

# Sexual minority status and psychotic experiences among young adult college students in the United States

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**ABSTRACT**

Studies are beginning to suggest that sexual minorities have greater odds of having psychotic experiences; however, more research is needed to examine whether this is true for young adults and what factors might mediate the association. We analyzed data from the Fall and Spring cohort of the 2020-2021 Healthy Minds Study, and used multivariable logistic regression to examine the associations between sexual minority status and psychotic experiences, adjusting for age, gender, and race/ethnicity. We then tested whether psychosocial factors accounted for the association. Sexual minority status was associated with 1.87 times greater odds of having psychotic experiences over the past 12 months (aOR: 1.87; 95% CI: 1.77-1.99; N=110,551). Several factors mediated the association between sexual orientation and psychotic experiences such as loneliness (26.93%), anxiety (30.90%), depression (33.18%), and marijuana use (13.95%); taken together, these factors accounted for 59.01% of the association between sexual minority status and psychotic experiences. Food insecurity, recent abuse, and discrimination did not significantly mediate the association. Findings should raise clinical awareness that psychotic experiences are more common among sexual minorities than among heterosexuals, which is largely explained by mental health factors, calling for targeted outreach and intervention.

## INTRODUCTION

Individuals who identify as gay, lesbian, bisexual, or other non-heterosexual orientations (i.e., sexual minorities) are at greater risk for a wide range of mental and physical health problems when compared with their heterosexual counterparts (Gorczynski & Fasoli, 2021). For example, sexual minorities are at greater risk for mood disorders, anxiety disorders, substance use disorders, and other psychiatric disorders (Bostwick et al., 2010; Medley et al., 2016; Semlyen et al., 2016). These mental health disparities may be explained by the Minority Stress Theory, which posits that stigmatized minority groups are subjected to high levels of stressors in the form of prejudice and discrimination, resulting in physiologic changes that underlie mental and physical health problems over time (Meyer, 2003; Pitoňák, 2017). Sexual minorities inhabit a homophobic and heterosexist society where they encounter harassment, isolation, maltreatment, and victimization (Marshall et al., 2008; Meyer, 2003), which are risk factors for psychopathology (Hall, 2018). One mental health disparity affecting sexual minorities is psychosis, which is a term used to describe the presence of hallucinations, delusions, thought disorder, and negative symptoms. Emerging studies have shown that sexual minorities are at greater risk for psychotic disorders, such as schizophrenia (Post & Veling, 2021), which can be serious and burdensome conditions (Cloutier et al., 2016; Rössler et al., 2005; Wu et al., 2005). Social defeat models describe how individuals who experience hostile social interactions (conflicts where one is excluded, bullied, subordinated, and humiliated) can impact the endocrine system (neurotransmitter levels, hormone levels) and can cause significant changes in behavior, physiology, and brain functioning (Björkqvist, 2001). As a result, social defeat sensitizes the mesolimbic dopamine system that gives rise to hallucinations and delusions, and also enhances the dopaminergic response to subsequent stressors (Selten et al., 2013; Selten & Cantor-Graae, 2007).

In recent decades, there has been an increasing focus placed on a subclinical form of psychosis known as *psychotic experiences* (Linscott & Van Os, 2010), which are mild and often ephemeral hallucinations and delusions that affect upwards of 10% of the general adult population in the United States without causing clinically significant distress or impairment (Cohen & Marino, 2013; Oh, Smith, et al., 2020). People who have psychotic experiences have greater risk for more persistent and severe forms of psychosis (Dominguez et al., 2011), though most people with psychotic experiences will never develop a psychotic disorder (Linscott & Van Os, 2010). However, psychotic experiences seem to predict a host of other problems (Oh, DeVlyder, et al., 2021), including psychiatric disorders (DeVlyder et al., n.d.), substance use (Degenhardt et al., 2018), chronic physical health conditions (Oh, DeVlyder, et al., 2021; Oh et al., 2019; Oh, Smith, et al., 2020; Oh, Waldman, et al., 2018; Scott et al., 2018), disabilities (Navarro-Mateu et al., 2017; Oh, Koyanagi, et al., 2018), loneliness (Narita et al., 2020, 2022), suicidal thoughts and behaviors (Yates et al., 2019), and shorter lifespan (Sharifi et al., 2015). Thus, it has been important to understand the extent to which sexual minorities might be at risk for psychotic experiences, and whether these experiences are indicative of other health outcomes.

The literature is beginning to suggest that sexual minorities are indeed more likely to report psychotic experiences than their heterosexual counterparts, though this is based on only a handful of studies. In England, one study found that sexual minority adults (aged 16 and older) had nearly double the odds of reporting psychotic experiences than heterosexual adults (Jacob et al., 2019). Similar findings were replicated in the Netherlands (Gevonden et al., 2014). In the United States, one study found that Latinx-American sexual minority adults (aged 18 and older) had greater odds of hallucinatory experiences (Oh, 2020). These associations are likely attributable to psychosocial factors (Jacob et al., 2019), as studies have shown that sexual minorities are more likely to report depression and anxiety (Plöderl & Tremblay, 2015), loneliness (Gorczynski & Fasoli, 2021), discrimination (Bostwick et al., 2014), traumas (Programs,

2014; Schneeberger et al., 2014), food insecurity (Gibb et al., 2021), and marijuana use (Gonzales, 2020), which have all been linked to psychotic experiences (Arseneault et al., 2004; Bardol et al., 2020; Bechtold et al., 2016; DeVlyder et al., n.d.; Gage et al., 2016; Jones et al., 2018; McGrath et al., 2017; Morgan et al., 2014; Narita et al., 2020; Oh et al., 2014; Oh, Nagendra, et al., 2021; Oh & DeVlyder, 2017). These psychosocial factors have been identified as potential mediators (Gevonden et al., 2014; Jacob et al., 2019; Qi et al., 2020); however, more research is needed to confirm these associations.

Psychotic experiences tend to emerge during young adulthood (McGrath et al., 2016), and mental health symptoms and treatment utilization has increased over the past decades among young adults on college campuses in the United States (Eisenberg, 2019; Lipson et al., 2019). Thus, in this study, we examine the associations between sexual minority status and psychotic experiences among young adult college students in the United States, exploring several psychosocial factors that may help explain this association.

## **METHODS**

### *Sample*

We analyzed data from the Fall and Spring cohort of the 2020-2021 Healthy Minds Study (HMS), a repeated cross-sectional, non-probability, web-based survey examining health and wellness among undergraduate and graduate student populations in the United States. The first survey was administered at 37 universities (N=34,168) between September through December of 2020; and the second survey was administered at 103 universities (N=103,748) between January through June 2021. These data were pooled into a single cross-sectional dataset. At each university, a random sample of 8,000 students was invited by e-mail to participate, except at smaller universities (<8,000 students) where all students were invited to participate. The response rate was 14%, which is comparable to other response rates from

online surveys using convenience samples and panels (Baker et al., 2013; Craig et al., 2013). We restricted the sample by age (18-34) to isolate young adults (18,013 observations excluded) who completed the sexual orientation item (1,917 observations excluded). We used complete-case analysis (up to 9297 observations deleted listwise), allowing sample sizes to vary across regression models according to the data that were available. All respondents provided informed consent to participate in the study. The HMS was approved by the Institutional Review Board [REDACTED], and the Institutional Review Boards at all participating campuses. The HMS data are available upon request at:

<https://healthymindsnetwork.org/hms/>.

### *Measures*

*Psychotic experiences over the past year* (outcome). Psychotic experiences were measured using an abbreviated version of the World Health Organization Composite International Diagnostic Interview Psychosis Screen, which has been used in large global epidemiology studies (McGrath et al., 2015). Respondents were asked four questions about the following experiences: (1) A feeling something strange and unexplainable was going on that other people would find hard to believe; (2) A feeling that people were too interested in you or that there was a plot to harm you?; (3) A feeling that your thoughts were being directly interfered or controlled by another person, or your mind was being taken over by strange forces?; and (4) An experience of seeing visions or hearing voices that others could not see or hear when you were not half asleep, dreaming, or under the influence of alcohol or drugs? Respondents were then asked a single item (yes/no) about whether any of these four experiences occurred over the past 12 months. This variable was treated dichotomously in accordance with prior studies to signify the presence of psychotic experiences (i.e., hallucinatory experiences and/or delusional ideations) (McGrath et al., 2015). We focused on 12-month psychotic experiences to minimize recall bias.

*Sexual minority status (predictor).* Respondents were asked: “How would you describe your sexual orientation?” Respondents could answer: Heterosexual, Lesbian, Gay, Bisexual, Queer, or Questioning. This variable was dichotomized to reflect heterosexual vs. sexual minority (Lesbian, Gay, Bisexual, Queer, or Questioning).

*Psychosocial factors.* Based on prior empirical studies, we examined six psychosocial factors, which were loneliness, depression, anxiety, marijuana, recent abuse, food insecurity, and discrimination (Bardol et al., 2020; Gorczynski & Fasoli, 2021; Narita et al., 2020; Oh et al., 2014, 2016; Oh, Jacob, et al., 2020). Notably, food insecurity is an important measure of socioeconomic status given that other traditional measures (such as income or years of education) may not be accurate indicators of socioeconomic status for this sample of young adults enrolled in higher education (Nazmi et al., 2019; Oh et al., 2022; Zigmont et al., 2021).

- (a) *Loneliness* was measured using the 3-item UCLA loneliness scale, where respondents were asked three questions: “How often do you feel that you lack companionship?”; “How often do you feel left out?”; “How often do you feel isolated from others?”. Respondents could answer: hardly ever, some of the time, or often. These items were summed into a scale ranging from 3-9, with greater scores, suggesting more loneliness. This scale was dichotomized in accordance with prior studies.
- (b) *Depression* was measured using the Patient Health Questionnaire – 9 (PHQ-9; Kroenke & Spitzer, 2002), which is validated and widely used in various populations (see Beard et al., 2016). The PHQ-9 contained nine questions eliciting information about depression symptoms over the past two weeks, ranging symptoms such as anhedonia to suicidal ideation. Respondents could answer the frequency of these symptoms from ‘not at all’ to ‘nearly every day’. The depression items were summed into a scale ranging from 0-27, which was dichotomized to represent the presence of ‘moderately severe or severe depression’ (i.e., a score of 15 or higher), in accordance with prior literature.

- (c) *Anxiety* was measured using the General Anxiety Disorder – 7 (GAD-7; Spitzer et al., 2006), which is also validated and widely used in various populations (see Lowe et al., 2008). The GAD-7 elicited information about anxiety symptoms over the past two weeks, ranging from nervousness to irritability. The anxiety items were summed into a scale ranging from 0-12, and then dichotomized to represent ‘moderately severe or severe anxiety’ (i.e., a score of 11 or higher).
- (d) *Cannabis use* was measured using the item that asked respondents (yes/no) whether they had used marijuana over the past 30 days.
- (e) *Recent Abuse* was measured using three items: (1) “Over the past 12 months, were you kicked, slapped, punched or otherwise physically mistreated by another person?”; (2) “Over the past 12 months, were you called names, yelled at, humiliated judged, threatened, coerced, or controlled by another person?”; and (3) “In the past 12 months, has anyone had unwanted sexual contact with you? (Please count any experience of unwanted sexual contact [e.g., touching of your sexual body parts, oral sex, anal sex, sexual intercourse, and penetration of your vagina or anus with a finger or object] that you did not consent to and did not want to happen regardless of where it happened).” Each category was dichotomized (yes/no), and recent abuse was coded to reflect the presence of any type of recent abuse.
- (f) *Food insecurity* was measured using two items: (1) Within the past 12 months I was worried whether our food would run out before we got money to buy more; (2) Within the past 12 months the food I bought just didn’t last and I didn’t have money to get more. Respondents could answer: never true, sometimes true, often true. Individuals were identified as food insecure with an affirmative answer (sometimes true or often true) to either question, following the two-item screen for families at risk of food insecurity (Hager et al., 2010).
- (g) *Discrimination* was assessed using the single item: In the past 12 months, how many times have you been treated unfairly because of your race, ethnicity, gender, sexual orientation, or cultural



background? Respondents could answer: never, once in a while, sometimes, a lot, most of the time, or almost all of the time. This variable was dichotomized, where sometimes, a lot, most of the time, and almost all of the time were considered positive endorsement of discrimination. The discrimination item was only administered at select colleges (subsample n=39,574).

*Sociodemographic covariates.* Respondents self-reported sociodemographic characteristics, including age (continuous), race/ethnicity (White, Black, Latinx/Hispanic, Multiracial, Other), gender (cis-male, cis-female, transgender/non-binary [including male/trans man, trans female/trans woman, genderqueer/gender non-conforming, gender non-binary, and other]). We also adjusted for the timing of the survey (Fall 2020, Spring 2021).

### *Analysis*

We calculated the prevalence of sexual minority status and explanatory factors, stratified by psychotic experiences. We also calculated the prevalence of psychosocial factors, stratified by sexual minority status. We then used multivariable logistic regression to examine the associations between sexual minority status and psychotic experiences, adjusting for age (continuous), gender (man, woman, transgender/non-binary/other gender), and race/ethnicity (White, Black, Asian American/Pacific Islanders [AAPI], Latinx, Multiracial, Other). In order to assess the degree to which the association between sexual orientation and psychotic experiences can be explained by loneliness, depression, anxiety, marijuana use, recent abuse, food insecurity, and discrimination, we conducted mediation analysis using the KHB (Karlson Holm Breen) command in Stata (Breen et al., 2013; Kohler et al., 2011). This method can be applied in logistic regression models and decomposes the total effect (i.e., unadjusted for the mediator) of a variable into direct (i.e., the effect of sexual orientation on psychotic experiences adjusted for the mediator) and indirect effects (i.e., the mediational effect). We report the

proportion of the effect of the independent variable (i.e., sexual minority status) attributed to the mediator (i.e., food insecurity, depression, anxiety, loneliness, marijuana use, recent abuse, and discrimination), as well as confidence intervals for the total, direct, and indirect effects. Confidence intervals were calculated with the delta method (Sobel, 1982). Using this method, the percentage of the main association explained by the mediator can also be calculated (mediated percentage). The mediated percentage is the percent attenuation in the log odds of psychotic experiences after the inclusion of the potential mediator in the model, compared to the model without the mediator. Details on the circumstances under which the indirect effect becomes significant are provided in the article by Kohler and colleagues (Kohler, et al, 2011).

*Survey weights.* We used sample probability weights to adjust for non-response using administrative available data on full student populations at each institution. Using multivariable logistic regression, response propensity was estimated based on gender identity, race/ethnicity, academic level, and grade point average. We then assigned response propensity weights to each student who completed the survey. Students who were less likely to have completed the survey were assigned a larger weight in the analysis. Sample weights gave equal aggregate weight to each school in the national estimates rather than assigning weights in proportion to school size, so that overall national estimates were not dominated by schools in our sample with large enrollment. Standard errors were clustered by college. We performed all statistical analyses using Stata SE 15.

## RESULTS

**Table 1** presents the descriptive statistics for the total sample and stratified by psychotic experiences. Approximately 23.32% of the weighted analytic sample were sexual minorities, and 15.95% of the

sample reported psychotic experiences over the past year. All psychosocial factors were more common among people with psychotic experiences than among people without psychotic experiences.

**Table 2** presents descriptive statistics for the psychosocial factors, stratified by sexual orientation.

Psychotic experiences were more common among sexual minorities (24.04%) than among heterosexuals (13.49%). All psychosocial factors were significantly more common among sexual minorities than among heterosexuals.

Using multivariable logistic regression, we found that sexual minority status was associated with 1.87 times greater odds of having psychotic experiences over the past 12 months, adjusting for age, race/ethnicity, gender, and timing of survey (aOR: 1.87; 95% CI: 1.77-1.99; N=110,551). Using the KHB method, we found that several factors mediated the association between sexual orientation and psychotic experiences, presented in **Table 3**. The mediated percentages were 26.93% for loneliness, 30.90% for anxiety, 33.18% for depression, and 13.95% for marijuana use. Taken together, these factors accounted for 59.01% of the association between sexual minority status and psychotic experiences. Food insecurity, recent abuse, and discrimination did not significantly mediate the association.

## DISCUSSION

We found that among young adult college students in the United States, sexual minority students had significantly elevated odds of having psychotic experiences over the past year. Mental and behavioral health factors such as loneliness, anxiety, depression, and marijuana use were key explanatory factors, accounting for 59.01% of the association. Socio-environmental factors are more common among sexual minorities, and the stress resulting from these factors can activate the hypothalamic pituitary adrenal axis, which may contribute to psychosis (Frodl & O'Keane, 2013; Maniam et al., 2014; Thompson et al.,

2007). With that being said, psychosocial stressors such as food insecurity, recent abuse, and discrimination did not appear to mediate the relation between sexual minority status and psychotic experiences, though the stressors may still causally contribute to mental and behavioral health factors. Traumatic events in particular are more prevalent among sexual minorities (Roberts et al., 2010), and have been strongly linked to psychotic experiences (McGrath et al., 2017; Yates et al., 2022). A significant portion remains unexplained beyond the factors we examined in this study. Findings comport with the minority stress theory (Marshal et al., 2008; Meyer, 2003), and social defeat models (Selten et al., 2013; Selten & Cantor-Graae, 2007), though we did not specifically measure these constructs. Minority stress and social defeat putatively drive psychotic experiences directly but may also operate through mental health factors (i.e., depression, anxiety, substance use) to give rise to psychotic experiences indirectly.

The current findings corroborate prior studies that have found that sexual minorities had greater odds of psychotic experiences among adults in England (Jacob et al., 2019) and Latinx-American adults (Oh, 2020). Jacob and colleagues adjusted for a broader range of mediators (e.g., nicotine dependence, perceived stress, bullying victimization, social support, sleep problems), though many of them overlapped with the mediators that we included in the current study (e.g., loneliness, cannabis use, mental health symptoms). Moreover, Jacob and colleagues used a discrimination measure specific to sexual orientation, while the current study only examined general discrimination. Their findings were based on a nationally representative sample of the English adult population, which may explain differences in findings the current study that examined associations among young adult college students from across the United States.

### *Limitations and future directions*

Findings should be viewed considering the limitations of this study. In terms of study design, all data were cross-sectional, which did not allow us to establish temporality. The onset of psychosis can often occur during childhood/adolescence, and given that it is difficult to establish when sexual identity is formed (and given that sexual identity can evolve over time), ascertaining the order of events can be difficult. We also did not have any information about when the mediators occurred. It is entirely possible that psychosocial stressors can drive substance use, anxiety, and depression, which in turn increase odds of psychotic experiences. Certain psychosocial factors (such as trauma) that occur in childhood/adolescence may be especially impactful on the development of psychosis (Croft et al., 2021; Rosenfield et al., 2021), though we did not find recent abuse to be a significant mediator. It is important to note that cross-sectional mediation analysis can produce biased findings (Maxwell et al., 2011; O’Laughlin et al., 2018). Since the mediators may be intertwined, it is possible that the mediated percentage we calculated in this study was overestimated. More research is needed using longitudinal data and structural equation modeling for mediation analyses.

In terms of sampling, the response rate was 14%, which is low but not uncommon for these types of surveys (Baker et al., 2013; Craig et al., 2013). We used survey weights to account for non-response, though sampling bias remains a concern. The survey was conducted at colleges across the United States, which represents a specific subset of the United States population. More research is needed to determine whether findings are generalizable outside of the college context.

In terms of measurement, all variables were self-reported, which may have resulted in social desirability or recall biases. For example, respondents may not have wanted to disclose their sexual orientation or psychotic experiences. Future surveys can elicit more information beyond self-reported sexual orientation, such as sexual behaviors and sexual desire/attraction. Along these lines, there was

considerable overlap with the sexual minority students and transgender/nonbinary/other gender students; however, the unique experiences of those transgender/nonbinary/other gender students should be explored through an intersectional lens.

The measure for psychotic experiences may also be enhanced by eliciting information about whether the experiences caused any distress, which may be more predictive of health outcomes (Bak et al., 2005). Moreover, the psychosis screen should elicit information about the socio-cultural contexts and meanings of the experiences (Larøi et al., 2014), which may be helpful to reduce the rate of false positives, though it is important to note that psychotic experiences largely associate with negative mental and physical health outcomes across cultures (McGrath et al., 2015).

Future surveys can also use more extensive psychosocial measures, which may produce different findings. For example, the HMS only administered a single item assessing experiences of discrimination broadly defined (attributable to gender, race/ethnicity, disability, or other factors) to a subsample of colleges/universities. Findings may have varied had the HMS used a discrimination measure specifically pertaining to sexual orientation, or had the measure been comprehensive enough to examine the intersections of identities. Future studies can also examine ways to account for paranoia that may be a natural reaction to inhabiting an invalidating and hostile social environment (e.g., heterosexism, homophobia, racism; (Metzl, 2010; Whaley, 1997, 1998, 2001b, 2001a), while also accounting for the possibility that people with persecutory delusional ideation may also over-report experiences of discrimination (Lewis et al., 2015).

In terms of analysis, variables in general were dichotomized and may not reflect the full range of a given construct (e.g., psychotic experiences, mental health factors, psychosocial stressors). That is,

associations may have been conditional on the intensity or frequency of experiences (e.g., mild vs. severe discrimination). Moreover, our study did not examine other linkages or explanatory factors (e.g., rejection sensitivity (Anglin et al., 2016), internalized homophobia (Gold et al., 2009; Gold & Marx, 2007)), which may have resulted in omitted variable bias.

Despite these limitations, our study was the largest to be conducted on this topic in the United States using data collected among young adult college students after the legalization of same-sex marriage in all 50 states in 2015.

### *Conclusion*

Findings should raise clinical awareness that psychotic experiences are more common among sexual minority students than among heterosexual students. Moreover, much of the relation between sexual minority status and psychotic experiences can be explained by mental health factors. Thus, more research is needed to determine whether targeted outreach and intervention to address these mental health issues among sexual minorities may curb incidence of psychotic experiences.

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**CONFLICTS OF INTEREST**

No competing financial interests exist.

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<b>Table 1: Characteristics of study sample, Healthy Minds Study, 2020-2021</b>				
Variables	No psychotic experiences (n=94032)	Psychotic experiences (n = 16533)	Total (N=110565)	P-value
Sexual Orientation				<0.001
Heterosexual	73088 (78.93%)	10341 (64.85%)	83429 (76.68%)	
Sexual minority	20932 (21.07%)	6189 (35.15%)	27121 (23.32%)	
Gender				<0.001
Cis-gender man	26174 (39.60%)	4425 (38.89%)	30599 (39.48%)	
Cis-gender woman	65239 (57.77%)	10917 (54.29%)	76156 (57.22%)	
Transgender/non-binary	2535 (2.56%)	1160 (6.66%)	3695 (3.21%)	
Missing/unknown	74 (0.07%)	28 (0.16%)	102 (0.09%)	
Race/Ethnicity				<0.001
White	57765 (60.74%)	9500 (56.51%)	67265 (60.07%)	
Asian Pacific Islander	11637 (9.50%)	1699 (8.69%)	13336 (9.37%)	
Black	7754 (10.91%)	1821 (12.30%)	9575 (11.13%)	
Latinx/Hispanic	6427 (7.98%)	1256 (8.62%)	7683 (8.09%)	
Multiracial	8529 (9.05%)	1886 (11.76%)	10415 (9.48%)	
Other	1538 (1.38%)	295 (1.62%)	1833 (1.42%)	
Missing/unknown	372 (0.43%)	73 (0.50%)	445 (0.44%)	
Age	21.94 (21.72 - 22.17)	21.34 (21.18 - 21.50)	21.85 (21.63 - 22.06)	<0.001
Survey				0.060
Fall 2020	23796 (26.86%)	3987 (24.97%)	27783 (26.56%)	
Spring 2021	70226 (73.14%)	12543 (75.03%)	82769 (73.44%)	
Food insecurity				<0.001
No	70462 (71.16%)	9748 (55.76%)	80210 (68.70%)	
Yes	23281 (28.84%)	6737 (44.24%)	30018 (31.30%)	
Loneliness				<0.001
No	43266 (47.71%)	3838 (23.90%)	47104 (43.91%)	
Yes	50756 (52.29%)	12692 (76.10%)	63448 (56.09%)	
Anxiety				<0.001
No	62355 (68.67%)	6397 (40.16%)	68752 (64.11%)	
Yes	30441 (31.33%)	9961 (59.84%)	40402 (35.89%)	
Depression				<0.001
No	75002 (81.35%)	9158 (56.48%)	84160 (77.36%)	
Yes	17374 (18.65%)	7157 (43.52%)	24531 (22.64%)	
Marijuana				<0.001
No	76997 (82.15%)	11495 (69.36%)	88492 (80.11%)	
Yes	17025 (17.85%)	5035 (30.64%)	22060 (19.89%)	
Abuse				<0.001
No	67835 (71.82%)	7295 (43.78%)	75130 (67.35%)	
Yes	25539 (28.18%)	9124 (56.22%)	34663 (32.65%)	
Discrimination				<0.001
No	29412 (88.07%)	4760 (78.54%)	34172 (86.53%)	
Yes	4045 (11.93%)	1357 (21.46%)	5402 (13.47%)	
N (weighted %) for binary/categorical; mean (95% CI) for continuous; p-values reflect Chi2 test for binary/categorical variables, and t-test for continuous variables. Psychotic experiences refer to experiences that occurred over the past 12 months.				

<b>Table 2. Prevalence of psychosocial factors by sexual orientation</b>			
	Heterosexual	Sexual minority	Total
Psychotic Experience (12-month)			<0.001
No	73088 (86.51%)	20932 (75.96%)	94020 (84.05%)
Yes	10341 (13.49%)	6189 (24.04%)	16530 (15.95%)
Food insecurity			<0.001
No	69455 (70.66%)	19135 (60.88%)	88590 (68.43%)
Yes	23313 (29.34%)	10139 (39.12%)	33452 (31.57%)
Loneliness			<0.001
No	39685 (41.98%)	7671 (25.80%)	47356 (38.34%)
Yes	56129 (58.02%)	22157 (74.20%)	78286 (61.66%)
Anxiety			<0.001
No	56969 (68.99%)	13110 (48.10%)	70079 (64.11%)
Yes	27003 (31.01%)	14219 (51.90%)	41222 (35.89%)
Depression			<0.001
No	69676 (82.30%)	17039 (61.43%)	86715 (77.45%)
Yes	14874 (17.70%)	10314 (38.57%)	25188 (22.55%)
Marijuana			<0.001
No	82086 (85.66%)	21332 (72.03%)	103418 (82.60%)
Yes	13728 (14.34%)	8496 (27.97%)	22224 (17.40%)
Abuse			<0.001
No	59940 (70.88%)	15710 (55.73%)	75650 (67.34%)
Yes	23493 (29.12%)	11458 (44.27%)	34951 (32.66%)
Discrimination			<0.001
No	26078 (88.54%)	8327 (80.25%)	34405 (86.49%)
Yes	3443 (11.46%)	2024 (19.75%)	5467 (13.51%)
N (weighted %) for binary/categorical, p-values reflect Chi2 test for binary/categorical variables.			

Table 3. Logistic regression analyses predicting psychotic experiences with psychosocial factors as mediators					
Mediator		aOR [95% CI]	p-value	% Mediated	N
Food Insecurity	Total	1.89 (1.78-2.00)	<0.001	9.75	110,226
	Direct	1.77 (1.67-1.88)	<0.001		
	Indirect	1.06 (0.96-1.18)	0.228		
Loneliness	Total	1.93 (1.82-2.05)	<0.001	26.93	110,550
	Direct	1.62 (1.53-1.72)	<0.001		
	Indirect	1.19 (1.06-1.33)	0.002		
Anxiety	Total	1.91 (1.80-2.03)	<0.001	30.90	109,152
	Direct	1.56 (1.47-1.66)	<0.001		
	Indirect	1.22 (1.04-1.43)	0.014		
Depression	Total	1.86 (1.76-1.98)	<0.001	33.18	108,689
	Direct	1.52 (1.43-1.61)	<0.001		
	Indirect	1.23 (1.06-1.43)	0.007		
Marijuana use	Total	1.88 (1.77-1.99)	<0.001	13.95	110,550
	Direct	1.72 (1.62-1.82)	<0.001		
	Indirect	1.09 (1.02-1.17)	0.017		
Abuse	Total	1.91 (1.80-2.02)	<0.001	22.61	109,791
	Direct	1.65 (1.56-1.74)	<0.001		
	Indirect	1.16 (0.99-1.35)	0.068		
Discrimination	Total	1.81 (1.64-2.00)	<0.001	7.37	39,574
	Direct	1.74 (1.57-1.91)	<0.001		
	Indirect	1.04 (0.87-1.25)	0.633		
Adjusted by age, gender, race/ethnicity					
Mediation analysis was calculated using the KHB method					