual.<sup>40</sup> Thus, behavioral definitions and identity-based definitions do not yield identical classifications. In addition, behavioral definitions suffer from measurement error based on variation across studies in the types of acts used to define same-sex sexual behavior.

In the case of the current study, respondents were asked about sexual "intercourse," a term that might have led to the exclusion of some individuals with same-sex partners who did not engage in this behavior; it is also unclear how this item was interpreted by female same-sex respondents.<sup>41</sup> However, the proportion of individuals reporting same-sex partners in the NCS (2.1% of men and 1.5% of women) is similar to the proportion of individuals with same-sex partners in other nationally representative surveys, including the 1996 National Household Survey on Drug Abuse (NHSDA) (2% of men and 1% of women)<sup>13</sup> and the National Health and Nutrition Examination Survey III (NHANES III) (2.2% of men).<sup>16</sup>

The small number of respondents who reported same-sex partners precluded analyzing multiple subgroups such as those defined by the cross-classification of marital status and number of sexual partners, as well as distinguishing between respondents with exclusively same-sex partners and those with both same-sex and opposite-sex partners. It is also unknown to what extent willingness to report having same-sex sexual partners to an interviewer is associated with willingness to report psychiatric symptomatology or how such an association could bias the results of this study.<sup>17</sup> Finally, because NCS data were collected between 1990 and 1992, the results we report here may not reflect the current nature of the relationship between sexual orientation and psychiatric disorders.

Within the context of these limitations, our findings underscore the growing concern that homosexually active individuals are at increased risk for psychiatric morbidity in much the same way as people with other disadvantaged social statuses.<sup>16,17,25,28,42,43</sup> Our results are consistent with previous investigations in

showing that risks of some psychiatric disorders and of suicidal symptoms are elevated among homosexually active people compared with exclusively heterosexually active people.<sup>10,16-18,42</sup> In the NCS, these associations appear to be stronger for women than for men.

These findings are broadly consistent with results from the NHSDA,<sup>17</sup> in which an abbreviated version of the CIDI (CIDI-SF)<sup>32</sup> was used to assess the presence of 6 psychiatric disorders (major depression, generalized anxiety disorder, panic, agoraphobia, alcohol dependence, and drug dependence). In the NHSDA, men with same-sex sexual partners had a higher risk of depression and panic than men with opposite-sex partners, whereas women with same-sex partners were more likely than women with opposite-sex partners to have alcohol and drug dependence. These results are also consistent with results of a recent population-based study from the Netherlands in which elevated rates of *DSM-III-R* mood and anxiety disorders were observed among men with same-sex partners, whereas *DSM-III-R* substance use disorders were more prevalent among women with same-sex partners.<sup>10</sup> However, similar analyses using data from NHANES III<sup>16</sup> showed no association between having same-sex sexual partners and lifetime or recent major depression, which in that study was assessed with the more extensive set of depression symptom questions in the Diagnostic Interview Schedule.<sup>44</sup> Because the sexual behavior questions were administered only to men in NHANES III, that study did not examine the risk of psychiatric disorders among women with same-sex sexual partners. There is more stable evidence in the literature to support the NCS finding that having same-sex sexual partners is related to an increased risk of suicidal thoughts and behaviors.<sup>16,18,21-24</sup>

In summary, there appears to be a general elevation of risk—sometimes exceeding the threshold of statistical significance, sometimes not—in the anxiety–mood–substance use spectrum of disorders. The difficulty in observing statistical significance is due to the low power for hypothesis testing that arises from the relatively small number of homosexual individuals in each of these studies, generally around 2% of respondents.<sup>13,16,17</sup> It may also be, however, that the elevated risk of psychiatric morbidity associated with homosexual behavior is small and nonspecific.

The extensive psychiatric assessments in the NCS, unavailable in previous large-scale surveys of the relationship between homosexuality and mental disorders, allowed us to decompose 12-month associations. Results suggest that the associations are due largely to elevated lifetime disorder risks among men and to elevated lifetime risks and early ages at onset among women. We lacked adequate statistical

power to fully test persistence effects. Consistent with prior research,<sup>13,39,42,45</sup> HIV-positive status was significantly related to an increased risk of psychiatric disorders. However, the increased risk of psychiatric disorders observed among homosexually active respondents was independent of HIV serostatus. Future studies with larger samples of homosexually active individuals may be able to clarify the importance of both persistence of disorders and HIV status in influencing mental health morbidity in this population.

Although our investigation focused on the risks of psychiatric disorders associated with homosexual behavior, we consider such behavior to be a proxy for sexual orientation, which may be associated with an elevated risk of mental disorders for a number of reasons. One of the most common is that stresses due to stigmatization and exposure to discriminatory behavior lead to higher rates of mental disorders. This hypothesis is consistent with the finding that lesbians and gay men experience discrimination in multiple domains of life<sup>46-51</sup> and that such discrimination is related to elevated levels of psychologic distress.<sup>9,25</sup> Another interpretation is that the heightened risk of mental disorders among lesbians and gay men might be related to the occurrence of victimization and abuse, especially during adolescence.<sup>4,52-54</sup> Various psychosocial factors such as a sense of isolation,<sup>55</sup> low levels of social support,<sup>56</sup> and frequent stressful life events<sup>57</sup> may also contribute to elevated rates of psychiatric disorders in this population.

An alternative explanation for our findings is that lesbians and gay men simply lead riskier lives, including higher consumption of alcohol and drugs<sup>13,19,20,21,58</sup> and higher rates of changing sexual partners,<sup>40</sup> which may be consistent with the development of some psychiatric disorders, particularly dysfunctional substance use. However, the specification involving number of sexual partners clearly contradicts that interpretation, at least in the realm of sexual behavior. Instead, we found that the association between same-sex partners and psychiatric morbidity was stronger among respondents who reported having a single sexual partner than among those reporting multiple partners.

There are clearly many remaining research questions worthy of further study. One is the overlap between sexual behavior and sexual identity as separate, albeit related, determinants of mental health. It would be useful if future surveys included both behavior and identity-based definitions of sexual orientation. This would allow researchers to investigate the impact of discrepancies between these 2 definitions on the association between sexual orientation and mental health. In addition, the precise causal mechanism at this point remains

unknown. Therefore, studies are needed that directly test mediational hypotheses to evaluate, for example, the relative salience of social stigmatization and of psychosocial and lifestyle factors as potential contributors to psychiatric morbidity among gays and lesbians. □

## Contributors

S.E. Gilman conducted the final analyses, wrote the first draft of the paper, and edited subsequent versions. S.D. Cochran, V.M. Mays, M. Hughes, and D. Ostrow conducted initial analyses and edited the manuscript. R.C. Kessler supervised the analyses and edited the manuscript. All authors discussed and helped refine the overall research question, discussed the analysis plan, and participated in interpreting the results.

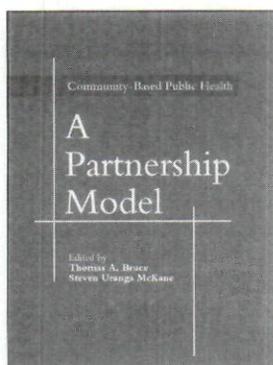
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