



# HHS Public Access

Author manuscript

*Addict Behav.* Author manuscript; available in PMC 2016 August 01.

Published in final edited form as:

*Addict Behav.* 2015 August ; 47: 80–85. doi:10.1016/j.addbeh.2015.03.023.

## Sexual Orientation Disparities in Psychiatric and Drug Use Disorders among a Nationally Representative Sample of Women with Alcohol Use Disorders

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### Abstract

**Background and Aims**—Sexual minority women (SMW) are at greater risk for alcohol use disorders (AUDs) compared to heterosexual women. However, there is a dearth of research on sexual orientation disparities in co-occurring disorders among women with AUDs. We examined disparities in lifetime co-occurring psychiatric and drug use disorders among a nationally representative sample of women with lifetime AUDs.

**Methods**—Data were analyzed from the 2004–2005 (Wave 2) of the National Epidemiological Survey on Alcohol and Related Condition (NESARC), which was collected in structured

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#### Contributors

Authors Mereish, Gamarel, Zaller, and Operario conceptualized the study. Author Lee conducted the statistical analysis. Author Mereish wrote the first draft of the manuscript. All authors contributed to and have approved the final manuscript.

**Statement 3: Conflict of Interest** Authors have no conflicts of interest.

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diagnostic face-to-face interviews. Adult women with AUDs ( $N = 4,342$ ) were included in the analyses and approximately 191 of those women self-identified as SMW. Lifetime alcohol and drug use disorders and psychiatric disorders were assessed using DSM-IV criteria. We conducted multivariate logistic regression analyses to compare SMW and heterosexual women with lifetime AUDs on lifetime psychiatric disorders and drug use disorders, while adjusting for sociodemographic variables.

**Findings**—While accounting for several covariates, SMW with lifetime AUDs were more likely than heterosexual women with lifetime AUDs to have lifetime psychiatric disorders (e.g., mood, anxiety, panic disorders) and drug use disorders (e.g., prescription drugs, cannabis use disorders).

**Conclusions**—Sexual minority women with lifetime alcohol use disorders are at heightened risk for co-occurring psychiatric and drug use disorders than heterosexual women with lifetime alcohol use disorders. The findings warrant the need for more research and empirically based interventions for the comprehensive treatment and prevention of alcohol use disorders among sexual minority women.

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Heavy alcohol consumption is one of the leading preventable causes of premature mortality in the United States,<sup>1</sup> with economic costs estimated to be at \$223.5 billion in 2006<sup>2</sup>. Approximately 17 million adults over the age of 18 had an alcohol use disorder in 2012 in the United States<sup>3</sup>. Although women tend to drink less than men, the consequences of alcohol use disorders and hazardous drinking are especially problematic for women<sup>4</sup>.

Among women, sexual minority women (SMW; e.g., lesbian, bisexual women) are at higher risk for alcohol use disorders (AUD) compared to heterosexual women<sup>5</sup>. Meta-analyses indicate that SMW are four times as likely to be at risk for AUDs compared to heterosexual women<sup>6</sup>. While SMW are also more likely to seek treatment for alcohol-related problems than heterosexuals<sup>7-9</sup>, they are likely to have more severe substance abuse problems than heterosexual women when in treatment<sup>7</sup>. Nonetheless, culturally sensitive services and interventions for SMW are quite limited<sup>10</sup>, and SMW continue to have more unmet treatment needs compared to heterosexual women<sup>11</sup>. Furthermore, there are no empirically-based SMW-specific treatment interventions for alcohol disorders<sup>12</sup>. Therefore, more research is needed to understand the clinical needs of SMW with AUDs, which is a federal and public health priority<sup>5,13</sup>.

In addition to disparities in AUDs, sexual minority women are at greater risk than heterosexual women for psychiatric and drug use disorders<sup>6,14</sup>. Despite the high prevalence of co-occurring psychiatric and substance use disorders in people with AUDs<sup>15-17</sup>, little is known about potential sexual orientation disparities in co-occurring disorders among women with AUDs. This is especially problematic because co-occurring disorders negatively impact substance use treatment outcomes<sup>18,19</sup> and have significant effects on mortality, physical health, such as liver cirrhosis and breast cancer, and overall functioning<sup>4,20</sup>. Thus, more population-based research is needed to examine the prevalence of co-occurring disorders among women with AUDs and related sexual orientation disparities.

Experiences of lifetime victimization and structural oppression may contribute to sexual orientation disparities in alcohol, drug, and psychiatric disorders. SMW are more likely than

heterosexual women to experience childhood and adulthood adversity and trauma (e.g., sexual, physical, emotional abuse and/or assault, school victimization, intimate partner violence), putting them at greater risk for AUDs as well as psychiatric and drug use disorders<sup>21–25</sup>. Although victimization and systematic oppression among women is concerning more generally, sexual minority stigma and stress may exacerbate their victimization experiences and their risk for AUDs. According to the minority stress model, sexual minority women experience unique and chronic stressors related to their stigmatized sexual identity (i.e., minority stressors such as discrimination), which have deleterious effects on their health<sup>14,26</sup>. In fact, several studies have documented the effects of minority stressors on alcohol and substance use disorders and related consequences<sup>27–30</sup>. Furthermore, sexual minorities residing in states with greater structural oppression (i.e., heterosexist policies) compared to sexual minorities living in states with affirming policies have higher prevalence of alcohol, substance, and psychiatric disorders<sup>31,32</sup>.

Given existing sexual orientation disparities in alcohol and substance use, and psychiatric disorders among women, there is a dearth of population-based research examining sexual orientation disparities in co-occurring disorders among women with AUDs. Thus, the purpose of this study is to examine sexual orientation disparities in co-occurring psychiatric and drug use disorders between SMW and heterosexual women with AUDs using a population-based survey. Using the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), we compared the prevalence of co-occurring psychiatric and drug use disorders among SMW and heterosexual women with AUDs. We hypothesized that SMW with AUDs would be at greater risk for psychiatric and drug use disorders than heterosexual women with AUDs.

## Methods

### Sample

We analyzed data from Wave 2 of the National Epidemiological Survey on Alcohol and Related Condition (NESARC). NESARC is a nationally representative survey, sponsored by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). Wave 1 was conducted in 2001 and 2002, and Wave 2 was conducted in 2004 and 2005. NESARC surveyed noninstitutionalized adults age 18 years and older of the United States, including the District of Columbia, Alaska and Hawaii, and oversampled African Americans, Hispanic Americans, and young adults 18–24 years of age. Detailed information of the NESARC survey methods and procedure is described in detail elsewhere<sup>33,34</sup>. We restricted our sample to only women who met diagnostic criteria for lifetime Alcohol Use Disorder (AUD) and who self-identified themselves as heterosexual or sexual minority (lesbian, bisexual, or not sure), composing a final sample of  $N = 4,342$  women.

### Measures

*Sociodemographic variables* included age, gender, race/ethnicity, marital status, employment, education, past year total family income, any health insurance at any time in past year, and private health insurance at any time past year.

*Sexual Orientation* was asked with this question: “Which categories on the card best describe you?” (1) heterosexual (straight), (2) gay or lesbian, (3) bisexual, or (4) not sure. We coded people who identified as lesbian, bisexual, and not sure as “sexual minority”.

*Lifetime Alcohol Use Disorder (AUD)* was assessed using the Alcohol Use disorder and Associated Disabilities Interview Schedule – DSM IV version (AUDADIS-IV). Reliability and validity of the *AUDADIS-IV* measures for alcohol use disorders are discussed elsewhere<sup>35–37</sup>. Anyone who met diagnostic criteria for lifetime alcohol abuse and/or dependence was defined as having a lifetime AUD.

*Lifetime Psychiatric disorders* were any mood or anxiety disorder according to DSM-IV criteria. Mood disorders were: major depressive disorder, manic episode, dysthymic episode, hypomanic episode. Anxiety disorders were: panic disorder with/without agoraphobia, agoraphobia without history of panic, social phobia, specific phobia, posttraumatic stress disorder, and generalized anxiety disorder. Reliability and validity of the NESARC mood and anxiety disorder measures are extensively discussed in detail elsewhere<sup>34,38</sup>.

*Lifetime drug use disorder* was assessed according to DSM-IV diagnoses of abuse and dependence for the following categories of medical and illicit drugs: sedatives, tranquilizers, opioids, amphetamine, cannabis, hallucinogen, cocaine, inhalants/solvents, heroin and other drug use disorder. We coded sedatives, tranquilizers, opioids, and amphetamine use disorders as “any prescription disorder”, and hallucinogen, cocaine, inhalants/solvents, heroin and other drug use disorders as “other drug use disorder.” We also coded an overall drug use disorder variable which included any participant meeting criteria for any of these drug use disorders.

## Statistical Analysis

We used STATA Statistical Software, version 13.1, for our analyses and employed the NESARC analytical survey weights and clustering in all analyses. First, we conducted bivariate analyses to compare characteristics of sexual minority and heterosexual women. Next, we ran multivariate logistic regression analyses to compare sexual minority women versus heterosexual women who had lifetime AUD on lifetime psychiatric disorders and drug use disorders, adjusting for sociodemographic variables. Adjusted odds ratio (AOR) and 95% confidence intervals (CI) are reported.

## Results

### Sociodemographic Characteristics

Of the 4,342 participants, 4,151 (95.6%) self-identified as Heterosexual, 191 (4.4%) self-identified as sexual minority (see Table 1). Among women who have a lifetime alcohol use disorder, SMW are more likely to be never married and less educated, and less likely to have any health insurance at any time in the past year.

### Lifetime Psychiatric Disorders and Drug Use Disorders

Compared to heterosexual women with lifetime AUDs, SMW with AUDs had a higher prevalence of any mood disorder, dysthymic disorder, panic disorder with/without

agoraphobia (Table 1). Sexual minority women with AUDs also had a higher prevalence than heterosexual women with AUDs of any drug use disorder, including any prescription drug use disorder, cannabis use disorder, and other drug use disorder.

After controlling for age, marital status, education, and any insurance past year, compared to heterosexual women with lifetime AUDs, SMW with lifetime AUDs had higher odds of having a lifetime: mood disorder, major depressive episode, dysthymic episode, any anxiety disorder, panic disorder with/without agoraphobia, social phobia, specific phobia, and generalized anxiety disorder (See Table 2). Compared to heterosexual women with lifetime AUDs, SMW with lifetime AUDs had higher odds of having a lifetime: any substance use disorder, any prescription drug use disorder, cannabis use disorder, and any other drug use disorder.

## Discussion

In this nationally representative sample, we found sexual orientation disparities in lifetime psychiatric and drug use disorders among adult women with lifetime AUDs. These findings build on the extant literature of sexual orientation disparities in AUDs to document disparities in co-occurring disorders among women with AUDs. These results also respond to multiple federal public health calls for research on sexual orientation health disparities and have implications for research and treatment of AUDs among women<sup>5,13</sup>.

Consistent with prior research, we found that SMW with lifetime AUDs had a significantly higher prevalence of lifetime psychiatric disorders, specifically anxiety and mood disorders, and drug use disorders compared with heterosexual women<sup>5</sup>. However, these are among the first known findings to document these disparities in co-occurring disorders among women with AUDs. SMW might be more likely to have these co-occurring disorders because of previous childhood and adulthood adversity, minority stressors, and structural stigma that they often experience at heightened levels<sup>14,21,23,31</sup>. Specifically, SMW are more likely than heterosexual women to experience lifetime adversity, minority stressors, and structural stigma, which are associated with increased risk for AUDs<sup>24,25,27-32</sup>. Future research should directly examine how these factors directly impact SMW with AUDs' risk for co-occurring disorders and their access to treatment services.

The elevated risk of lifetime anxiety, mood, and drug use disorders among SMW with AUDs compared to heterosexual women with AUDs has several implications for clinical treatment of AUDs and alcohol-related intervention and prevention efforts. Given that co-occurring disorders negatively impact substance use treatment outcomes<sup>18,19</sup> and have significant effects on physical health and overall functioning<sup>4,20</sup>, we urgently need appropriate interventions for SMW. Our findings indicate that SMW's clinical treatment is complex and underscore the need for comprehensive and culturally-sensitive alcohol interventions that take into account both psychiatric and substance use conditions. This is especially important because SMW continue to have unmet treatment needs than heterosexual women<sup>11</sup> and there are no empirically-based SMW-specific treatment interventions for AUDs<sup>12</sup>.

Although our study has several strengths including its utilization of a population-based sample and diagnostic measures to better understand sexual orientation disparities in co-occurring disorders among women with AUDs, it is important to highlight the limitations. First, due to small cell sizes in the varying disorders, we aggregated specific sexual minority women subgroups (i.e., bisexual and lesbian women as well as SMW of color and White SMW); thus, results are limited in their ability to examine sexual orientation disparities for specific subgroups. Second, because this was an existing population-based sample, our results are limited to only a self-reported sexual orientation identity measure; thus, we were not able to examine disparities based on sexual behaviors or attractions. Third, our data were cross-sectional, which limits any inferences about the order of the co-occurring disorders. Finally, these descriptive findings do not directly examine potential theoretical etiological or risk factors that might help explain sexual orientation disparities in co-occurring disorders among women with AUDs; future research is necessary to examine potential etiologic pathways contributing to the risks observed in this analysis.

Sexual orientation disparities in health are a public health concern and warrant future epidemiologic and intervention research<sup>5,13</sup>. Given the variability in sexual orientation disparities in AUDs based on subgroups of SMW, such as SMW who are racial/ethnic minorities<sup>39-41</sup> and bisexual women<sup>42,43</sup>, future research should examine disparities in co-occurring disorders among subgroups of SMW. Similarly, given variability in sexual orientation disparities in AUDs depending on how sexual orientation is measured<sup>44</sup>, future research should utilize multiple measures of sexual orientation, including identity, behavior, and attractions. Moreover, research is needed to examine potential risk factors and theoretical mechanisms that might help explain sexual orientation disparities, such as lifetime cumulative stress, minority stress, and structural stigma. Additional research is also needed to identify resilience and protective factors for SMW with AUDs. Empirically supported treatments of AUDs for SMW are scant<sup>12</sup>; thus, identifying risk and protective mechanisms is essential for the development and testing of comprehensive and integrated clinical interventions for SMW with AUDs.

## Acknowledgments

### Role of Funding Sources

Funding was provided by the National Institute of Alcohol Abuse and Alcoholism (grants U24 AA022000 and P01 AA019072), the National Institute of Drug Abuse (T32DA016184), and the National Institute of Mental Health (T32MH078788). The NIAAA conducted the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) survey. However, NIAAA had no role in the analysis or interpretation of the data for this manuscript, writing of the manuscript, or the decision to submit the paper for publication.

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### Highlights

- Women with alcohol use disorders from the NESARC were studied.
- Sexual orientation disparities were found in co-occurring psychiatric disorders.
- Sexual orientation disparities were found in co-occurring drug use disorders.

Comparisons of heterosexual versus sexual minority women with lifetime AUDs in the NESARC (2004–2005).

**Table 1**

	Heterosexual (N=4,151)			Sexual minority (N=191)			p
	N	%	95% CI	N	%	95% CI	
<b>Age (at wave 1): Mean ± SE</b>		39.3 ± 0.26			34.5 ± 0.93		<.0001
18–24	576	15.8	(14.3, 17.4)	33	21.1	(14.2, 30.3)	<.01
25–44	2169	51.1	(49.2, 53.0)	118	60.6	(51.5, 69.1)	
45–64	1175	27.7	(26.2, 29.3)	38	17.5	(12.5, 24.0)	
65 and older	231	5.4	(4.6, 6.3)	2	0.8	(0.1, 4.7)	.07
<b>Race/Ethnicity</b>							
White, non-Hispanic	2882	80.7	(78.6, 82.7)	123	72.4	(63.6, 79.8)	
Black, non-Hispanic	619	8.2	(7.0, 9.5)	25	10.4	(6.3, 16.6)	
Other, non-Hispanic	148	4.6	(3.8, 5.6)	13	8.8	(4.4, 16.9)	
Hispanic	502	6.5	(5.2, 8.1)	30	8.4	(5.4, 12.9)	
<b>Marital Status</b>							<.0001
Married	1905	54.8	(52.7, 56.8)	25	16.6	(10.2, 25.7)	
Living with partner	184	4.4	(3.7, 5.4)	18	9.2	(5.1, 16.0)	
Widowed/Divorced/Separated	1194	22.6	(21.1, 24.1)	38	18.0	(12.5, 25.4)	
Never married	868	18.2	(16.8, 19.8)	110	56.3	(46.7, 65.4)	.65
<b>Employment</b>							
Employed - full time	2257	62.0	(60.1, 63.9)	125	67.1	(57.4, 75.6)	
Employed - part time	628	18.7	(17.2, 20.3)	20	16.1	(9.4, 26.3)	
Unemployed/Retired	558	14.8	(13.4, 16.3)	18	11.8	(7.6, 17.8)	
Disabled	187	4.5	(3.7, 5.5)	10	5.0	(2.2, 11.2)	.02
<b>Highest level of education</b>							
Less than high school	355	7.2	(6.2, 8.3)	21	14.0	(7.7, 24.1)	
High school or GED	968	23.1	(21.5, 24.9)	31	12.9	(8.1, 20.0)	
Some college	1624	39.8	(37.7, 41.8)	72	40.0	(30.6, 50.1)	
Completed college	827	21.0	(19.4, 22.7)	46	23.0	(16.1, 31.7)	
Completed Master's or higher	377	9.0	(7.9, 10.1)	21	10.1	(6.5, 15.4)	.18
<b>Total family income past year</b>							

	Heterosexual (N=4,151)			Sexual minority (N=191)			p
	N	%	95% CI	N	%	95% CI	
Less than \$ 20,000	896	18.5	(16.8, 20.3)	47	23.2	(16.6, 31.4)	
\$ 20,000 to \$ 34,999	780	17.2	(15.8, 18.7)	34	18.8	(12.5, 27.3)	
\$ 35,000 to \$ 69,999	1320	32.0	(30.3, 33.8)	69	34.8	(26.3, 44.4)	
\$ 70,000 or more	1155	32.3	(30.0, 34.7)	41	23.2	(16.8, 31.1)	.01
<b>Any Health Insurance at any time past year*</b>							
Yes	3649	89.1	(87.7, 90.4)	161	81.9	(74.0, 87.8)	
No	500	10.9	(9.6, 12.3)	30	18.1	(12.2, 26.0)	.78
<b>Private Health Insurance at any time past year</b>							
Yes	2846	71.3	(69.3, 73.3)	129	70.2	(61.5, 77.7)	
No	1304	28.7	(26.7, 30.7)	62	29.8	(22.3, 38.5)	.02
<b>Any mood disorder</b>							
Yes	2001	48.0	(46.1, 49.9)	107	58.4	(49.7, 66.6)	
No	2150	52.0	(50.1, 53.9)	84	41.6	(33.4, 50.3)	.06
<b>Major Depressive Episode</b>							
Yes	1810	43.7	(41.8, 45.7)	94	52.6	(43.4, 61.6)	
No	2341	56.3	(54.3, 58.2)	97	47.4	(38.4, 56.6)	.23
<b>Manic Episode</b>							
Yes	463	11.1	(9.9, 12.4)	27	14.3	(9.6, 20.7)	
No	3688	88.9	(87.6, 90.1)	164	85.7	(79.3, 90.4)	.03
<b>Dysthymic Episode</b>							
Yes	479	11.3	(10.2, 12.5)	33	17.6	(12.1, 25.0)	
No	3672	88.7	(87.5, 89.8)	158	82.4	(75.0, 87.9)	.45
<b>Hypomanic Episode</b>							
Yes	266	6.0	(5.2, 6.8)	14	7.8	(3.8, 15.5)	
No	3885	94.0	(93.2, 94.8)	177	92.2	(84.5, 96.2)	.73
<b>Any anxiety disorder</b>							
Yes	855	19.7	(18.2, 21.3)	45	21.0	(14.4, 29.6)	
No	3296	80.3	(78.8, 81.8)	146	79.0	(70.4, 85.7)	<.01
<b>Panic Disorder w/o agoraphobia</b>							
Yes	496	11.9	(10.7, 13.1)	34	24.1	(16.0, 34.6)	

		Heterosexual (N=4,151)				Sexual minority (N=191)				
		N	%	95% CI	N	%	95% CI	p		
No		3655	88.1	(86.9, 89.3)	157	75.9	(65.4, 84.0)			
<b>Panic Disorder w/agoraphobia</b>								.03		
Yes		193	4.5	(3.8, 5.4)	13	9.6	(5.0, 17.6)			
No		3958	95.5	(94.7, 96.2)	178	90.4	(82.4, 95.0)			
<b>Agoraphobia w/o history of panic disorder</b>								.52		
Yes		27	0.7	(0.5, 1.1)	1	0.4	(<.01, 2.7)			
No		4124	99.3	(98.9, 99.5)	190	99.6	(97.3, 100.0)			
<b>Social Phobia</b>								.10		
Yes		561	14.2	(12.9, 15.7)	37	19.7	(13.4, 28.0)			
No		3590	85.8	(84.3, 87.2)	154	80.3	(72.0, 86.6)			
<b>Specific Phobia</b>								.09		
Yes		1167	28.6	(26.8, 30.5)	63	36.0	(27.6, 45.3)			
No		2984	71.4	(69.5, 73.2)	128	64.0	(54.7, 72.4)			
<b>Posttraumatic Stress Disorder</b>								.73		
Yes		855	19.7	(18.2, 21.3)	45	21.0	(14.4, 29.6)			
No		3296	80.3	(78.8, 81.8)	146	79.0	(70.4, 85.7)			
<b>Generalized Anxiety Disorder</b>								.10		
Yes		682	16.7	(15.3, 18.3)	39	23.3	(15.9, 32.7)			
No		3469	83.3	(81.7, 84.7)	152	76.7	(67.3, 84.1)			
<b>Any drug use disorder †</b>								<.0001		
Yes		1074	26.1	(24.4, 27.8)	92	49.0	(40.4, 57.6)			
No		3077	73.9	(72.3, 75.6)	99	51.0	(42.4, 59.6)			
<b>Any Prescription drug use disorder °</b>								<.01		
Yes		383	9.1	(8.0, 10.3)	31	19.0	(12.2, 28.3)			
No		3768	90.9	(89.7, 92.0)	160	81.0	(71.7, 87.8)			
<b>Cannabis Use Disorder</b>								<.0001		
Yes		819	20.3	(18.8, 21.9)	73	39.7	(31.2, 48.9)			
No		3332	79.7	(78.2, 81.2)	118	60.3	(51.1, 68.8)			
<b>Other Drug Use Disorder §</b>								<.0001		

	Heterosexual (N=4,151)		Sexual minority (N=191)		<i>p</i>
	<i>N</i>	%	<i>N</i>	%	
Yes	410	9.9	43	23.3	(16.4, 32.0)
No	3741	90.1	148	76.7	(68.0, 83.6)

Note. %: weighted.

\* Any insurance includes Medicare, Medi-gap, Medicaid, Tricare/Champus/Champva/VA or other military healthcare, private health insurance, government/state sponsored health insurance, long-term care insurance, and any other health insurance plan.

† Any drug use disorder includes sedatives, tranquilizers, opioids, amphetamine, cannabis, hallucinogen, cocaine, inhalants/solvents, heroin and other drug use disorder.

‡ Any Prescription use disorder includes sedatives, tranquilizers, opioids, and amphetamine use disorder.

§ Other drug use disorder includes hallucinogen, cocaine, inhalants/solvents, heroine and other drug use disorder

**Table 2**

Adjusted odds of lifetime mood disorders, anxiety disorders, and drug use disorders among sexual minority women compared with heterosexual women with lifetime AUDs, NESARC 2004–2005.

	<b>Sexual minority vs Heterosexual women (ref)</b>		
	<b>AOR</b>	<b>95% CI</b>	<b>p</b>
<b>Any mood disorder</b>	1.54	(1.06, 2.24)	.03
Major Depressive Episode	1.47	(1.00, 2.18)	.05
Manic Episode	1.19	(0.72, 1.97)	.49
Dysthymic Episode	1.73	(1.05, 2.85)	.03
Hypomanic Episode	1.10	(0.52, 2.33)	.79
<b>Any anxiety disorder</b>	1.62	(1.11, 2.36)	.01
Panic Disorder without agoraphobia	2.53	(1.50, 4.27)	.001
Panic Disorder with agoraphobia	2.26	(1.09, 4.71)	.03
Agoraphobia without history of panic disorder	0.77	(0.08, 7.19)	.82
Social Phobia	1.57	(0.99, 2.48)	.05
Specific Phobia	1.49	(1.02, 2.17)	.04
Posttraumatic Stress Disorder	1.11	(0.67, 1.83)	.69
Generalized Anxiety Disorder	1.66	(1.00, 2.76)	.05
<b>Any substance use disorder †</b>	2.59	(1.80, 3.71)	<.001
Any Prescription drug use disorder °	2.41	(1.44, 4.04)	.001
Cannabis Use Disorder	2.36	(1.59, 3.50)	<.001
Other Drug Use Disorder §	2.51	(1.62, 3.88)	<.001

*Note.* Adjusted for age, marital status, education, and any insurance past year.

† Any substance abuse includes sedative, tranquilizer, opioid, amphetamine, cannabis, hallucinogen, cocaine, inhalant/solvent, heroin and other drug use disorder.

° Any Prescription use disorder includes sedative, tranquilizer, opioid, and amphetamine use disorder

§ Other drug use disorder includes hallucinogen, cocaine, inhalant/solvent, heroine and other drug use disorder