Anxiety and Related Disorders and Concealment in Sexual Minority Young Adults

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Sexual minorities face greater exposure to discrimination and rejection than heterosexuals. Given these threats, sexual minorities may engage in sexual orientation concealment in order to avoid danger. This social stigma and minority stress places sexual minorities at risk for anxiety and related disorders. Given that three fourths of anxiety disorder onset occurs before the age of 24, the current study investigated the symptoms of generalized anxiety disorder, social phobia, panic disorder, posttraumatic stress disorder, and depression in sexual minority young adults relative to their heterosexual peers. Secondarily, the study investigated sexual orientation concealment as a predictor of anxiety and related disorders. A sample of 157 sexual minority and 157 heterosexual young adults matched on age and gender completed self-report measures of the aforementioned disorders, and indicated their level of sexual orientation concealment. Results revealed that sexual minority young adults reported greater symptoms relative to heterosexuals across all outcome measures. There were no interactions between sexual minority status and gender, however, women had higher symptoms across all disorders. Sexual minority young women appeared to be at the most risk for clinical levels of anxiety and related disorders. In addition, concealment of sexual orientation significantly predicted symptoms of social phobia. Implications are offered for the cognitive and behavioral treatment of anxiety and related disorders in this population.

**Keywords:** anxiety; depression; lesbian/gay/bisexual; sexual minorities; concealment

**Behavioral Theory and Neurobiological Evidence** suggest that chronic exposure to threat contributes to anxiety through overactivation of the fear response (Erkin & Wager, 2007; Marks, 1969; Wolpe, 1958). Socially stigmatized populations, such as lesbian, gay, and bisexual individuals, hereafter referred to as sexual minorities, face repeated exposure to threat on the basis of minority status (Herek & Garnets, 2007; Meyer, 2003). Such threat can include childhood maltreatment, bullying, and physical and sexual assault at rates much higher than heterosexual peers (Balsam & Hughes, 2013) as well as discrimination...
and rejection (Meyer, 2003, 2013). This exposure to violence, discrimination, and rejection often occurs in social contexts that lack legal protection (Hatzenbuehler, Keyes, & Hasin, 2009). Only 17 states include sexual orientation and gender identity as protected classes in hate crimes legislation, and just 16 states prohibit discrimination on the basis of sexual orientation and gender identity in educational settings (Human Rights Campaign, 2015). Such threats to the well-being of sexual minorities are conceptualized as minority stress (Meyer, 2003, 2013), a model which posits that stress results from stigma at the structural level as well as individual stigma-related processes such as the concealment of sexual orientation.

Due to dangers associated with sexual minority status, concealment of sexual orientation is often used as a coping strategy (Meyer, 2003; Pachankis, Cochran, & Mays, 2013). Sexual orientation concealment may range from explicitly claiming a heterosexual identity to more subtle forms of impression management in an effort to make one’s sexual orientation undetectable. A comprehensive model of the consequences of concealing a stigmatized social identity suggests that preoccupation with the discovery of a stigmatized identity results in hypervigilance (i.e., a heightened state of sensory sensitivity along with an exaggerated intensity of behaviors with the goal to detect threats), which is psychologically stressful (Pachankis, 2007). Although concealment of a stigmatized social identity may reduce the risk of explicit discrimination (Ragins, Singh, & Cornwell, 2007), sexual orientation concealment is broadly associated with worse mental health (Schimshak, Siegel, Downing Jr., & Parsons, 2013; Sedlovskaya et al., 2013). However, little work has looked at the association between sexual orientation concealment and disorder-specific measures. In a study of veterans and active-duty service members, Cochran, Balsam, Flentje, Malte, and Simpson (2013) found that participants’ sexual orientation concealment while serving in the military predicted later symptoms of posttraumatic stress disorder (PTSD) and depression. In another line of research, sexual orientation concealment was found to be more closely associated with symptoms of generalized anxiety disorder and major depressive disorder among sexual minority women relative to sexual minority men (Pachankis, Cochran, et al., 2015). In a review, Cochran and Mays (2013) reported that the most robust finding has been higher rates of suicidality and depression among sexual minorities in comparison to heterosexuals with a 12-month prevalence of 20% of sexual minorities experiencing major depressive disorder (e.g., Cochran & Mays, 2000; Garofalo, Wolf, Wissow, Woods, & Goodman, 1999; Remafedi, French, Story, Resnick, & Blum, 1998; Russell & Joyner, 2001).

Given the aforementioned stressors, it is understandable that sexual minorities do experience higher rates of anxiety disorders compared to their heterosexual counterparts; however, findings are mixed with respect to how such results differ by gender. For example, in the National Comorbidity Study, there was higher 12-month prevalence of specific phobia and PTSD and higher lifetime risk of generalized anxiety disorder (GAD), simple phobia, and PTSD in women with a same-gender sexual partner in the past 5 years relative to women with an opposite-gender partner only; however, there were no differences in lifetime risk for any anxiety disorder based on partner gender for men (Gilman et al., 2001). In contrast, in the Netherlands Mental Health Survey and Incidence Study there was a higher 12-month prevalence of mood and anxiety disorders among sexual minority men, though not among sexual minority women (Sandfort, de Graaf, Bijl, & Schnabel, 2001).

Additional studies, however, have found differences for male and female sexual minorities. For example, data from the MacArthur Foundation National Survey of Midlife Development showed a higher prevalence of panic attacks in gay/bisexual men and greater prevalence of GAD in gay/bisexual women relative to heterosexual peers (Cochran, Sullivan, & Mays, 2003). Furthermore, in the National Epidemiologic Survey on Alcohol and Related Conditions, there were higher odds of any lifetime anxiety disorder in sexual minority men and sexual minority women relative to heterosexuals (Bostwick, Boyd, Hughes, & McCabe, 2010). Similarly, in the California Quality of Life survey, there was an increased 12-month prevalence of GAD and panic attacks in sexual minority men and women relative to their heterosexual counterparts; however, concurrent HIV/AIDS infection in some of the sample potentially limits the generalizability of these findings (Cochran & Mays, 2009).

These epidemiological studies lack conclusive findings, potentially due to different operational definitions of sexual orientation. For example, Gilman et al. (2001) relied on participants who reported having sex with a same-gender partner within the past five years to define minority sexual orientation, whereas Cochran and Mays (2009) included both participants’ self-identification as well as a behavioral report of any past same-gender sexual partner as indicative of minority sexual orientation. Bostwick et al. (2010) assessed three self-reported dimensions of sexual orientation: identity, attraction, and behavior. This resulted in a more comprehensive measurement of sexual orientation. However, the positioning of sexual behavior as a proxy for sexual
orientation was consistent across most of the aforementioned studies and much of the epidemiological literature. This behavioral operationalization of sexual orientation fails to capture sexual orientation identity, which Stein (2010) suggests is particularly relevant to sexual minority young adults, a group that has not yet received the scrutiny it might deserve. Discrepant findings in prior research may also be due to cohort effects. Researchers have identified marked differences between the coming-of-age experiences of sexual minority youth today relative to the experiences of older sexual minorities (Martin & D’Augelli, 2009).

On average, gay youth become aware of differences in sexual attraction at age 12, and first disclose a minority sexual orientation at age 17 (Pachankis & Goldfried, 2006). The disclosure of sexual orientation is a continual process whereby the sexual minority individual must choose whether to disclose or conceal in each new social interaction. Young adulthood is a sensitive period for the development of sexuality and the search for potential romantic partners is a key developmental task (Erikson, 1997). Disclosing versus concealing a minority sexual orientation is particularly relevant to emerging adults and has been theorized to be anxiety provoking (Pachankis, 2007; Pachankis, Goldfried, & Ramrattan, 2008), thus making the investigation of concealment and anxiety in sexual minority young adults of great import.

Young adults are at particular risk for anxiety disorders, given that three fourths of anxiety disorder onset occurs by 24 years of age (Kessler et al., 2005). Theories of anxiety disorders are particularly applicable to the experiences of sexual minorities. The contrast avoidance model suggests that individuals with GAD engage in chronic worry as a buffer against sharp increases in negative emotionality (Newman & Llera, 2011). Given that sexual minorities are likely to experience an unpredictable environment, it is understandable that sexual minorities may engage in worry as a preparatory strategy to cope with such threats. Individuals with GAD have also been shown to consider every possible outcome as a means to control potential future threats, and thus may see worry as adaptive (Newman, Llera, Erickson, Przeworski, & Castonguay, 2013). One study of sexual minorities did find that degree of worry related to sexual orientation was significantly associated with increased negative affect and depressive symptoms (Weiss & Hope, 2011). A growing body of research also argues that exposure to nonviolent racism, which does not meet the DSM Criterion A definition of trauma, is still traumatic because it is a threat to one’s well-being and produces symptoms analogous to PTSD (Bryant-Davis & Ocampo, 2005; Waller, 2003). Similarly, recent research has begun to question Criterion A in the assessment of PTSD in sexual minorities. Alessi, Meyer, and Martin (2013) found that non-life-threatening traumatic events can still produce symptoms of PTSD and concluded that adherence to the DSM definition results in many PTSD-like disorders being missed. Therefore, although the present research did evaluate symptoms of PTSD in relation to participants’ most stressful life experience, we did not assess DSM criterion A. Fears of negative evaluation are core cognitions of social phobia, and considering the societal stigma surrounding minority sexual orientation, it is easy to understand why a sexual minority person may hide a core aspect of himself in order to avoid negative evaluation and rejection (Pachankis, 2007). Considering these theories and that hypervigilance to threat is a core feature across emotional disorders (Amir, Elias, Klumpp, & Przeworski, 2003; Mathews & MacLeod, 2005; Newman et al., 2013), and that sexual minority young adults are exposed to threat on the basis of minority status, research into clinical levels of anxiety and depression in sexual minority young adults is warranted.

Sexual minority adolescents and young adults, relative to heterosexual peers, are documented to be at greater risk for experiencing discrimination, violence, and rejection (Faulkner & Cranston, 1998; Garofalo, Wolf, Kessel, Palfrey, & DuRant, 1998). In a recent national survey, sexual minorities between the ages of 13 and 21 reported verbal harassment at school (74.1%), physical harassment at school (36.2%), and experiencing LGBT-related discriminatory policies at school (55.5%; Gay Lesbian and Straight Education Network, 2013).

Two studies investigated symptoms of social phobia in sexual minority youth relative to heterosexual controls. One study found higher social interaction anxiety, in a small, yet ethnically diverse, sample of sexual minority youth relative to heterosexual youth (Safren & Pantalone, 2006). In a larger sample of college-aged men, there were significant elevations in social interaction anxiety and fear of negative evaluation in gay/bisexual men relative to heterosexuals (Pachankis & Goldfried, 2006). Additionally, sexual orientation concealment was a correlate of social phobia in sexual minority men (Pachankis & Goldfried, 2006). Thus, preliminary evidence suggests elevated social-phobia-related symptoms in sexual minority young people and that concealment of sexual orientation is associated with social phobia in sexual minority young men.

In sexual minority young adults, there remains a significant gap in understanding the experience of anxiety beyond social phobia and the role of concealment. We sought to test the hypothesis that sexual minority young adults would report greater symptoms of GAD, panic disorder, social phobia,
PTSD, and depression, and reach clinical levels of symptoms at rates higher than their heterosexual peers. Although DSM-5 classifies PTSD as a trauma and stressor-related disorder, it acknowledges that symptoms following a traumatic event “can be well understood within an anxiety or fear-based context” (American Psychiatric Association, 2013; p. 265). Given this, and the historical understanding of PTSD as an anxiety disorder, we included PTSD symptoms in our research. We assessed for symptoms of depression given its association with anxiety disorders (Brown, Campbell, Lehman, Grisham, & Mancill, 2001) as well as prior robust findings suggesting higher rates in sexual minorities (Cochran & Mays, 2013). Secondarily, we investigated symptoms of disorders in sexual minority women relative to sexual minority men given the mixed findings in earlier research. On the one hand, we thought sexual minority men may display greater symptoms of anxiety and related disorders given social theories that suggest same-gender attraction among men is more stigmatized (Herek, 1988). On the other hand, we recognized the existing research (Kessler et al., 2005) that documents that being of female gender raises one’s risk for anxiety and related disorders. Therefore, we did not have a directional hypothesis for the comparison of anxiety and related disorders between sexual minority women and sexual minority men. We also tested the hypothesis that concealment of sexual orientation would be associated with symptoms of anxiety and related disorders in sexual minority young adults. Thus, the present study sought to extend current understanding and conceptualization of anxiety in a population with known exposure to actual threat.

**Method**

**Participants**

Participants were 3,350 undergraduate students at a large northeastern university enrolled in introductory psychology courses. Due to differences in the number of participants who identified as heterosexual (n = 3,193) relative to the number of participants who identified as a sexual minority (n = 157), we randomly selected a subsample of heterosexual participants (matched on age and gender to sexual minority participants) for all comparisons between sexual minority and heterosexual participants. This resulted in a final sample size of N = 314, with 157 participants identifying as sexual minorities and 157 participants identifying as heterosexuals. This sample consisted of 201 self-identified women (64%), 113 self-identified men (36%). Mean age was 18.8 years (SD = 1.10) and did not significantly differ between sexual minority and heterosexual participants, t(314) = 2.67, p = .103. Ethnic distribution was as follows: 71.3% (n = 224) White/Caucasian, 13.4% (n = 42) Asian/Asian-American, 6.1% (n = 19) African American/Black, 3.2% (n = 10) Hispanic/Latino, 1.0% (n = 3) Arab/Middle Eastern or Arab American, .3% (n = 1) Pacific Islander, 2.5% (n = 8) other, and 2.2% (n = 7) declined to answer.

**Measures**

**Generalized Anxiety Disorder Questionnaire (GAD-Q-IV; Newman et al., 2002)**

This is a 9-item self-report inventory designed to measure symptomatology of GAD based on the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1994). Questions assess the occurrence of excessive and uncontrollable worry, worry content, the presence of worry for more days than not over at least 6 months, interference with daily life caused by worry, and the occurrence of six associated symptoms: restlessness, insomnia, difficulty concentrating, irritability, fatigue, and muscle tension. The GAD-Q-IV has demonstrated good retest reliability and strong intrarater agreement with a structured diagnostic interview (Newman et al., 2002). Scoring can be both dimensional as well as criterion-based to arrive at a self-reported diagnosis (Moore, Anderson, Barnes, Haigh, & Fresco, 2013).

**Panic Disorder Self-Report (PDSR; Newman, Holmes, Zuzell, Kachin, & Behar, 2006)**

This is a 24-item self-report measure of panic disorder based on the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1994). Sample items include: “During the last six months, have you had a panic attack or a sudden rush of intense fear or anxiety?” and “Was at least one panic attack unexpected, as if it came out of the blue?” If participants respond affirmatively to these initial questions, they complete additional items such as fear of recurrent attacks and the experience of physiological symptoms. Convergent and divergent validity, as well as good retest reliability, were demonstrated (Newman et al., 2006). The measure yields a total dimensional score. Alternatively, the measure can also yield an analogue diagnosis through a scoring scheme congruent with DSM-IV criteria. This measure was administered for two out of the three semesters of data collection, thus resulting in a smaller sample that completed this assessment (n = 106 heterosexuals; 98 sexual minorities).

**Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5; Weathers et al., 2013)**

This is a 20-item self-report assessment of symptoms of PTSD based on the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2013).
Psychiatric Association, 2013). The PCL-5 is a new measure that has demonstrated good temporal stability (Keane et al., 2014). Participants were instructed to fill out the PCL-5 in relation to their most stressful life experience.

Social Phobia Diagnostic Questionnaire (SPDQ; Newman, Kachin, Zuellig, Constantino, & Cashman-McGrath, 2003)

This is a comprehensive measure to identify the presence of social phobia (also referred to as social anxiety) based on DSM-IV criteria. The 29 items measure subjective levels of fear in social, evaluative, and performance situations as well as associated impairment and distress. The SPDQ has demonstrated excellent retest reliability as well as strong convergent and discriminant validity (Newman et al., 2003). It can also be scored both dimensionally and diagnostically based on DSM criteria. An additional strength of the SPDQ is that it does not contain any heterocentric language commonly used in other measures of social phobia (Weiss, Hope, & Capozzoli, 2013). The measure yields a total dimensional score. Alternatively, the measure can also yield an analogue diagnosis through a scoring scheme congruent with DSM-IV criteria.

Beck Depression Inventory–II (BDI-II; Beck, Steer, & Brown, 1996)

This 21-item questionnaire assesses symptoms of depression, including hopelessness, irritability, fatigue, thoughts of death, and feelings of guilt and sadness. Items contain a 0 to 3 scale, and responses are summed to yield a total score. Scores of 0 to 13 indicate minimal depression, 14 to 19 indicate mild depression, 20 to 28 indicate moderate depression, and 29 to 63 indicate severe depression (Beck, Steer, & Brown, 1996). The BDI-II has demonstrated high retest reliability (Beck, Steer, & Brown, 1996), and internal consistency (Beck, Steer, Ball, & Ranieri, 1996).

Sexual Orientation

Participants responded to a single-item measure of sexual orientation, “How would you most accurately describe your sexual orientation?” Categorical response options were heterosexual, bisexual, gay, lesbian, queer, and questioning. Of the 157 sexual minorities, 71 (45%) identified as bisexual, 27 gay (17%), 7 lesbian (4%), 5 queer (3%), 47 questioning (30%). Questioning was included in the sexual minority condition in line with current research on sexual minority young adults (Eisenberg, Gower, McMorris, & Bucchianeri, 2015; Lytle, De Luca, Blonsnich, & Brownson, 2015). Thus, 157 participants (4.7%) identified as a sexual minority and were dichotomized as such in analyses.

Sexual Orientation Openness/Concealment

Participants completed an additional measure of sexual orientation openness/concealment. This single item: “How open in general are you now about your sexual orientation?” was taken from Pachankis and Goldfried (2006). Possible responses were on a 7-point Likert-type scale (1 = sexual orientation completely hidden from others, 4 = sexual orientation not quite hidden but not quite open, 7 = completely open with others about sexual orientation). Higher scores indicate greater openness regarding one’s sexual orientation and, thus, lower concealment. Sexual minority participants reported a M = 4.59 (SD = 2.31).

PROCEDURE

Participants completed the study measures online as part of the psychology subject pool screening and received partial course credit for their participation. No recruitment materials identified anxiety or sexual minority status as the focus of this study. Data collection took place over three semesters from 2014 to 2015. The university’s Institutional Review Board approved all study procedures.

DATA ANALYSIS

Analyses were conducted in four steps. First, to test the hypotheses that sexual minority young adults would report greater symptoms relative to heterosexual peers and to investigate potential gender differences in the levels of symptoms among sexual minorities, differences in self-report measures of GAD, social phobia, PTSD, and depression were evaluated using a two-way multivariate analysis of variance (MANOVA) with gender and sexual minority status as factors. Follow-up univariate analyses were conducted only for effects for which the omnibus test reached significance. Panic disorder was not included in the MANOVA given that it was not assessed in the entire sample due to listwise deletion, and a separate univariate analysis was conducted for this measure with gender and sexual minority status as factors. Next, the clinical level of symptoms of GAD, panic disorder, social phobia and depression were calculated. PTSD was excluded from the clinical level of symptom analysis given that there are currently no empirically determined cutoff scores for the PCL-5 and also because we did not assess criterion A. For the anxiety disorders, the clinical level of symptoms was determined by dichotomous criterion scoring consistent with DSM-IV criteria. For depression, BDI-II scores that fell in the moderate and severe ranges of depression were considered to be clinical. Clinical levels of symptoms were compared between sexual minority and heterosexual participants, sexual minority and heterosexual men, sexual minority and
heterosexual women, and sexual minority men and women using chi-squares. In cases where any of the cell sizes were less than 5, we used Fisher’s exact tests instead of chi-squares. Then, using only the subsample of sexual minority participants, a series of hierarchical multiple regression analyses were performed according to steps outlined by Aiken and West (1991) and Cohen, Cohen, West, and Aiken (2003) to test the hypothesis that concealment of sexual orientation would predict level of symptom measures. Gender was the sole predictor in model one. Gender and concealment were both entered as predictors in model two.

Results

Symptom Severity Measures

Means and standard deviations for participant scores on measures of GAD, social phobia, panic disorder, PTSD, and depression are presented by gender and sexual minority status in Table 1. The overall multivariate model was significant for sexual minority status, $F(4, 282) = 8.25, p = .0001, \eta^2 = .075$; and gender, $F(4, 282) = 5.71, p = .0001, \eta^2 = .050$; however, the omnibus interaction between gender and sexual minority status was not significant, $F(4, 282) = 1.11, p = .350, \eta^2 = .002$. Compared to men, women within the whole sample had more symptoms of GAD, $F(1, 288) = 22.37, p = .0001, \eta^2 = .073$, social phobia, $F(1, 288) = 6.29, p = .013, \eta^2 = .022$, PTSD, $F(1, 288) = 5.91, p = .016, \eta^2 = .020$, depression, $F(1, 288) = 23.04, p = .023, \eta^2 = .018$, and panic disorder, $F(1, 203) = 9.48, p = .002, \eta^2 = .045$. Similarly, sexual minorities scored significantly higher relative to heterosexuals on symptoms of GAD, $F(1, 288) = 22.64, p = .0001, \eta^2 = .074$, social phobia, $F(1, 288) = 22.67, p = .0001, \eta^2 = .074$, PTSD, $F(1, 288) = 15.03, p = .0001, \eta^2 = .050$, depression, $F(1, 288) = 23.04, p < .0001, \eta^2 = .075$, and panic, $F(1, 203) = 8.36, p = .004, \eta^2 = .040$.

Clinical Level of Symptoms

Percentage of participants who reached a clinical level of symptoms for GAD, panic disorder, social phobia, and depression are presented for sexual minority and heterosexual participants, overall and by gender, in Table 2. Sexual minorities were significantly more likely than heterosexual participants to reach a clinical level of symptoms for GAD, $\chi^2(1, N = 313) = 11.04, p = .001$, Cohen’s $d = .382$, social phobia, $\chi^2(1, N = 313) = 10.66, p = .001$, Cohen’s $d = .376$, and depression, $\chi^2(1, N = 313) = 23.92, p = .0001$, Cohen’s $d = .575$. Sexual minority women were also significantly more likely to reach a clinical level of symptoms relative to heterosexual women for GAD, $\chi^2(1, N = 201) = 9.66, p = .002$, Cohen’s $d = .449$, social phobia, $\chi^2(1, N = 201) = 7.63, p = .006$, Cohen’s $d = .397$, and depression, $\chi^2(1, N = 200) = 18.70, p = .0001$, Cohen’s $d = .642$. Compared to heterosexual men, sexual minority men were significantly more likely to reach a clinical level of depression, $\chi^2(1, N = 113) = 6.41, p = .01$, Cohen’s $d = .490$, and marginally more likely for social phobia ($p = .058$). Finally, compared to sexual minority men, sexual minority women were more likely to reach a clinical level of GAD ($p = .015$) and marginally more likely for depression ($p = .065$). There were no significant differences on the clinical levels of panic disorder for any of the aforementioned comparisons.

Concealment Analyses

Summary statistics of model fit and parameter estimates for the hierarchical multiple regressions of

<table>
<thead>
<tr>
<th>Measure</th>
<th>Sexual Minority</th>
<th>Heterosexual</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>$M$ (SD) $n$</td>
<td>$M$ (SD) $n$</td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>Men</td>
</tr>
<tr>
<td>GAD</td>
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<td>3.72 (3.48)</td>
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<tr>
<td>Panic</td>
<td>4.09 (6.34)</td>
<td>1.82 (4.39)</td>
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<tr>
<td>Social Phobia</td>
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<td>10.62 (7.64)</td>
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<tr>
<td>Depression</td>
<td>16.71 (12.35)</td>
<td>13.93 (11.69)</td>
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<tr>
<td>PTSD</td>
<td>19.21 (20.01)</td>
<td>13.35 (17.19)</td>
</tr>
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</table>

Note. GAD = Generalized Anxiety Disorder; PTSD = Posttraumatic Stress Disorder
gender and concealment are presented in Table 3. In model one, gender was a significant predictor of symptoms for GAD, panic, depression, social phobia, and PTSD. In model two, for which the predictors were concealment and gender, gender was a significant predictor of GAD, panic, depression, social phobia, and PTSD, and concealment was a significant predictor of social phobia symptoms. Thus, lack of sexual orientation openness/concealment was associated with symptoms of social phobia.

**Discussion**

This study investigated anxiety and related disorders in sexual minority young adults. Sexual minorities reported greater dimensional symptomatology of GAD, social phobia, panic, depression and PTSD and were significantly more likely to reach a clinical level of symptoms for GAD, social phobia, and depression relative to their heterosexual counterparts. Our findings of higher symptoms and clinical levels of multiple anxiety and related disorders in sexual minority young people extends previous work showing higher symptoms of social phobia in young adults (Pachankis & Goldfried, 2006; Safren & Pantalone, 2006).

Gender differences were also evident across the whole sample for dimensional measures of all disorders with women exhibiting higher levels of symptoms for GAD, social phobia, panic, depression, and PTSD. Relative to sexual minority men, sexual minority women were also more likely to exhibit a clinical level of symptoms of GAD and marginally more likely to exhibit a clinical level of depression. Sexual minority men were significantly more likely than heterosexual men to reach a clinical level of symptoms of depression and marginally more likely to exhibit a clinical level of social phobia. In addition, compared to their heterosexual counterparts, sexual minority women were significantly more likely to reach a clinical level of symptoms for GAD, social phobia and depression. Females have been extensively documented to be at increased risk for anxiety

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**Table 3**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Model</th>
<th>$R^2$</th>
<th>$R^2 \Delta$</th>
<th>$F$</th>
<th>df</th>
<th>Predictor</th>
<th>$\beta$</th>
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<td>.078</td>
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<td>.086</td>
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<td>-3.00**</td>
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<td>.093</td>
<td>.007</td>
<td>4.85**</td>
<td>94</td>
<td></td>
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<td>.029</td>
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<td>137</td>
<td></td>
<td>Con</td>
<td>-.21</td>
<td>-2.56*</td>
</tr>
</tbody>
</table>

*Note. GAD = Generalized Anxiety Disorder; PTSD = Posttraumatic Stress Disorder; Con = Concealment; * $p < .05$, ** $p < .01$, *** $p < .001$. 

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**Table 2**

| Percentage of Participants Meeting Clinical Level of Symptoms for Disorders Among Sexual Minority and Heterosexual Participants Overall and by Gender |
|---|---|---|---|---|---|
| Diagnoses | Sexual Minority | Heterosexual |   |   |   |
|           | Overall | Men | Women | Overall | Men | Women |
| GAD       |          |     |       | 26.1 (41)a | 15.0 (9)c | 33.0 (32)c b |
|           | 15.1 (18)b | 5.7 (3) | 14.4 (15)b |
| Panic     | 2.5 (4)  | 0.0 (0) | 4.1 (4) | 1.9 (3) | 1.9 (1) | 1.9 (2) |
| Social Phobia | 22.3 (35)a | 15.0 (9) | 26.8 (26)c | 8.9 (14)a | 3.8 (2)c | 11.5 (12)c |
| Depression| 37.6 (59)a | 28.3 (17)c | 43.3 (42)d | 19 (21)a | 9.5 (5)c | 15.4 (16)d |

*Note. Same superscripts indicate significant differences between the means a $p < .01$ b $p < .05$ c $p = .01$, d $p = .065$, * $p = .058$; GAD = Generalized Anxiety Disorder; PTSD = Posttraumatic Stress Disorder.
and related disorders (Kessler et al., 2005), thus it is understandable that the sexual minority women in our sample reported greater clinical levels of GAD and depression relative to sexual minority men. Taken together, these findings suggest that sexual minority young adults may be at risk for elevated symptoms of GAD, social phobia, depression, panic disorder, and PTSD as well as clinical levels of GAD, social phobia, and depression, with sexual minority women facing the highest risk.

We also investigated sexual orientation concealment/openness in relation to disorders given the developmental importance of sexual orientation disclosure in this cohort. We found that lack of sexual orientation openness/concealment was associated with symptoms of social phobia, suggesting that concealment may intensify symptoms of social phobia among male and female sexual minorities. This finding extends the work of Pachankis and Goldfried (2006), who found that concealment was correlated with social phobia in sexual minority men. Our inclusion of other anxiety disorders and depression in this analysis suggests that this relationship is specific to social phobia. Previous research found that individuals actively concealing a stigmatized social identity were more likely to focus on keeping this identity hidden during social interactions (Pachankis & Goldfried, 2006; Smart & Wegner, 1999). This preoccupation with concealment may lead to social phobia. However, it is also possible that this relationship may represent a different pathway. Socially anxious individuals may be less likely to disclose personal information, such as a minority sexual orientation. Behavioral inhibition, a hallmark of social phobia, may also be the common factor underlying both social phobia and sexual orientation concealment.

There are limitations to the present study. First, we combined multiple sexual minorities (lesbian, gay, bisexual, queer, and questioning) for analyses. Although this categorization is in line with prior research, it prevents comparison between different sexual minority subgroups. Future researchers may wish to consider conducting separate analyses among each sexual minority group, particularly given that bisexual individuals often report the highest symptom severity (Conron, Mimiaga, & Landers, 2010). Second, this study was cross-sectional and correlational and therefore cannot definitively determine whether concealment or being a sexual minority are risk factors for the development of anxiety and related disorders. It is possible that additional variables may be operating. Future researchers may also wish to test a longitudinal model in which a latent variable is used to represent the commonalities among anxiety and related disorders. Third, our sample was drawn from a college population and was also predominantly Caucasian, so it is unclear to what extent these findings may generalize to sexual minorities who do not attend college, older cohorts, or for those who have an intersectional identity (e.g., sexual minority and racial minority). Fourth, we focused on sexual orientation identity given the importance of identity in the development of young adults. However, this also means our findings may not necessarily generalize to young men who have sex with men or women who have sex with women, yet do not identify as a sexual minority. Moreover, the use of self-report measures to determine clinical symptoms is a limitation of this study due to the overlap of symptoms among anxiety and related disorders. The use of a structured clinical interview would likely better distinguish symptoms between the disorders and aid in differential diagnosis. Finally, our measures for GAD, social phobia, and panic disorder symptoms reflected DSM-IV criteria whereas our PTSD measure focused on DSM-5 symptoms without the explicit assessment of criterion A. We included DSM-IV measures of GAD, social phobia, and panic because GAD criteria have not changed in DSM-5 and panic and social phobia have changed very little. In addition, the measures we used for all disorders were the most updated versions of these questionnaires available.

Overall, this study provides support for the potential risk sexual minority young adults face for symptoms of anxiety disorders, depression, and posttraumatic stress, with sexual minority women perhaps being at the most risk for clinical levels of these disorders. Within sexual minorities, greater sexual orientation concealment was significantly associated with greater symptom severity of social phobia. Young adulthood is a sensitive period for the development of sexual identity. Prior research has found that the context in which a sexual minority person comes out affects mental health (Friedman, Marshal, Stall, Cheong, & Wright, 2008); thus, we might consider young adulthood and the disclosure of minority sexual orientation to be a particularly sensitive developmental period for sexual minority young adults. This population may benefit from structural interventions that target the social causes of mental health disparities, such as discrimination and stigma. An unsupportive social climate has been shown to be associated with increased risk for suicide attempts in LGB youth (Hatzenbuehler, 2011), thus establishing safe and open spaces in educational settings is an appropriate intervention. At the individual level, clinicians might be well advised to consider the unique contexts of sexual minority clients and consider culturally appropriate treatment approaches (e.g., Pachankis, Hatzenbuehler, et al., 2015).
Common targets of cognitive behavioral therapy for anxiety disorders such as avoidance and cognitive distortions should be considered carefully in the presentation of a sexual minority patient. For example, avoidance of locations and geographic regions that are known to be hostile to sexual minorities may in fact be adaptive. Similarly, worries related to discrimination, such as loss of employment due to sexual orientation, may at first appear to be a cognitive distortion, but in fact it is possible to be legally fired for being gay in most of the 50 states (Human Rights Campaign, 2015). Therapist awareness of these factors is important for the delivery of culturally competent care to this population. Clinicians working with sexual minority individuals may be well advised to consult treatment guidelines for working with LGB individuals (American Psychological Association, 2012; Shiperd, 2015).

Conflict of Interest Statement
The authors declare that there are no conflicts of interest.

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