Psychopathology in Sexual Minority Individuals: Prevalence, Treatment Utilization, and Association with Relationship Quality

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PSYCHOPATHOLOGY IN SEXUAL MINORITY INDIVIDUALS: PREVALENCE, TREATMENT UTILIZATION, AND ASSOCIATION WITH RELATIONSHIP QUALITY

by

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Psychopathology in Sexual Minority Individuals: Prevalence, Treatment Utilization, and Association with Relationship Quality
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The final copy of this thesis has been examined by the signatories, and we find that both the content and the form meet acceptable presentation standards of scholarly work in the above mentioned discipline.

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Overall, this study was designed to explore differences in the prevalence of and service utilization for mood, anxiety, and substance use disorders between lesbian, gay, and bisexual (LGB) and heterosexual individuals, as well as to examine the association between romantic relationship quality and psychopathology among LGB individuals. For Study 1, we compared the prevalence of meeting DSM-IV criteria for a mood, anxiety, substance use, comorbid, and any disorder between LGB and heterosexual individuals using data from the National Comorbidity Survey Replication (NCS-R; \( N = 6,404 \)). We found that compared to heterosexual individuals, there was a higher prevalence of mood, anxiety, and any disorder for LGB individuals. Using the same sample, we also investigated potential differences in treatment utilization between LGB and heterosexual individuals meeting criteria for psychiatric disorders. We found that compared to heterosexual individuals, LGB individuals, in general, were more likely to seek treatment from complementary alternative medicine, non-psychiatrist mental health providers, and any provider (and other broad provider categories). Differences in treatment utilization varied somewhat by disorder type. For Study 2, we evaluated whether poor relationship quality was associated with psychopathology among LGB individuals, and evaluated potential moderators of these associations, including minority stress and social support. Data were obtained from an online sample of LGB individuals in romantic relationships (\( N = 292 \)). We found that relationship quality was significantly and negatively associated with symptoms of depression, anxiety,
alcohol use, and substance use. We also found that, in general, the associations between relationship quality and psychopathology symptoms were moderated by experiences of discrimination, perceived family support, and community connectedness. Moderation results varied somewhat for different mental health symptoms. These findings support the need for continued investigation of the associations between relationship quality and mental health among LGB individuals. Taken together, the findings from these two studies suggest that continued research is needed on the prevalence, risk factors, and treatment of mental health problems in LGB individuals, and suggest that relationship quality may be an important correlate of mental health in LGB individuals.
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Evidence suggests that rates of mental health problems are higher among sexual minority (i.e., lesbian, gay, and bisexual [LGB]) individuals as compared to heterosexual individuals (e.g., Cochran, Sullivan, & Mays, 2003). However, there are limitations with studies that have examined the prevalence of mood, anxiety, and substance use disorders amongst sexual minority individuals. Therefore, one of the primary aims of this study was to increase understanding of the prevalence of mood, anxiety, and substance use disorders amongst sexual minority individuals, and to compare the prevalence of these disorders for sexual minority individuals relative to heterosexual individuals. Further, a second aim of the study was to gain a better sense of treatment utilization patterns amongst sexual minority individuals through evaluating rates of treatment utilization across a number of different treatment providers for people with a past-year psychiatric disorder and to compare these rates of treatment utilization for LGB individuals with those for heterosexual individuals. Results from the study enhance our understanding of mental health disparities between LGB and heterosexual individuals.

A third aim of the study was to explore the cross-sectional association between romantic relationship quality and mental health problems (i.e., symptoms of depression, anxiety, and substance use) amongst sexual minority individuals, as the association between relationship quality and mental health is well established amongst heterosexual individuals (Goering, Lin, Campbell, Boyle, & Offord, 1996; Whisman, 1999, 2007), but is highly underexplored amongst LGB individuals. In addition, the study explored the degree to which the associations between relationship quality and symptoms of psychopathology amongst sexual minority individuals were moderated by minority stress experiences and level of support received from family, friends, and the community.
Mental Health Disparities Between Heterosexual and Sexual Minority Individuals

Evidence suggests that there are significant mental health disparities between sexual minority individuals as compared to their heterosexual counterparts. For example, epidemiological research finds that gay or bisexual men have a higher prevalence of depression, panic attacks, and psychological distress than heterosexual men, whereas lesbian or bisexual women have a higher prevalence of generalized anxiety disorder (GAD) than heterosexual women (Cochran et al., 2003). Compared to heterosexual individuals, higher prevalence rates of anxiety, mood, and substance-use disorders have been reported by respondents (a) with same-sex sexual partners (Gilman, Cochran, Mays, Hughes, Ostrow, & Kessler, 2001), or (b) who classified themselves as lesbian, gay, or bisexual in sexual identity (Cochran & Mays, 2009; Cochran, Mays, Alegria, & Takeuchi, 2007; Hatzenbuehler, Keyes, & Hasin, 2009). Sexual minority women (lesbian, bisexual, or questioning) with lifetime alcohol use disorders were also found to be more likely to have comorbid psychiatric disorders (e.g., mood, anxiety, and panic disorders) and drug use disorders (e.g., prescription drugs, cannabis use disorders) compared to heterosexual women with lifetime alcohol use disorders (Mereish, Lee, Gamarel, Zaller, & Operario, 2015). Higher rates of psychiatric disorders among LGB individuals relative to heterosexual individuals have also been found in population-based samples of people in the Netherlands and the United Kingdom (Chakraborty, McManus, Brugha, Bebbington, & King, 2011; Sandfort, de Graaf, Bijl, & Schnabel, 2003). It is important to learn more about the mental health of LGB individuals, as they comprise a significant minority of people in the United States. There are more than 8 million adults in the United States who identify as LGB, comprising 3.5% of the adult population (1.8% identify as bisexual, and 1.7% identify as lesbian or gay; Gates, 2011).
One of the most prominent theoretical and explanatory frameworks to explain these disparities is the minority stress model (Meyer, 2003). This model proposes that stigma, prejudice, and discrimination experienced by sexual minority individuals create a hostile and stressful environment that contributes to higher prevalence of mental health problems. Different stress processes include experiences of prejudice events, expectations of rejection, internalized heterosexism (also known as internalized homophobia), and ameliorative coping processes that LGB individuals encounter on a frequent and ongoing basis. Thinking about this from the perspective of the diathesis-stress model of psychopathology (Bleuler, 1963; Rosenthal, 1963), minority stress may become a source of chronic stress in one’s life, which interacts with one’s predisposition for psychopathology, resulting in mental health difficulties.

Research from nationally representative samples finds support for the minority stress model, as living in states with greater institutional discrimination (i.e., lacking protections against hate crimes, employment discrimination based on sexual orientation) predicted stronger associations between LGB status and psychiatric comorbidity (Hatzenbuehler et al., 2009). Further, living in states that banned gay marriage predicted significant increases in percentages of psychiatric disorders over time amongst LGB individuals, which was not found for LGB individuals living in states without bans or amongst heterosexual individuals living in states with bans (Hatzenbuehler, McLaughlin, Keyes, & Hasin, 2010). Additionally, social policies may not only contribute to mental health outcomes through exposure to minority stress (such as violence, concealment, etc.), but also may influence mental health through reducing individuals’ access to financial and social resources (e.g., lacking economic protections coming from marriage, less power and prestige, less health-related knowledge, etc.; Hatzenbuehler, 2010).

In addition to finding that institutional discrimination influences the mental health of
LGB individuals, research has found that self-stigma regarding ones’ sexual orientation (which is connected to society’s views of being LGB) is associated with depressive symptoms and state anxiety (Herek, Gillis, & Cogan, 2015). Further, interpersonal relationships may also become a source of stress for LGB individuals. For example, LGB youth report fearing rejection by family and friends regarding their sexual orientation (Savin-Williams & Ream, 2003). Further, research finds that family rejection regarding ones’ sexual orientation is associated with higher suicide attempts, drug use, and depression amongst LGB youth (Ryan, Huebner, Diaz, & Sanchez, 2009).

Although informative, there are several methodological limitations with the existing research on the mental health of LGB individuals. For example, one study included adults between the ages of 25 and 74 years of age and examined the prevalence of only three interview-based psychiatric disorders (major depression, GAD, and panic disorder); alcohol and drug dependency were also assessed but they were based on dichotomizing a screening measure (Cochran et al., 2003). Therefore, people younger than 25 and older than 74 were not included and the prevalence of other common psychiatric disorders was not assessed. Another study included a low percentage (6%) of older individuals over 65 years of age, and the majority of the sample fell between 26-45 years of age (Hatzenbuehler et al., 2009). Furthermore, in another study, same-sex sexuality was defined in terms of whether the respondent had had sexual intercourse with at least one person of the same sex in the preceding five years (Gilman et al., 2001). There are problems with this operationalization of same-sex sexuality, however, including a focus on sexual partners in the preceding five years, the exclusive assessment of one sexual behavior (sexual intercourse) that does not assess for same-gender sexual desire or other same-gender sexual behaviors (e.g., oral sex), the exclusion of people who reported not having sexual
intercourse during the five-year period, and the lack of assessment of sexual identity. The impact this operationalization may have on the study findings can be seen by examining the results from other studies that have examined multiple operationalizations of same-sex sexuality. For example, in a population-based sample of 3,432 individuals between the ages of 18 and 59, the proportion of women who reported same-sex sexual partners varied from 1.3% in the past year to 4.1% reporting any female partners since turning 18; the proportion of men who reported same-sex sexual partners varied from 2.7% in the past year to 4.9% reporting any male partners since turning age 18 (Cochran et al., 2007). In comparison, 6.2% of men and 4.4% of women reported being at least somewhat attracted to members of their own sex, and 2.8% of men and 1.4% of women reported identifying with a label denoting same-sex sexuality.

Overall, prior research finds that sexual minority individuals have a higher prevalence of mood, anxiety, and substance-use disorders as compared to heterosexual individuals, which may be due to their exposure to sexual minority stressors. However, given the limitations of prior studies regarding the prevalence of psychiatric disorders in sexual minority individuals, additional research is needed to better understand the prevalence of a wide range of psychiatric disorders amongst individuals who self-identify as being LGB in representative samples of adults across age groups as compared to prevalence for individuals who identify as heterosexual.

**Treatment Seeking and Service Utilization of Sexual Minority Individuals**

Accurate information on the use of mental health treatments by people with mental health problems is necessary for improving mental health services for those who need treatment. Estimates of treatment service utilization in general population samples suggest that approximately 19% of people with psychiatric disorders received treatment in the 1980s (Robins & Regier, 1991) and 25% of people with psychiatric disorders received treatment in the 1990s.
More recently, it was estimated that although 41% of people with a psychiatric disorder in the preceding 12 months received some treatment, only 32.7% received at least minimally adequate treatment (Wang et al., 2005). Importantly, this study also found that unmet need for treatment was greatest in traditionally underserved groups, including the elderly, racial-ethnic minorities, people with low income or no insurance, and residents of rural areas.

Relatively few studies have evaluated the treatment service utilization of sexual minority individuals. It is important to gain a better understanding of their treatment seeking and utilization patterns given that sexual minority individuals not only experience greater mental health needs due to higher mental health morbidity, but also due to issues generated by their minority status, such as experiencing discrimination (Hughes, Haas, & Avery, 1997). However, many barriers exist in terms of accessing mental health services, including stigma and discrimination, particularly homophobia and heterosexism (Travers & Schneider, 1996), as well as concerns about privacy and confidentiality, which may deter sexual minority individuals from discussing their sexuality with health care providers (Cniro et al., 2005; Klitzman & Greenberg, 2002). Institutional factors within the healthcare system, including a lack of appropriate training and limited insurance coverage for same-sex partners, may also affect the quality of healthcare available to sexual minority individuals (Lick, Durso, & Johnson, 2013). Further, social policies decrease access to financial and social resources (Hatzenbuehler, 2010), which may impede access to treatment.

Research suggests that even after LGB individuals overcome barriers to seeking treatment, they are more likely than heterosexual individuals to encounter negative health care experiences. For example, a survey looking at satisfaction with both inpatient and outpatient mental health services in New York City found that LGB individuals were significantly more
likely to be dissatisfied with mental health services as compared to heterosexual individuals (Avery, Hellman, & Sudderth, 2001). Further, a survey of gay and lesbian physicians in the United States found that whereas 98% believed it was important for patients to disclose their sexual orientation to healthcare providers, 64% believed that by disclosing homosexual behavior patients risk receiving substandard care (Shatz & O’Hanlan, 1994). Consistent with this belief, Stevens (1998) found that of 332 health care experiences reported by lesbians (half of which were lesbians of color), less than one-fourth of these experiences were evaluated positively. Therefore, research finds that many adolescents (Allen, Glicken, Beach, & Naylor, 1998) and adults (Eliason & Schope, 2001) choose not to disclose their sexual orientation to health care providers.

Given these barriers, it is not surprising that LGB individuals have greater unmet mental health needs as compared to heterosexual individuals. Indeed, a study of adult individuals from Hennepin County, Minnesota, found that relative to heterosexual individuals, lesbian, gay, bisexual, and transgender individuals reported greater use of mental health services, but were also more likely to have unmet mental health needs (i.e., they indicated wanting to talk with or seek help from a health professional about emotional concerns, but delayed or did not get the care they thought they needed; Burgess, Lee, Tran, & van Ryn, 2008). A study using a nationally representative sample of sexual minority youth (defined by ever having a same-sex romantic attraction or having a recent same-sex romantic relationship or sexual partner) found similar results, such that sexual minority youth reported greater utilization of mental health services compared to their heterosexual peers, but simultaneously reported greater unmet mental health needs (i.e., more people who reported no receipt of mental health services in spite of moderate to severe mental health symptoms; Williams & Chapman, 2011).
One study on treatment service utilization explored differences between LGB and heterosexual individuals using a population-based sample (Cochran et al., 2003). Specifically, they explored differences in LGB and heterosexual individuals’ use of four services, including seeing a mental health provider, general physician, attending a self-help group, or taking psychiatric medication. In looking at differences in treatment seeking using the whole sample, they found that gay-bisexual men were more likely to see a mental health provider, general physician, attend a self-help group, or take psychiatric medication, or use at least one of four types of mental health treatments than heterosexual men. They found similar results when comparing lesbian or bisexual women with heterosexual women with the exception that lesbian or bisexual women were not more likely to take psychiatric medication than heterosexual women. In looking at differences in treatment seeking using the subsample of the people meeting criteria for any of five psychiatric disorders or who met criteria for high psychological stress in the past month, gay-bisexual men were more likely than heterosexual men to receive at least one of four types of mental health services; similarly, lesbian-bisexual women were also more likely than heterosexual women to report receiving at least one of the four services. However, it is not known whether there were differences in treatment seeking across the different types of providers. Although informative, this study has several limitations. First, although the researchers provided comparisons between the prevalence of each of the four types of service utilization between heterosexual men and women and gay-bisexual men and lesbian-bisexual women in the overall sample, they collapsed across the four sectors of service utilization in their comparisons of treatment service utilization between groups in their subsample of people meeting criteria for one of the assessed psychiatric disorders, or meeting criteria for high levels of current psychological distress. As people who meet criteria for a disorder are most in need of
intervention, it is important to explore potential differences in types of services utilized between heterosexual and sexual minority individuals meeting criteria for a psychiatric disorder. In addition, the study did not include other professionals who might provide treatment, including religious or spiritual advisors. Another recent study found that compared to heterosexuals, sexual minority individuals were more likely to receive treatment, but it too did not evaluate treatment by provider (Grella, Greenwell, Mays, & Cochran, 2009).

Overall, more research is needed to better understand patterns of treatment seeking amongst sexual minority individuals. Specifically, it is important to evaluate whether there are differences between heterosexual and sexual minority individuals’ patterns of treatment seeking from different types of providers and settings to evaluate whether or not sexual minority individuals disproportionately seek treatment from specific types of providers or treatment settings. If differences are found in treatment seeking patterns, this may reflect that LGB individuals experience greater comfort or ease of access receiving treatment from specific types of providers and/or settings as compared to others.

**Poor Relationship Quality as a Correlate of Poor Mental Health**

Given that sexual minority individuals report greater mental health difficulties as well as less adequate treatment compared to their heterosexual peers, it is important to identify risk factors for mental health difficulties among sexual minority individuals. Once identified, these risk factors may be targeted to reduce these disparities. For the purposes of developing interventions for prevention, it is especially useful to identify risk factors that influence a variety of mental health outcomes, that are widespread/common, and that are modifiable (Coie et al., 1993).

One potentially important risk factor meeting all of these requirements is poor romantic
relationship quality. Prior research has demonstrated significant associations between poor quality of relationship with one’s spouse/partner and a variety of common psychiatric disorders (i.e., mood disorders, anxiety disorders, and substance use disorders; Goering et al., 1996; Whisman, 1999, 2007). Concerning the criterion of being widespread, research has shown that approximately 30% of couples are dissatisfied with their relationship (Whisman, Beach, & Snyder, 2008) and nearly 50% of first marriages end in separation or divorce (Copen, Daniels, Vespa, & Mosher, 2003). Finally, concerning the modifiable criterion, research has demonstrated the efficacy of couple/family therapy (Shadish & Baldwin, 2003) and interpersonal psychotherapy (Cuijpers et al., 2011), the latter of which involves improving social functioning with important others. Couple-based treatments for treating psychiatric disorders such as depression and substance abuse have also been found to be effective (Fals-Stewart, O’Farrell, Birchler, Córdova, & Kelley, 2005; Whisman & Beach, 2012). Further, relationship education programs have been found to be effective for improving relationship quality, and are very effective for improving communication skills (Hawkins, Blanchard, Baldwin, & Fawcett, 2008).

However, the existing body of research regarding romantic relationship quality and mental health focuses almost exclusively on heterosexual relationships. It is, therefore, important to expand this area of research to also examine the association between relationship quality and psychopathology in sexual minority individuals as same-sex couples represent a significant minority of couples in the United States. According to census data from 2013, there are nearly 650,000 committed same-sex couples in the United States, representing about 6 in every 1,000 households (Gates, 2011). Further, the vast majority of lesbian and gay youth (92% and 82%, respectively) expect to be in a long-term relationship as adults (D’Augelli, Rendina, Sinclair, & Grossman, 2007).
We were only able to identify a handful of studies exploring the associations between romantic relationship quality and mental health within sexual minority individuals. In a geographically diverse sample of 571 individuals in committed, co-habiting same-sex relationships, relationship quality was found to have a moderate sized association with depressive symptoms, which is similar to what has been found amongst heterosexual couples (Whitton & Kuryluk, 2014). Results from the study also found that the association between relationship quality and depressive symptoms was not moderated by gender, age, internalized heterosexism, or relationship length. In another study of same-sex couples, a measure of relationship well-being based on satisfaction, love, and trust was negatively associated with a measure of mental health based on depression, anxiety, and stress (Blair & Holmberg, 2008). In a sample of 110 lesbians in committed relationships, distress in the romantic relationship was not significantly correlated with depression severity; however, the assessment of relationship distress was based on a single-item measure (Oetjen & Rothblum, 2000).

Given the limited research on the association between relationship quality and mental health of sexual minority individuals, it is important to conduct research in this area to gain a better understanding of these associations in understudied sexual minority groups. Specifically, we were unable to find any prior research exploring the associations between relationship quality and symptoms of anxiety and substance use; we were only able to find research exploring depressive symptoms or general mental health. More research is needed to gain a better understanding of the associations between relationship functioning in sexual minority individuals and difficulties across symptoms of anxiety and substance use, as sexual minority individuals demonstrate higher prevalence rates of anxiety and substance use disorders compared to heterosexual individuals (Cochran et al., 2003; Hatzenbuehler et al., 2009).
It is reasonable to expect that the associations between relationship quality and mental health that have been found in heterosexual individuals would be similarly found in sexual minority individuals. Research comparing the relationships of same-sex couples to heterosexual couples finds many more similarities rather than differences in relationship functioning. For example, prior research has found that heterosexual and same-sex couples do not differ in their average levels of relationship quality (Peplau & Fingerhut, 2007) and in the correlates of relationship outcomes (Kurdek, 2005). In spite of this, it is important to note that relationships of sexual minority individuals are fundamentally different from heterosexual relationships due to the social climate of stigmatization and discrimination around same-sex relationships and attractions that heterosexual individuals do not encounter. Further, LGB couples often report anticipating rejection, which may lead them to respond with hypervigilance and concealment of their relationship (Rostosky, Riggle, Gray, & Hatton, 2007). It is possible then that forming and maintaining romantic relationships under these circumstances may result in differences in the associations between relationship quality and mental health. Hence, it is important not to simply assume that what has been found regarding the associations between romantic relationship quality and mental health amongst heterosexual individuals will be the same amongst sexual minority individuals. It is, therefore, important to conduct studies on existing relationship theories with sexual minority samples, which will help provide information regarding the generalizability of existing relationship theories that have been developed and tested in heterosexual couples (Peplau & Spalding, 2000).

**Minority Stress as a Moderator of the Association between Relationship Quality and Mental Health.** Society’s attitudes toward sexual minorities have changed significantly in the United States and elsewhere over the past two decades, and many key institutions have changed
their negative stances or policies toward sexual minority individuals (Herek, 2009a). This change in opinion is reflected by the U.S. Supreme Court declaring same-sex marriage legal nationwide on June 26, 2015, and by 60% of the American public supporting gay marriage (Gallup, 2015). However, in spite of society becoming more accepting of same-sex relationships, sexual minority individuals continue to experience significant discrimination and hostility (Herek, 2009b), and the extent to which individuals experience discrimination may vary depending on their place of residency (Hatzenbuehler et al., 2009; Swank, Fahs, & Frost, 2013).

We were interested in exploring whether the association between relationship quality and mental health of sexual minority individuals would be moderated by the extent of the individuals’ exposure to minority stress. It seems likely that under conditions of heightened stress, including heightened minority stress, having a romantic relationship of higher quality may be particularly important to buffer the effects of minority stress experiences on mental health, whereas the stress of being in a discordant relationship would be exacerbated by additionally experiencing high levels of minority stress. The importance of examining minority stress comes from research findings that minority stress is associated with depressive symptoms and state anxiety (Herek et al., 2015), as well as substance use (Lehavot & Simoni, 2011), and that minority stress is associated with perceived relationship quality and satisfaction (Frost & Meyer, 2009; Mohr & Daly, 2008; Otis, Rostosky, Riggle, & Hamrin, 2006).

Individuals rely on social connections to formulate more positive appraisals of stressful events (Cohen, 2004), and this has been found to be a positive coping strategy for LGB individuals experiencing minority stress. For instance, a study of gay men found that greater social support was related to more positive attributions and less self-blame for discriminatory events (Burns, Kamen, Lehman, & Beach, 2012). Overall, social support was found to be a
resiliency factor for LGB individuals to promote psychological health (Kwon, 2013), and it seems that a high quality romantic relationship could provide a consistent and easily accessible source of support. Accordingly, in a qualitative study of LGB couples’ experiences, some LGB couples reported feeling that talking about stigma together and framing it in positive ways seemed to strengthen the bond within their relationships (Frost, 2011). On the other hand, it seems that being in a strained romantic relationship could both intensify the detrimental effects of minority stress, in addition to serving as a source of stress in and of itself.

**Forms of Minority Stress.** Minority stress can be examined from several perspectives, including internal and external forms. We were interested in exploring whether multiple forms of minority stress would moderate the associations between relationship quality and mental health. In terms of internal forms of minority stress, researchers have distinguished between internalized heterosexism and stigma sensitivity. *Internalized heterosexism* (also known as *internalized homophobia*) is a term for the negative feelings that sexual minorities may feel about their own sexuality due to living in a heterosexist society. Internalized heterosexism has been shown to be associated with both reduced relationship satisfaction (Frost & Meyer, 2009; Mohr & Daly, 2008), as well as symptoms of depression and anxiety (Herek et al., 2015), and substance use (Lehavot & Simoni, 2011). Although one study did not find that internalized heterosexism moderated the association between relationship quality and depressive symptoms (Whitton & Kuryluk, 2014), additional research is needed to replicate this finding and further evaluate whether the associations between relationship quality and anxiety and substance use may be moderated by internalized heterosexism.

*Stigma sensitivity* involves both awareness and anxious expectation of being stigmatized (Major & O’Brien, 2005). Although awareness of one’s potential to be stigmatized may be
adaptive to some degree as it may help a person anticipate, identify, and avoid threatening situations (Pinel, 1999), it can simultaneously be highly stressful for someone to feel the need to continuously search the environment for signs of possible rejection or discrimination. Consistent with this theory, LGB individuals with high levels of stigma awareness reported higher levels of depressive symptoms and suicidal ideation even when accounting for levels of internalized homonegativity (Lewis, Derlega, Griffin, & Krowinski, 2003). Further, higher stigma sensitivity was found to be associated with lower levels of relationship quality (Mohr & Fassinger, 2006). However, stigma sensitivity has not been examined as a potential moderator of the association between relationship quality and psychopathology.

In terms of external forms of minority stress, we were interested in evaluating experiences of perceived discrimination based on sexual identity and institutional discrimination, which are distinct but related constructs. For instance, current or historical institutional discrimination may contribute to an individual experiencing greater perceived discrimination (e.g., if there are no laws against employment discrimination, a sexual minority individual may be at greater risk of experiencing it). Sexual minority individuals report more frequent experiences of day-to-day and lifetime discrimination than heterosexual individuals, which is associated with reduced quality of life and greater risk of psychopathology (Mays & Cochran, 2001). Using a population-based sample, researchers found that LGB individuals who had experienced discrimination were more likely to develop substance use disorders compared to those who had not experienced discrimination (McCabe, Bostwick, Hughes, West, & Boyd, 2010). Additionally, higher levels of specific experiences of perceived discrimination based on sexual orientation (e.g., experience of property vandalization, verbal assault, etc.) has also been found to be associated with reduced relationship satisfaction (Otis et al., 2006).
Research from nationally representative samples also finds that higher levels of institutional discrimination (based on employment, protection from hate crimes, and marriage rights) are associated with worse mental health outcomes (Hatzenbuehler at al., 2009; Hatzenbuehler et al., 2010). On the other hand, a study using an online survey sample of over 2,000 LGB individuals found that legal recognition of same-sex couple relationships can actually protect well-being, as they found that LGB individuals in legally recognized relationships experience fewer depressive symptoms, lower levels of stress, and more meaning in their lives compared to those in committed (but not legally recognized) relationships, controlling for other factors (Riggle, Rostosky, & Horne, 2010). This study also found that LGB individuals in legally recognized relationships experience less internalized homophobia, bringing to light how a form of external minority stress can influence an internal form.

**Interpersonal Support as a Moderator of the Association between Relationship Quality and Mental Health.** Sexual minority individuals may experience interpersonal difficulties with family, friends, and the community at large stemming from experiences of rejection of their sexual minority identity. These experiences may put sexual minority individuals at risk for greater isolation and lack of social support compared to heterosexual individuals. Further, as social support is helpful for formulating more positive appraisals of stressful events (Cohen, 2004), lacking general social support may exacerbate the strain of romantic relationship conflict, as the individual may have difficulty finding someone to talk to about their relationship difficulties. Or, in the event that they might be experiencing conflicts with friends, family, or the community, or having trouble making connections with others, those in strained romantic relationships may also lack support from their partner in combating these stressors. Additionally, lacking general social support may negatively influence the quality of the
romantic relationship itself as research finds that perceived social support is associated with relationship satisfaction in lesbian and gay couples (Jordan & Deluty, 2000), and for lesbian and gay adoptive parents, social support is associated with less parenting stress (Goldberg & Smith, 2011).

One important aspect of social support from others for sexual minority individuals concerns the reactions they receive from family members after disclosing their sexual identity. Studies show that LGB adolescents’ relationships with parents are often challenged, particularly around the time of disclosure of their sexual identity or “coming out” (D’Augelli, Grossman, & Starks, 2005). Two studies have found that the majority of parents of gay and lesbian children initially react negatively to their children’s disclosure of sexual orientation (Robinson, Walters, & Skeen, 1989; Savin-Williams & Ream, 2003). Another study of nationally representative adults in the United States found that one-third of gay-bisexual and lesbian-bisexual adults reported not receiving adequate social and emotional support from parents to whom they first disclosed their sexual orientation, and also found evidence that individuals who received a non-supportive reaction from their parents had increased odds of developing depression and hazardous substance abuse (Rothman, Sullivan, Keyes, & Boehmer, 2012). Additionally, a study using a convenience sample of White and Latino LGB young adults from local LGB venues found that family rejection of sexual orientation rates were significantly associated with higher rates of suicide attempts, depression, and drug use (Ryan et al., 2009). Further, general family support in LGB youth recruited through snowball sampling in Israel was also found to have a stronger negative association with mental distress above friend support (Shilo & Savaya, 2011). On the other hand, family acceptance has also been found to be a protective factor for lesbian, gay, bisexual, and transgender young adults as it was found to be protective against depression,
substance abuse, and suicidal ideation and behaviors (Ryan, Russell, Huebner, Diaz, & Sanchez, 2010). A study looking at both general support and sexuality specific support of family and friends of bisexual college aged young adults found that general support of both family and friends was most predictive of depression and life satisfaction, and both family and friend sexuality-specific support was most predictive of bi-negativity (Sheets & Mohr, 2009). Research finds that this sense of rejection from family can continue past adolescence and young adulthood, as in a qualitative study of LGB adult couples, many individuals reported experiencing rejection from their families of origin in the forms of expressing discomfort with the relationship, refusing to acknowledge the partner or the relationship, blatant attempts to cause dissolution of the relationship, verbal attacks, and withholding support (Rotosky et al., 2007). Overall, the literature supports the importance of social support from family members for the psychological health and overall well-being of sexual minority individuals.

Research also finds that lesbian, gay, and bisexual youth are not only concerned about how their parents will react to their sexual orientation, but are also concerned about how their friends will react, and fear rejection by both (Savin-Williams & Ream, 2003). Indeed, friends’ general social support and acceptance of their sexual orientation is important, and was found to influence LGB Israeli youth’s comfort to disclose their sexual orientation (Shilo & Savaya, 2011). In this study, LGB friends’ general support also showed strong positive effects on well-being. Although sexual minority individuals may certainly face rejection regarding their sexual orientation from friends, the difference between their relationships with friends as compared to their relationships with family members is that they may choose to exit unsupportive friend relationships. Indeed, sexual minority individuals often choose to develop “families of choice”, or an elaborate friendship network utilized to compensate for a lack of supportive family ties.
(Weeks, Heaphy, & Donovan, 2001). This friendship network then becomes critically valuable as it can provide support to individuals when they are confronted with problems related to their sexual orientation (Dewaele, Cox, Van den Berghe, & Vincke, 2011). Several studies have found that LGB individuals and couples receive less of their social support from their families and a greater amount of their social support from their friendship networks than do heterosexual individuals and couples (Dewaele et al., 2011; Kurdek, 2001, 2005). Therefore, establishing supportive friendship relationships may be especially beneficial for sexual minority individuals given the possibility of lacking adequate familial support due to rejection of their sexual orientation. This research is consistent with prior research on heterosexual relationships finding that the quality of relationships with family and friends has been found to be associated with health and well-being (e.g., Walen & Lachman, 2000).

In addition to receiving support from family and friends, sexual minority individuals may also receive social support from being connected to the community at large. In fact, a study of LGB youth found that general social connectedness was significantly associated with psychological well-being when adjusting for the perceived social support of family and friends (Detrie & Lease, 2007). Research also finds that greater LGB community connectedness is linked to a greater sense of social and psychological well-being amongst LGB adults (Kertzner, Meyer, Frost, & Stirratt, 2009), and greater connectedness to the community was found to be associated with reduced substance use (i.e., cigarette smoking behaviors) amongst sexual minority women (Johns et al., 2013).

Given the importance of support from family, friends, and the community for the psychological health and well-being of sexual minority individuals, we were interested in examining whether social support from family, friends, and the community would moderate the
associations between romantic relationship quality and mental health. Specifically, we predicted that lacking general support outside of the relationship might strengthen the association between romantic relationship quality and mental health, as individuals with little or no support from others would not have an outside buffer to protect them from relationship strain, thereby making the individual more susceptible to developing mental health problems.

The Current Study

The study consisted of two parts. Part 1 sought to expand on prior research examining mental health disparities and treatment utilization of sexual minority adults by evaluating differences between sexual minority and heterosexual individuals on these variables. This portion of the study explored the following aims and hypotheses.

Aim 1: To identify differences between sexual minority and heterosexual individuals in the 12-month prevalence of broadband categories of mood, anxiety, and substance use disorder, comorbid disorder, and any disorder.

Hypothesis 1: We predicted that there would be a higher prevalence of mood, anxiety, and substance use disorder, comorbid disorder, and any disorder amongst sexual minority individuals as compared to heterosexual individuals.

Aim 2: To identify differences between sexual minority and heterosexual individuals in treatment utilization – overall and by service sector for a wide range of treatment providers – for people who met past-year diagnostic criteria for mood, anxiety, and substance use disorder, comorbid disorder, and any disorder.

Hypothesis 2: We predicted that sexual minority individuals would be more likely than heterosexual individuals to receive treatment for mood, anxiety, and substance use disorder, comorbid disorder, and any disorder. However, we did not have specific hypotheses regarding
differences between heterosexual and sexual minority individuals with respect to treatment utilization from specific treatment sectors or providers.

Part 2 of the study sought to advance scientific understanding regarding correlates for psychopathology amongst sexual minority individuals. Specifically, we evaluated romantic relationship quality as a potential correlate of psychopathology. We then evaluated potential moderators (i.e., minority stress and social support outside of the relationship) of the cross-sectional associations between relationship quality and psychopathology. For this part of the study, we focused on sexual minority individuals, and did not make comparisons between sexual minority and heterosexual individuals. This portion of the study explored the following aims and hypotheses.

Aim 3: To investigate romantic relationship quality as a correlate for symptoms of mood, anxiety, and substance use disorders.

Hypothesis 3: We hypothesized that there would be significant cross-sectional associations between relationship quality and symptoms of mood, anxiety, and substance use (alcohol use and drug use) disorders, such that relationship quality would be negatively associated with psychopathology.

Aim 4: To evaluate whether minority stress (i.e., internalized heterosexism, stigma sensitivity, perceived discrimination, and institutional discrimination) and social support from family, friends, and the community moderated the cross-sectional associations between relationship quality and symptoms of mood, anxiety, and substance use disorders.

Hypothesis 4: We hypothesized that sexual minority stress and support from family, friends, and the community would moderate the cross-sectional associations between relationship quality and symptoms of depression, anxiety, and substance use, such that the
magnitude of these associations would be stronger in the presence of higher levels of minority stress and lower levels of social support.
Study 1

For the first study we used data from a population-based sample of adults to explore mental health disparities and differences in treatment utilization patterns between heterosexual and LGB individuals.

Method

Participants. The National Comorbidity Survey Replication (NCS-R) is a nationally representative household survey of 9,282 English-speaking respondents aged 18 years and older in the United States (Kessler et al., 2004; Kessler & Merikangas, 2004). Participants were selected on the basis of a multistage clustered area probability sample of households. Participants completed face-to-face interviews between February 2001 and April 2003 with an overall response rate of 70.9%. The survey was administered in two parts. Part 1 was comprised of a core diagnostic assessment given to all participants \((n = 9,282)\). Part 2 included an assessment of additional disorders as well as questions about risk factors, consequences, and other correlates, which were administered to all Part 1 respondents meeting lifetime criteria for any disorder plus a probability sub-sample of other respondents \((n = 5,692)\). The Part 1 sample was weighted to adjust for differential probabilities of selection of respondents within households and for differential nonresponse, and poststratified to match the 2000 Census population on several geographic and demographic variables; the Part 2 sample was additionally weighted to adjust for differential probabilities of selection.

A random subset of Part 1 participants was asked about their sexual orientation \((n = 6,404)\). On the basis of weighted data, the final sample consisted of 53% women and 47% men. The racial/ethnic distribution of the sample was 75% White, 11% Black, 11% Hispanic, and 4% other. Participants were on average 44.68 years old \((SD = 16.63\) years, range = 17 – 98).
The sexual orientation distribution of the weighted sample was 97.4% heterosexual and 2.6% LGB (1.5% of the sample identified as being homosexual and 1.1% identified as being bisexual). Of the individuals that identified as being homosexual, 48% were female, and 52% were male. Of those that identified as bisexual, 63% were female, and 37% were male.

Measures.

**Sexual Orientation.** Sexual orientation was assessed through a question in which participants selected one of the following items they believed best described their sexual orientation: (a) “heterosexual or straight – that is primarily sexually attracted to members of the opposite sex,” (b) “homosexual or gay – that is primarily attracted to members of your own sex,” (c) “bisexual – that is, attracted to both men and women,” (d) “something else,” or (e) “you’re not sure.” Consistent with prior research (e.g., Cochran et al., 2003), the “homosexual or gay” and bisexual groups were combined to increase statistical power; people who endorsed the “something else” or “you’re not sure” responses were not included in the analyses.

**Psychiatric Disorder.** Psychiatric diagnoses were based on the World Mental Health version of the Composite International Diagnostic Interview (WMH-CDI; Kessler & Üstün, 2004), a fully structured lay interview that generates diagnoses according to the DSM–IV. The analyses were based on 12-month diagnoses of anxiety disorders (panic disorder, agoraphobia without panic disorder, generalized anxiety disorder [GAD], specific phobia, social phobia, posttraumatic stress disorder [PTSD]), mood disorders (major depressive disorder [MDD], dysthymia, bipolar disorder I or II), and substance use disorders (alcohol and drug abuse and dependence); childhood disorders (e.g., conduct disorder) included in the NCS-R were not included in the study because their assessment was limited to a subset of respondents (i.e., those between the ages of 18 and 44 years). PTSD and substance use disorders were only assessed
amongst Part 2 respondents. Consistent with other reports on psychiatric disorders in the NCS-R (Kessler, Chiu, Demler, & Walters, 2005), DSM–IV organic exclusion rules were used in making diagnoses, and diagnostic hierarchy rules were used in making all diagnoses other than substance use disorders. Participants met criteria for comorbid disorder if they met criteria for any two different disorders with the exception of meeting criteria for both substance abuse and substance dependence. Blind clinical re-interviews using the Structured Clinical Interview for DSM–IV (SCID; First, Spitzer, Gibbon, & Williams, 2002) with a probability subsample of NCS-R respondents demonstrated good agreement between WMH-CIDI and SCID diagnoses.

**Mental Health Service Utilization.** Participants were asked whether they ever received treatment for “problems with your emotions or nerves or your use of alcohol or drugs.” A list of treatment providers was presented in a booklet and included psychiatrist, general practitioner or family physician, any other physician, psychologist, social worker, counselor, any other mental health professional (e.g., psychotherapist or mental health nurse), religious or spiritual advisor (e.g., minister, priest, or rabbi), or any other healer (e.g., chiropractor, herbalist, or spiritualist). Participants who reported ever receiving any treatment were then asked whether they had received treatment from each provider in the past 12 months. We followed Wang et al.’s (2005) coding of service providers and classified past-year service use into overall mental health service utilization and into separate 5 sectors of provider: psychiatrist, non-psychiatrist mental health specialist (psychologist or other non-psychiatrist mental health professional in any setting, social worker or counselor in a mental health specialty setting, or use of a mental health hotline), general medical provider (primary care physician, other general physician, nurse, or any other health care professional not previously mentioned), human services professional (religious or spiritual advisor, or social worker or counselor in any setting other than a specialty mental health
setting), and complementary and alternative medicine professional (any other type of healer, such as a chiropractor, participation in an Internet support group, or participation in a self-help group). Psychiatrist and non-psychiatrist specialist categories were combined into a broader mental health specialty category. Mental health specialty was also combined with general medical into an even broader health care category. Human Services and CAM were also combined into a non-health care category.

**Analysis Plan.** Aim 1 addressed the difference in the prevalence of mood, anxiety, and substance use disorder, comorbid disorder, and any disorder between sexual minority and heterosexual individuals. Logistic regression analyses were conducted in which each class of disorder, comorbid disorder, and any disorder were regressed on sexual orientation (0 = heterosexual; 1 = LGB). Data from Part 1 respondents were examined for mood disorder, and data from Part 2 respondents were examined for anxiety, substance use, comorbid, and any disorder. Sample weights were used in all analyses. These weights adjust for differences in probabilities of selection, differential nonresponse, differences between the sample and the U.S. population, and, for analyses involving Part 2 respondents, for oversampling of the Part 2 sample. Analyses were conducted using SPSS Complex Samples and the Taylor series linearization approach to estimating sampling variance, which incorporates the sample design into the data analysis, thus rendering acceptable standard errors of the parameter estimates. To evaluate whether hypothesized associations were incremental to demographics, age and gender were included as covariates in all analyses.

Aim 2 compared treatment utilization overall and by specific treatment sector between heterosexual and sexual minority individuals who met criteria for a mood, anxiety, comorbid, or any disorder in the past 12 months. Parallel analyses for substance use disorder were not
conducted because there were too few people who met criteria for past year substance use disorder to conduct meaningful analyses. Logistic regression analyses were conducted in which receiving 12-month treatment overall and by particular sectors (0 = no, 1 = yes) was regressed on sexual orientation (0 = heterosexual; 1 = LGB), with age and gender included as covariates.

Results

Twenty-five percent of participants in the NCS-R dataset met criteria for any disorder. Among those in the sample who met criteria for any disorder, 42% met criteria for a comorbid disorder. Prevalence rates of each of the classes of disorders in the sample as well as logistic coefficients, odds ratios, and 95% confidence intervals from each logistic regression analysis are presented in Table 1.

In the past year, the odds of an LGB individual meeting criteria for a mood disorder, anxiety disorder, or any disorder were at least 2 times greater than the odds for a heterosexual individual meeting criteria. Specifically, compared to the odds of heterosexual individuals meeting diagnostic criteria, the odds of LGB individuals meeting criteria for a disorder were 2.09 times greater for a mood disorder, 2.17 times greater for an anxiety disorder, and 2.00 times greater for any disorder. The odds of an LGB individual meeting criteria for a substance use disorder or comorbid disorder were not significantly greater than the odds for a heterosexual individual meeting diagnostic criteria.

Of individuals who met criteria for any psychiatric disorder, 63.1% of them received treatment for problems with their emotions or nerves or use of substances in the year prior to the interview. The odds ratios and 95% confidence intervals from the logistic regression analyses predicting service utilization across individuals with a mood, anxiety, comorbid, or any disorder across the specific categories of providers (psychiatrist, non-psychiatrist mental health specialist,
general medical provider, human service provider, complementary alternative medicine) are presented in Table 2, and across broad categories of providers (mental health specialty, health care, non-health care, and any service provider) in Table 3.

In terms of findings regarding specific categories of service providers for individuals meeting criteria for a mood disorder, the odds of an LGB individual utilizing CAM therapies were 2.10 times greater than the odds for a heterosexual individual. For individuals meeting criteria for an anxiety disorder, the odds of an LGB individual utilizing services from a non-psychiatrist mental health specialist were 2.09 times greater than the odds for a heterosexual individual. No other differences in treatment utilization were found between LGB and heterosexual individuals meeting criteria for a mood or anxiety disorder.

For individuals meeting criteria for any psychiatric disorder, the odds of an LGB individual utilizing services from a non-psychiatrist mental health specialist were 2.00 times greater than the odds for a heterosexual individual. Also, the odds of an LGB individual utilizing CAM therapies were 2.07 times greater than the odds for a heterosexual individual. No differences in treatment seeking behaviors were found between LGB and heterosexual individuals meeting criteria for comorbid disorders.

In terms of findings regarding treatment seeking across broad categories of service providers, no differences in treatment seeking patterns were found between LGB and heterosexual individuals meeting criteria for a mood disorder. For individuals meeting criteria for an anxiety disorder, (a) the odds of an LGB individual utilizing mental health specialty services were 2.50 times greater than the odds for a heterosexual individual, (b) the odds of an LGB individual utilizing health care services were 2.15 times greater than the odds of a heterosexual individual, and (c) the odds of an LGB individual utilizing services from any
service provider were 2.10 times greater than the odds for a heterosexual individual.

For individuals meeting criteria for any psychiatric disorder, (a) the odds of an LGB individual utilizing services from a mental health specialist were 2.39 times greater than the odds for a heterosexual individual, (b) the odds for an LGB individual utilizing services from a health care provider were 2.41 times greater than the odds for a heterosexual individual, and (c) the odds for an LGB individual seeking services from any service provider were 2.29 times greater than the odds for a heterosexual individual. No differences in treatment seeking behaviors were found between LGB and heterosexual individuals meeting criteria for comorbid disorders.

Discussion

The present study was conducted to enhance the epidemiological literature exploring mental health disparities and differences in treatment utilization between LGB and heterosexual individuals. As predicted, we found that the odds of LGB individuals meeting criteria for a mood, anxiety, or any disorder were at least 2 times greater than the odds for heterosexual individuals meeting diagnostic criteria. This is consistent with literature suggesting that there is greater mental health morbidity amongst LGB individuals as compared to heterosexual individuals in the United States (Cochran et al., 2003; Cochran et al., 2007; Cochran & Mays, 2009; Gilman et al., 2001; Hatzenbuehler et al., 2009) as well as in the Netherlands and United Kingdom (Chakraborty et al., 2011; Sandfort et al., 2003). Unexpectedly, we found that the odds of LGB individuals meeting criteria for a substance use disorder were not higher than the odds for heterosexual individuals, which was not consistent with the existing literature. Further, we found that the odds of LGB individuals meeting criteria for a comorbid disorder were not higher than the odds for heterosexual individuals, which also was inconsistent with previous findings that sexual minority individuals experience greater prevalence of comorbid disorders (Cochran et
al., 2003; Mereish et al., 2015). It is unclear why no differences were found between LGB and heterosexual individuals in terms of likelihood of having a substance use or comorbid disorder. An inspection of the prevalence rates provided in Table 1 indicate that these disorders were less prevalent overall than the other assessed disorders. Furthermore, as these disorders were assessed only in Part 2 participants, it is possible that the lack of statistical significance was due to the small number of LGB individuals in the Part 2 sample and resulting low statistical power for detecting differences in prevalence of these low base rate disorders between groups.

This study addresses some of the methodological limitations of prior studies. Specifically, a strength of the NCS-R sample is that its age range is more inclusive than other nationally representative surveys utilized for this research (17-98 year of age) as compared to 25-74 in the National Survey of Midlife Development in the United States (MIDUS) sample (used in Cochran et al., 2003) or mostly 26-45 year olds (with 6% over 65) in the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) sample (used in Hatzenbuehler et al., 2009). Additionally, the NCS-R utilizes a clear operationalization of sexual orientation (asking individuals to self identify whether they are heterosexual, homosexual, or bisexual) as compared to other studies utilizing sexual behavior to operationalize same-sex sexuality (Gilman et al., 2001; Sandfort et al., 2003), which might be inconsistent with identity. Overall, the study finds additional evidence for mental health disparities between LGB and heterosexual individuals. Additional research is needed to better understand what drives and maintains these mental health disparities so that we can effectively reduce them.

The present study was also conducted to explore differences in treatment seeking patterns between LGB and heterosexual individuals, which is greatly underexplored. This information may help increase our understanding of what types of providers and treatment sectors LGB
individuals may preferentially seek, which is important given their significant mental health needs. In terms of treatment seeking from specific providers, we found that the odds of LGB individuals meeting criteria for a mood disorder or any disorder seeking complementary alternative medicine (defined as any other type of healer, such as a chiropractor, participation in an Internet support group, or participation in a self-help group) were at least 2 times greater than the odds of heterosexual individuals seeking treatment from these providers. This finding is consistent with a study exploring differences in CAM therapy (defined as traditional healing, acupuncture, massage, or herbal therapies) use between lesbian and heterosexual women for general “help,” which found that lesbians had greater odds of having ever used CAM in the past twelve months and in their lifetime compared to heterosexual women (Smith, Matthews, Markovic, Youk, Danielson, & Talbott, 2010). These study authors also found that experiencing perceived discrimination in a health care setting was a correlate of both lifetime and past 12-month CAM use, which provides evidence that sexual minority individuals may utilize CAM therapy more than their heterosexual counterparts given experiences of discrimination in more traditional health care settings. Additionally, our results are consistent with findings that sexual minority individuals are more likely to attend a self-help group than heterosexual individuals for help with emotional or mental health reasons or for personal problems (Cochran et al., 2003). Further, perhaps sexual minority individuals believe that self-help or Internet support groups may be more helpful than traditional health care services, as these modes of treatment may provide access to advice and support for coping with issues generated by their minority status from other sexual minority individuals. Additionally, it seems likely that an LGB individual would appreciate the potential anonymity of being in an Internet support group, as research finds
that LGB individuals often have concerns about their privacy and confidentiality (Cniro et al., 2005; Klitzman & Greenberg, 2002).

We also found that the odds of LGB individuals with an anxiety disorder or any disorder seeking treatment from a non-psychiatrist mental health specialist (psychologist or other non-psychiatrist mental health professional in any setting, social worker or counselor in a mental health specialty setting, or use of a mental health hotline) were at least 2 times higher than the odds of heterosexual individuals seeking services from these providers. These findings are consistent with research suggesting that sexual minority individuals are more likely to seek treatment from a mental health provider as compared to heterosexual individuals (Cochran et al., 2003). It is intriguing that we found higher rates of treatment seeking from a non-psychiatrist mental health specialist for LGB individuals meeting criteria for anxiety disorders, as research on treatment seeking in general community samples find that the majority of people with anxiety disorders do not receive any treatment (Johnson & Coles, 2013). It is unclear why we found these differences, but perhaps the anxiety LGB individuals experience is of greater severity than that of heterosexual individuals given the additional anxiety they may experience from issues generated by their minority status. Or, perhaps they are more comfortable seeking therapy for the purpose of addressing issues generated by their minority status, so they enter treatment to address these issues rather than to directly address their anxiety disorder.

Overall, given that LGB individuals meeting criteria for psychiatric disorders may have greater mental health needs than heterosexual individuals owing to additional issues generated by minority status (i.e., discrimination; Hughes et al., 1997), it would make sense that LGB individuals are seeking mental health treatments at higher rates than heterosexual individuals. However, it should be noted that the mental health community has not historically been a safe
place for LGB individuals, as conversion therapy was once utilized as the treatment of choice when homosexuality was thought to be a disease (Haldeman, 1994). Given this history, it is unclear how LGB individuals feel about the quality of mental health services they receive. Research finds that even therapists who profess to be affirmative in their approach to therapy demonstrate evidence of subtle heterosexual bias (Bieschke et al., 2000), and research finds that there are common themes in the microaggressions encountered by LGB individuals in the therapeutic environment (e.g., assuming sexual orientation is the cause of all presenting issues, making stereotypical assumptions, etc.; Shelton & Delgado-Romero, 2011). Future research should explore the level of comfort LGB individuals feel when seeking therapeutic services, because although it may be a positive trend that individuals are willing to seek mental health treatment in spite of barriers, LGB individuals will only benefit from the treatment in the event that they find the therapy to be safe and effective. Future research is also needed to explore ways to enhance training for mental health specialists to provide services that are more sensitive to the needs of LGB individuals. For instance, based on research findings that basic counseling skills and the therapeutic relationship were key determinants of the quality of LGBT clients’ therapy experiences, as were the therapist’s attitudes toward client sexual orientation/gender identity (Israel, Gorcheva, Burnes, & Walther, 2008), it is important to enhance these skills in mental health specialists.

In our results regarding treatment seeking across broad provider categories, we also found that the odds of LGB individuals with an anxiety disorder or any disorder seeking treatment from a mental health specialty provider (mental health specialist or psychiatrist), health care provider (mental health specialty providers and general medical providers), and any service provider (all provider types combined) were at least 2 times higher than the odds for
heterosexual individuals seeking treatment from these providers. This is consistent with research findings that LGB individuals seek greater treatment compared to heterosexual individuals in general (Cochran et al., 2003; Grella et al., 2009). Overall, these findings indicate that, in general, LGB individuals meeting criteria for psychiatric disorders are seeking treatment more than heterosexual individuals.

The only broad provider category for which we did not find higher odds of usage among LGB individuals was non-health care providers (human services and CAM). It is unclear why differences were not found, especially because CAM therapies were found to have higher utilization amongst LGB individuals with a mood disorder or any disorder. However, seeking help from religious or spiritual advisors is included in the human service category, and historically religious based counseling has not been an LGB affirming type of service. In fact, research finds that LGB individuals who sought religious or spiritual treatment had higher odds of later committing suicide compared to those who did not seek treatment at all (Meyer, Teylan, & Schwartz, 2014). Therefore, this may explain the lower rates of treatment seeking in this broad service category.

Overall, our findings contribute to prior research suggesting that there are differences in mental health treatment seeking between LGB and heterosexual individuals using nationally representative samples (Cochran et al., 2003; Grella et al., 2009). Our study extends this line of research by exploring the differences in treatment seeking across different providers and for specific classes of disorders. In future research, it will be important to explore what accounts for these differences in treatment seeking patterns, as it is unclear what accounts for higher use of certain types of treatment providers/settings by LGB individuals. Further, it is important to
continue to explore LGB individuals’ experiences using different types of treatment across sectors, in order to improve services to better fit their needs.

In interpreting these results, it is important to keep in mind limitations of our study. First, our power to detect associations between sexual orientation and mental health outcomes and treatment seeking utilization was limited because of the low numbers of lesbian, gay, and bisexual individuals in the NCS-R survey (183 LGB individuals out of a total sample of 6,404 individuals). Given sample size limitations, we were also unable to run analyses exploring differences in treatment utilization patterns between LGB and heterosexual individuals meeting criteria for substance use disorders, so this is an important question for future research. Further, the study used a retrospective design, relying on participants’ self-report of past-year mental health care service utilization and psychiatric symptoms. Although a 1-year time frame may limit memory and reporting biases, individuals may have some difficulty recalling their experience of mental health symptoms and treatment seeking behavior in the past year. It is also unclear if individuals were willing to report on their sexual orientation openly in their survey data, and if they may have been biased to report in certain ways about their mental health symptoms. Measuring sexual orientation in studies where individuals are recruited by general methods is a relatively new, so not much is known about how this influences reporting (Black, Gates, Sanders, & Taylor, 2000; Butler, 2001).

In spite of these limitations, our findings contribute in meaningful ways to the body of work suggesting that minority sexual orientation status is a risk factor for higher mental health morbidity and greater overall service use, as well as greater service use in specific service provider categories (i.e., CAM and non-psychiatrist mental health specialty) for specific classes of disorders.
Study 2

For the second study, we collected survey data online to explore the associations between relationship quality and symptoms of psychopathology (i.e., depression, anxiety, alcohol use, and substance use). We also explored whether the associations between relationship quality and symptoms of psychopathology were moderated by minority stress and level of available social support from family, friends, and the community.

Method

Participants and Procedures. We recruited 301 sexual minority individuals, who are over 18 years of age and in serious romantic relationships lasting at least 6 months, through Amazon Mechanical Turk (MTurk). Participants were required to live in the United States and be fluent in English to be eligible to participate. MTurk provides researchers inexpensive and rapid access to research participants who are somewhat more diverse than standard Internet samples, and much more diverse than American college samples, as well as provide data that are at least as reliable as traditional methods (Buhrmester, Kwang, & Gosling, 2011).

Study participants completed a series of self-report surveys as described below. Additionally, six attention check questions were incorporated into the questionnaire assessment, and participants who responded to two or more incorrectly were not included in the study. Completion of the questionnaires took approximately 30 minutes, and participants received $1.50 for their participation. The payment amounts exceeded the median hourly wage for MTurk, which is $1.38 (Horton & Chilton, 2010). The Institutional Review Board approved the project, and all participants gave informed consent prior to participation.

In order to recruit a balanced sample in regard to sexual orientation, we posted separate HITs in MTurk aimed at recruiting 100 lesbian women, 100 gay men, 50 bisexual women, and
50 bisexual men. HITs or “Human Intelligence Task” is the term MTurk uses to represent a single, self-contained task that a Worker can work on, submit an answer, and collect a reward for completing. Some individuals responded to the incorrect HIT based on their sexual orientation, but as long as they identified as being LGB and met all the other requirements, they were reclassified into the correct group and included as participants in the study. Twenty-seven univariate outliers were identified and their scores were changed to reflect the next highest or lowest non-outlier number. Nine individuals were identified as multivariate outliers and were not included in the study.

The results are based on the remaining 292 participants (145 men, 147 women). In regard to sexual orientation, 190 participants considered themselves to be gay or lesbian, and 102 considered themselves to be bisexual. Specifically, 94 participants identified as being lesbian women, 96 as gay men, 53 as bisexual women, and 49 as bisexual men. The racial/ethnic distribution of the sample was 80% White, 11% Black, 3% Asian, and 5% other; 11% of participants considered themselves to be Hispanic, Latino, or of Spanish origin. Participants were on average 32 years old (SD = 8.83 years, range = 18 – 70). In terms of current marital status, 30% of participants were not married and not living together, 59% were cohabitating but not married, and 11% were married. In terms of lifetime marital history, the majority (78%) had never been married, 17% had been married once, 3% were married twice, and 1% were married three or more times. On average, participants were in their current relationship for 3.65 years (SD = 4.51 years, range = 6 months to 34 years). Seventeen percent of participants were parents, and 8% had one child, 6% had 2, and 3% had 3 or more children. In terms of educational attainment, 10% completed high school, 25% completed some college, 13% completed an associate’s degree, 41% completed a bachelor’s degree, and 11% completed a professional or graduate
degree. The majority of the sample earned an annual salary between $50,000 and $74,999 (23.8%), followed closely by 21.7% earning between $35,000 and $49,000, followed by 19.6% earning between $25,000 and $34,999, followed by 12.9% earning between $15,000 and $24,999. Both the percentage of study participants making an annual salary between $75,000 and $99,999, and the percentage of study participants making an annual salary of under $15,000 was 8%. One percent of the sample earned an annual salary above $150,000. The sample was geographically diverse, with 18% coming from the Northeast, 19% from the Midwest, 43% from the South, and 19.5% from the West. Seventy percent of participants lived in states in which same-sex marriage was legal when the United States Supreme Court decision of June 26, 2015 resulted in the legalization of same-sex marriage nationwide.

Measures.

Sexual Orientation. Sexual orientation was measured by 3 questions assessing self-identification (of sexual orientation), sexual behavior, and sexual attraction (Badgett & Goldberg, 2009). Self-identification was assessed with the question “Do you consider yourself to be: (a) Heterosexual or straight; (b) Gay or lesbian; or (c) Bisexual?” Sexual behavior was assessed with the question “In the past 5 years, who have you had sex with?” Responses included (a) Men only, (b) Women only, (c) Both men and women, and (d) I have not had sex. Finally, sexual attraction was assessed with the question “People are different in their sexual attraction to other people. Which best describes your feelings? Are you: (a) Only attracted to females? (b) Mostly attracted to females? (c) Equally attracted to females and males? (d) Mostly attracted to males? (e) Only attracted to males? (f) Not sure?”

Relationship Quality. Relationship quality was assessed with the Couples Satisfaction Index [CSI(16); Funk & Rogge, 2007]. The CSI(16) is composed of items that assess global
relationship satisfaction on 6- and 7-point Likert-type scales. Examples of items are “Our relationship is strong” and “I really feel like I am part of a team with my partner.” Ratings are summed, with higher ratings indicating higher relationship satisfaction. Scores range from 0-81 on this scale, with 51.5 identified as the cut-off score representing significantly distressed relationships (Funk & Rogge, 2007). The CSI(16) demonstrates strong convergent validity and construct validity with other measures of relationship satisfaction (Funk & Rogge, 2007). Cronbach’s alpha coefficient was .96.

**Depressive Symptoms.** Depressive symptoms were measured with the Center for Epidemiologic Studies – Depression Scale (CES-D; Radloff, 1977). This 20-item scale asks individuals how often they experienced depressive symptoms over the past week. Items were scored on a 4-point scale and a total score was calculated by summing the items, with higher scores reflecting higher levels of depressive symptoms. Scores range from 0-60 on this scale, with 16 representing the cutoff score for identifying individuals with clinically elevated levels of symptoms (Radloff, 1997). Cronbach’s alpha coefficient was .94.

**Anxiety Symptoms.** Anxiety symptoms were measured with the Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988), which is a 21-item measure. Items are scored on a 4-point scale with higher scores reflecting higher levels of anxiety. The severity score is the raw-score sum across the 21 items, and ranges from 0-63. Cronbach’s alpha coefficient was .96.

**Alcohol Use.** Alcohol use was assessed with the Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, De La Fuente, & Grant, 1993) a 10-item self-report instrument used to assess for alcohol consumption, drinking behaviors, and alcohol-related problems. Scores range from 0 to 40, and a cutoff score of >8 suggesting that the individual is drinking in a hazardous or harmful manner (Conigrave, Hall, & Saunders, 1995). Considerable
evidence shows support for the AUDIT’s internal consistency (Barry & Fleming, 1993), and AUDIT scores are correlated with other self-report screening tests (Bohn, Babor, & Kranzler, 1995). Cronbach’s alpha coefficient was .90.

**Drug Use.** Drug use over the past six months was assessed using the Drug Use Disorders Identification Test (DUDIT; Stuart, Moore, Kahler, & Ramsey, 2003; Stuart, Moore, Ramsey, & Kahler, 2004). The DUDIT contains 14 questions and is modeled after the AUDIT. It assesses the frequency and intensity of drug use and symptoms that may be indicative of tolerance or dependence. The DUDIT examines the use of 7 different classes of drugs (cannabis, cocaine, hallucinogens, stimulants, sedatives/hypnotics/anxiolytics, opiates, and other substances [e.g., steroids, inhalants]). The DUDIT, unlike the AUDIT, does not have a standardized cutoff score to indicate the presence of hazardous/harmful drug use. Scores range from 0 to 70, and higher scores indicate greater frequency and intensity of drug use. The DUDIT has demonstrated good reliability and validity across multiple samples (Stuart et al., 2004; 2008). Cronbach’s alpha coefficient was .88.

**Internalized Heterosexism.** Internalized heterosexism was assessed using the seven-item Sexual Identity Distress Scale (SID; Wright & Perry, 2006). The questionnaire asks participants to rate their agreement with statements describing how they think and feel about their sexual orientation (e.g., “For the most part, I enjoy being gay/lesbian/bisexual”, “I wish I weren’t attracted to the same sex”) on a 5-point scale from 1 (strongly agree) to 5 (strongly disagree). After four items are reverse-scored, items are summed so that higher scores represent higher levels of internalized heterosexism. The SID has demonstrated good internal consistency and evidence of construct validity (Wright & Perry, 2006). Cronbach’s alpha coefficient was .86.
**Stigma Sensitivity.** Stigma sensitivity was assessed using the Stigma Consciousness Questionnaire (SCQ; Pinel, 1999) for gay men and lesbians. This is a ten-item measure that assesses the degree to which one expects to be judged on the basis of a stereotype. The version of the measure used in this study was modified slightly from the version used by Pinel (1999). Because the scale uses the term “homosexual,” which does not include bisexual individuals, the language was be modified to state “lesbian, gay, and bisexual.” Sample items are, “Stereotypes about lesbian, gay, and bisexual people have not affected me personally” (reverse scored) and “Most heterosexuals have a problem viewing lesbian, gay, and bisexual people as equals.” The scale was also modified such that respondents indicate their agreement using a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree) rather than a seven-point scale. A mean score for stigma consciousness was generated with higher scores on the measure reflecting greater stigma consciousness (greater expectation of prejudice and discrimination). Pinel (1999) reported a Cronbach’s $\alpha$ of .81 and demonstrated construct validity by correlating the SCQ with established measures of self-consciousness and a measure of trust in others. Cronbach’s alpha coefficient was .78.

**Perceived Discrimination Based on Sexual Orientation.** Perceived discrimination was measured by adapting the Experience of Discrimination (EOD) questions originally developed by Krieger (1990). Respondents were first asked if they had ever “experienced discrimination, been prevented from doing something, or been hassled or made to feel inferior” in any of 9 settings (i.e., getting a job, being at work, medical care, getting housing, getting a mortgage or loan, applying for social services or public assistance, dealing with the police) based on their sexual orientation. The original measure asked whether individuals experienced discrimination on account of race, ethnicity, or color, but we modified this item to focus on sexual minority
status. Then, we measured the frequency at which they encountered discrimination in each of these situations using a 4-item ordinal scale such that never = 0, once = 1, 2-3 times = 2.5, and 4 or more times = 5. The measure yields two scores. The first score is the number of different situations in which the individual perceived experiencing discrimination. The second score is the frequency at which the individual perceived experiencing discrimination, which is determined by summing the frequency scores (across all settings). Cronbach’s alpha coefficient for number of situations of discrimination was .74, and for frequency of discrimination was .72.

**Institutional Discrimination.** Institutional discrimination was measured by asking participants to self-report what state they live in, and to indicate whether same-sex marriage was legal in their state prior to June 26, 2015 (when same-sex marriage was declared legal nationwide).

**Social Support from Friends and Family.** We assessed the level at which individuals receive support from family and friends by using a general measure of perceived support from friends and family. Specifically, we used Procidano and Heller’s (1983) 40-item scale to measure self-reported perceptions of general social support from friends (PSS-Fr; 20 items) and family (PSS-Fa; 20 items). Items for the two subscales are identical except for the relationship type (friends or family). Sample items include “My friends give me the moral support I need” and “My family is sensitive to my personal needs.” Response options for items are “yes,” “no,” and “don’t know.” Items are scored such that a 0 indicates an absence of perceived support and a 1 indicates a presence of perceived support. Items endorsed as “don’t know” are scored as an absence of support. Scores are summed, which produces subscale scores ranging from 0 to 20 with higher scores indicating higher levels of perceived support. Procidano and Heller (1983) reported internal consistency reliability estimates for general friend support and general family
support of .88 and .90, respectively. In the current study, Cronbach’s alpha coefficient for friend support and general family support was .75 and .82, respectively.

**General Social Support.** We assessed an individual’s global perception of how available social support is in their life, and how satisfied they are with the social support available to them, by using the 6-item Social Support Questionnaire (SSQ6; Sarason, Sarason, Shearin, & Pierce, 1987). The questionnaire asks individuals to identify (up to nine) persons in their environment who can help in the situation described by the item (e.g., “Whom can you count on to be dependable when you need help?”). They were also asked to evaluate their level of satisfaction with the support they have on a 6-point scale, ranging from 1 (very unsatisfied) to 6 (very satisfied) for each situation. This measure yields 2 scores: the number of persons in their social network (SSQN) and the degree of satisfaction with the support they receive (SSQS), which were both calculated by averaging scores across the six items. The 6-item version has the same alpha reliability as the original version (more than .90) for both scales. Cronbach’s alpha coefficients in the current study were .95 for SSQN and .96 for SSQS.

**Community Support.** We assessed the level at which individuals receive support through their community by using a measure of community connectedness. We adapted a 7-item community cohesion scale used in the Urban Men’s Health Study (UMHS), a multi-city study of gay men’s psychological and physical health (Mills et al., 2001). We added the item “You feel a bond with other LGBT individuals” from Herek and Glunt’s (1995) community consciousness scale, which is consistent with a modification made by Frost and Meyer (2012). Frost and Meyer (2009) indicated including this item because it captures a symbolic affiliation not denoting activities, which is not addressed in the original 7-item measure. Items were scored on a 4-point scale, from 1 (agree strongly) to 4 (disagree strongly) to determine the extent to which
participants agreed with items such as, “Participating in the LGBT community is a positive thing for you.” Scores were recoded such that higher scores indicated more connectedness. Scores were summed and range from 8-32. Higher scores indicate higher levels of community connectedness. Scores on the measure demonstrated an internal consistency of .78 in the UMHS (Barrett & Pollack, 2005). Cronbach’s alpha coefficient was .93 in the current study.

Analysis Plan

Aim 3 evaluated the cross-sectional association between relationship quality and symptoms of depression, anxiety, and substance use among sexual minority individuals. To explore these cross-sectional associations, we first ran Pearson correlations between relationship quality and symptoms of depression, anxiety, and substance use (alcohol and drug use). Following this, we ran linear regression analyses in which symptoms of depression, anxiety, and alcohol and drug use were regressed on relationship satisfaction, with age and sex entered as covariates to examine whether the hypothesized association between relationship quality and psychopathology was incremental to these two demographic variables.

Aim 4 examined whether the cross-sectional associations between relationship quality and symptoms of depression, anxiety, and substance use were moderated by sexual minority stress (i.e., internalized heterosexism, stigma sensitivity, perceived discrimination, and institutional discrimination) or by level of support outside of the relationship (i.e., family, friend, and community support). To evaluate Hypothesis 5, multiplicative interaction terms (e.g., Internalized Heterosexism × Relationship Satisfaction) were created, and linear regression analyses were used in which symptoms of depression, anxiety, and substance use were regressed on these interaction terms, adjusting for the component terms and demographic characteristics; the component terms were mean deviated (i.e., centered) prior to creating the interaction terms.
Results

Information regarding sexual behavior is presented in Table 4 and information regarding sexual attraction is presented in Table 5. All means and standard deviations of study variables are presented in Table 6, and correlations between study variables are presented in Table 7.

As predicted by Hypothesis 4, we found that relationship quality was significantly and negatively associated with symptoms of depression (\(r = -.41, p < .001\)), anxiety (\(r = -.24, p < .001\)), alcohol use (\(r = -.34, p < .001\)), and drug use (\(r = -.23, p < .001\)). All unstandardized coefficients (\(B\)), standard errors of unstandardized coefficients (SE \(B\)), and standardized coefficients (\(\beta\)) from the linear regression analyses exploring the associations between relationship quality and symptoms of mental health (adjusting for age and sex) are presented in Table 8. The unstandardized coefficients represent the change in mental health symptoms when the value of relationship quality changed by one unit, adjusting for age and sex. Results from the linear regression models found that relationship quality was significantly and negatively associated with reduced symptoms of depression, anxiety, alcohol use, and drug use, adjusting for age and sex.

Turning next to the moderation analyses, results from the linear regression analyses are presented in Tables 9. From these analyses, we found that the Experiences of Discrimination (Number of Settings) × Relationship Quality interaction term was significantly associated with symptoms of anxiety, alcohol use, and drug use. The Experiences of Discrimination (Frequency) × Relationship Quality interaction term was also significantly associated with symptoms of anxiety, alcohol use, and drug use. Additionally, the Perceived Family Support × Relationship Quality interaction term was significantly associated with symptoms of depression and anxiety.
Finally, the Community Connectedness × Relationship Quality interaction term was associated with symptoms of anxiety.

To understand the nature of the significant interactions, we entered low (one standard deviation below the mean), average (the mean), and high (one standard deviation above the mean) values for each significant moderator and relationship quality into the linear regression equation predicting mental health symptoms, holding sociodemographic variables at their mean, and plotted graphs for each.

The interaction effects between Experiences of Discrimination (Number of Settings) × Relationship Quality on mental health symptoms (anxiety, alcohol use, drug use) are presented in Figure 1, and interaction effects between Experiences of Discrimination (Frequency) × Relationship Quality on mental health symptoms (anxiety, alcohol use, drug use) are presented in Figure 2. These graphs indicate that the strength of the associations between relationship quality and symptoms of anxiety, alcohol, and drug use increase with increasing exposure to discrimination across settings and frequency. Said differently, at higher levels of one variable (e.g., discrimination), the association between the other variable (e.g., relationship quality) and psychopathology is smaller in magnitude. Thus, the interaction between relationship quality and discrimination is an example of a buffering interaction (Cohen, Cohen, West, & Aiken, 2003, p. 285), in which relationship quality may serve as a protective factor that buffers the impact of discrimination, which is a well established risk factor for psychopathology among LGB individuals (Mays & Cochran, 2001).

The interaction effects between Perceived Family Support × Relationship Quality on mental health symptoms (depression and anxiety) are presented in Figure 3. These graphs show that across both symptoms of depression and anxiety, the strength of the association between
relationship quality and mental health symptoms increases with increasing family support. The results suggest a synergistic or enhancing interaction (Cohen et al., 2003, p. 285), in which relationship quality and family support are both negatively associated with psychopathology and together there is a stronger than additive association with symptoms of depression and anxiety.

The interaction effect between Community Connectedness × Relationship Quality on symptoms of anxiety are presented in Figure 4. This interaction can be described as being a crossover interaction, in which higher levels of community connectedness is associated with lower levels of anxiety for people with higher relationship quality, whereas it is associated with higher levels of anxiety for people with lower relationship quality.

**Discussion**

The present study was conducted to explore the associations between intimate relationship quality and mental health among LGB individuals, as prior research has almost exclusively focused on relationships of heterosexual individuals. As predicted, we found that higher relationship quality was significantly and negatively associated with symptoms of depression, anxiety, alcohol use, and drug use, adjusting for age and sex. These findings are consistent with prior research demonstrating significant associations between poor quality of relationship with one’s spouse/partner and a variety of common psychiatric disorders (i.e., mood, anxiety, and substance use disorders) for heterosexual individuals (Goering et al., 1996; Whisman, 1999, 2007). This suggests that the relationship theories that have been developed and tested regarding the connections between relationship quality and mental health amongst heterosexual individuals may be generalizable across LGB individuals. This is consistent with research finding that LGB relationship functioning shares many more similarities than differences with heterosexual relationship functioning (Peplau & Fingerhut, 2007).
Our findings are also consistent with the limited research currently available regarding the associations between LGB relationship quality and mental health, which finds significant associations between relationship quality and symptoms of depression (Whitton & Kuryluk, 2014) and general mental health (Blair & Holmberg, 2008) amongst individuals in same-sex relationships. Our findings were inconsistent with a study finding that distress in a romantic relationship was not significantly associated with depression severity amongst lesbians in committed relationships (Oetjen & Rothblum, 2000).

Overall, the results from our study extend the existing literature on the associations between mental health and relationship quality amongst LGB individuals, as it is the first to establish associations between relationship quality and symptoms of anxiety, alcohol use, and substance use. Additionally, it provides additional support for the association between relationship quality and depressive symptoms among LGB individuals. These findings are consistent with the perspective that relationship quality may be an important risk factor influencing the mental health morbidity of LGB individuals.

The present study was also conducted to explore potential moderators of the associations between relationship quality and mental health among LGB individuals, including exposure to minority stress (internalized heterosexism, stigma sensitivity, perceived discrimination, and institutional discrimination), and social support (from family, friends, and the community). As research exploring the associations between relationship quality and mental health amongst LGB individuals is scarce, research on potential moderators of these associations is nearly nonexistent.

Overall, we found that experiences of minority stress moderated the associations between relationship quality and symptoms of mental health. Specifically, we found that perceived discrimination (both in terms of the number of settings discrimination was experienced in and the
frequency of experiencing discrimination across settings) moderated the associations between relationship quality and symptoms of anxiety, alcohol use, and drug use. The strength of the associations between relationship quality and symptoms of anxiety, alcohol, and drug use were greater with greater exposure to discrimination across settings and frequency. These findings suggest that relationship quality may serve as a protective factor that buffers the detrimental impacts of discrimination, which was consistent with our prediction. As perceived discrimination is a well-established risk factor for psychopathology among LGB individuals (Mays & Cochran, 2001), it is promising to find that relationship quality may potentially buffer the negative mental health consequences associated with experiencing discrimination. These results are interesting in light of research finding that social support is related to more positive attributions and less self-blame for discriminatory events (Burns et al, 2012), and to research finding that some LGB couples report actively engaging in conversations regarding stigma together with the aim of trying to frame situations in more positive ways (Frost, 2011). Therefore, perhaps being in a higher quality relationship allows individuals to have more support around experiences of discrimination, thereby reducing their impact. Overall, these findings provide additional support for the importance of interventions targeting relationship quality amongst LGB individuals.

We found that internal forms of minority stress (internalized heterosexism and stigma sensitivity) did not moderate the associations between relationship quality and symptoms of mental health in our study. This is consistent with previous research finding that the association between relationship quality and depressive symptoms was not moderated by internalized heterosexism among individuals in same-sex relationships (Whitton & Kuryluk, 2014). From the results of this study, it seems that the associations between relationship quality and mental health
symptoms are robust, such that they are significant and do not vary across different levels of internalized heterosexism and stigma sensitivity.

Finally, we found that institutional discrimination did not moderate the associations between relationship quality and mental health symptoms. This is inconsistent with our prediction that encountering institutional discrimination (i.e., living in a state that had banned same-sex marriage) would strengthen the associations between relationship quality and mental health symptoms. However, in interpreting these results, it is important to consider limitations with our operationalization of institutional discrimination. Our operationalization was based on whether or not same-sex marriage was legal in their state of residence prior to June 26, 2015, when same-sex marriage was declared legal nationwide. As such, participants were asked to indicate what state they live in, and whether same-sex marriage was legal at this time. However, we found that a large percentage of individuals either indicated not knowing whether same-sex marriage was approved in their state, or provided the incorrect response. It is unclear why participants were confused about the status of same-sex marriage laws in their state at this time. It is possible that participants may have been confused given the many recent changes in same-sex marriage laws. For example, Florida had recently approved same-sex marriage in January of 2015, and Alabama in February of 2015. Alternatively, participants could have relocated to a new state recently and been unfamiliar with same-sex marriage policies of this state. Additionally, some participants wrote, “don’t know, and don’t care” in their response to the item, which indicates that some participants may not have felt strongly about the issue. Overall, these results suggest that operationalization of institutional discrimination, at least as operationalized by same-sex marriage laws, was not a statistically significant moderator of the association between relationship quality and psychopathology. Future research is needed to examine whether
other forms of institutional discrimination (e.g., lacking protections against hate crimes, employment discrimination based on sexual orientation) moderate the associations between relationship quality and psychopathology in LGB individuals.

We also found that social support moderated the associations between relationship quality and mental health. Specifically, we found that family support and community connectedness moderated the associations between relationship quality and mental health symptoms, such that the strength of the associations between relationship quality and symptoms of depression and anxiety were greater at higher levels family support. This finding was inconsistent with our prediction that the strength of the association between relationship quality and mental health symptoms would increase with decreasing family support. Instead, individuals who reported low perceived family support reported more similar levels of depressive and anxious symptoms across levels of relationship quality. This finding indicates that high relationship quality may have limited ability to buffer individuals from the detrimental effects of lacking family support. Therefore, this finding points to the importance of interventions targeting the improvement of family relationships (i.e., family-based therapy), or helping LGB individuals cope with lacking family support. A study testing a family-based treatment for suicidal LGB adolescents found that the treatment was able to reduce suicidal ideation, depressive symptoms, and maternal attachment-related anxiety and avoidance (Diamond, Diamond, Levy, Closs, Ladipo, & Siqueland, 2012).

Although perceived family support was found to be a significant moderator, we found that perceived friend support and overall social support did not moderate the associations between relationship quality and mental health symptoms. These findings may be connected to research indicating that family support may be more impactful for mental health outcomes.
compared to friend support. For instance, one study found that family support has more negative impacts on mental distress than friend support amongst LGB youth (Shilo & Savaya, 2011). Research also finds that LGB adults report experiencing significant rejection from their families of origin, such as expressing discomfort with their romantic relationship, refusing to acknowledge the partner, etc. (Rotosky et al., 2007), which may be less common within the context of friendship and other types of relationships. Further, one can imagine that family rejection may be especially impactful, as individuals in serious relationships may be hoping that their relationship partner will be accepted into their family. The rejection of one’s partner may be even more painful in the context of having a committed, high quality relationship as compared to one of lower quality or commitment. Alternatively, friend support and general social support may not have been significant moderators of the associations between relationship quality and mental health symptoms, due to most people indicating being fairly satisfied with their friend support and general social support.

In the current study, we explored perceived social support from family and friends in terms of receiving general social support, but did not specifically measure family and friend support of respondents’ sexuality or acceptance of their significant other. Although all these forms of support may share some overlap, it may be valuable to tease apart the differential effects that general social support and support for one’s sexuality and/or one’s partner has on the associations between relationship quality and mental health of LGB individuals in future research. Also, it is possible that friend support and general social support would potentially moderate the associations between relationship quality if the study had included more individuals who were very dissatisfied with their friend support and general social support.
Finally, community connectedness was also found to moderate the association between relationship quality and symptoms of anxiety. This interaction was found to be a crossover interaction, in which higher levels of community connectedness was associated with lower levels of anxiety for people with higher relationship quality, whereas it was associated with higher levels of anxiety for people with lower relationship quality. This finding was inconsistent with our hypothesis that the strength of the associations between relationship quality and mental health symptoms would be higher with lower community connectedness. Although these results initially may seem counterintuitive, it is possible that LGB individuals who are more connected to the LGB community feel more pressure to have their relationship be an exemplar of an LGB relationship, so that it can present a positive image of being LGB. They also may be more afraid of the relationship ending, which may indicate that there is something “wrong” with LGB relationships. Research finds evidence that LGB individuals, in general, feel concerned about protecting the image of LGB relationships. For instance, a study in the United Kingdom found that LGB individuals underreported domestic violence incidents, and one of the contributing factors for this was a fear of bringing up problems within the LGB community, which is already considered “problematic” in a homophobic society (Donovan, Hester, Holmes, & McCarry, 2006). Individuals who are more connected to the LGB community may be more concerned about presenting LGB relationships in a problematic light than those who are less connected.

In interpreting these findings, it is important to consider several limitations of the study. First, in our study we decided to include individuals who are bisexual, even in the event that they are in a relationship with an opposite-sex partner. However, bisexual individuals may have very different experiences when in same-sex as opposed to opposite-sex relationships. For instance, when they are in opposite-sex relationships, their sexual identity as a sexual minority individual
may be hidden. Therefore, it may be important in future research to tease apart different
experiences of bisexual individuals in opposite-sex vs. same-sex relationships. Further, some
individuals may identify as being of another sexual identity such as omnisexual or pansexual,
and future research should explore the experiences of individuals who identify with alternative
sexual orientations. Additionally, although our recruitment materials described our study as
recruiting male and female LGB individuals, we do not know if individuals who identify as
gender fluid or as trans-male or trans-female participated in the study. In future research, it may
be helpful to either include being trans or gender fluid as an exclusionary criterion, or to
specifically recruit trans and gender fluid LGB individuals to learn more about their specific
experiences.

Due to the cross-sectional design of the study, the extent to which relationship quality is a
cause or consequence of symptoms of psychopathology cannot be determined. Therefore,
longitudinal research is needed to evaluate the prospective associations between relationship
quality and longitudinal changes in mental health symptoms. Also, as the study only explored
mental health symptoms, we did not examine the associations between relationship quality and
the prevalence or incidence of psychiatric disorders among LGB individuals. Therefore, future
research is needed to explore potential associations between relationship quality and psychiatric
disorders among LGB individuals.

In spite of its limitations, the findings from the study make important contributions to the
current literature regarding the associations between relationship quality and mental health of
LGB individuals. The study is the first known to us to find associations between relationship
quality and symptoms of anxiety, alcohol use, and drug use, and provides additional support for
the association between relationship quality and symptoms of depression amongst LGB
individuals. It is also the first study we know of that has examined the degree to which the associations between relationship quality and mental health are moderated by minority stress (specifically by experiences of discrimination) and social support (specifically perceived family support and community connectedness). If future studies find that relationship quality precedes mental health difficulties among LGB individuals as it has been found for heterosexual individuals (e.g., Overbeek et al., 2006) this would support research examining the effectiveness of couple-based interventions for the prevention and treatment of mental health problems in LGB individuals. The current findings support continued research on couple functioning on the onset, course, and treatment of mental health problems amongst LGB individuals, as well as continued research on how minority stress and social support interacts with these associations.

**General Discussion**

The present research finds additional evidence of significant mental health disparities between sexual minority and heterosexual individuals. Specifically, we found that the odds of LGB individuals meeting criteria for a mood, anxiety, or any disorder were at least 2 times greater than the odds for heterosexual individuals. This finding supports prior research suggesting greater rates of mental health morbidity amongst LGB individuals as compared to heterosexual individuals (Cochran et al., 2003; Cochran et al., 2007; Cochran & Mays, 2009; Gilman et al., 2001; Hatzenbuehler et al., 2009). Given the LGB community’s significant mental health needs, it is important to understand treatment utilization patterns of LGB individuals, which is greatly underexplored. In our study, we found that, in general, LGB individuals meeting criteria for psychiatric disorders had greater odds of utilizing services generally, and utilizing CAM and non-psychiatrist mental health specialties specifically as compared to heterosexual
individuals. Differences in treatment utilization varied somewhat for different disorder categories.

Research finding greater mental health morbidity and treatment seeking of LGB individuals as compared to heterosexual individuals highlights the need to identify risk factors for mental health difficulties among sexual minority individuals. In our research we found that relationship quality was significantly and negatively associated with symptoms of depression, anxiety, alcohol use, and drug use. We also identified moderators of the associations between relationship quality and mental health symptoms, finding the associations to be moderated by minority stress (specifically by experiences of discrimination) and social support (specifically perceived family support and community connectedness). Moderation findings varied somewhat for different mental health symptoms.

Overall, our research suggests that poor relationship quality may be an important risk factor for mental health morbidity among LGB individuals. This finding has important public health implications, as it suggests that it may be possible to protect the mental health of LGB individuals through promoting healthy relationships with our social policies and clinical interventions. Further, whereas relationship difficulties are widespread with nearly 50% of first marriages ending in separation or divorce (when looking at a general household sample; Copen et al., 2003), LGB individuals may be even more impacted as they are found to be at heightened risk for break up as compared to heterosexual individuals (Khaddouma, Norona, & Whitton, 2015).

In terms of clinical interventions, it may be important for LGB individuals in distressed relationships to receive couples/family therapy or interpersonal therapy, both of which have been found to be effective at improving relationship functioning (Shadish & Baldwin, 2003; Cuijpers...
et al., 2011, respectively). Additionally, these findings suggest that couples based approaches may be more effective for treating individual mental health difficulties for LGB individuals in relationships. In general, couple-based treatments for treating psychiatric disorders such as depression and substance abuse are found to be effective (Fals-Stewart et al., 2005; Whisman & Beach, 2012). Further, it may be beneficial to provide relationship education programs to LGB individuals in order to enhance their skills for preventing relationship distress and maintaining healthy relationships. In general, relationship education programs have been found to be effective for improving relationship quality, and very effective for improving communication skills (Hawkins et al., 2008). In future research, it will be important to evaluate the effectiveness of these treatments for LGB individuals specifically.

Research exploring similarities and differences between LGB and heterosexual intimate relationships find that they both confront many of the same challenges (e.g., negotiation of shared realistic goals, relationship expectations, and effective communication), which indicates that current evidence-based approaches to couple therapy and relationship education likely will assist LGB relationships (Pepping & Halford, 2014). At the same time, this research finds that LGB individuals in relationships may also face distinctive challenges (e.g., homophobic discrimination, internalized homophobia, and low support from many families), which indicates that it also may be important to adapt existing approaches to couple education and therapy to enhance their relevance and effectiveness. It seems especially important to address these distinct challenges, as research finds that the minority stress LGB individuals face is associated with perceived relationship quality and satisfaction (Frost & Meyer, 2009; Mohr & Daly, 2008; Otis et al., 2006), and perceived social support is also found to be associated with relationship satisfaction in lesbian and gay couples (Jordan & Deluty, 2000). Overall, it is important to
enhance and tailor our interventions to fit the specific needs of LGB individuals, and existing research on modified interventions point to their enhanced effectiveness (Pachankis, Hatzenbuehler, Jonathon, Safren, & Parsons, 2015; Ross, Doctor, Dimito, Kuehl, & Armstrong, 2008). Although we know little about service utilization of LGB individuals with respect to couple or relationship orientated therapies specifically, the findings from the current study suggest that LGB individuals use other services at higher rates than heterosexual individuals.

Overall, the study findings are promising, as they point to the potential to prevent or reduce mental health difficulties in the LGB community through promoting healthy relationships. As there is limited research on the associations between relationship quality and mental health amongst LGB individuals, our findings should be replicated, particularly in longitudinal designs, before firm conclusions can be drawn. Nevertheless, the associations we observed between relationship quality and symptoms of depression, anxiety, alcohol use, and substance use highlights the potential importance of intimate relationships across a variety of mental health difficulties. Overall, our study results suggest the importance of continued research exploring relationship quality as a potential risk factor for mental health difficulties amongst LGB individuals.
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## Appendix A

Table 1

*Prevalence Rates of Psychiatric Disorder Classes and Their Association With Sexual Orientation*

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Prevalence</th>
<th>Association with sexual orientation</th>
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<td></td>
<td>%</td>
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<tr>
<td>Mood</td>
<td>13</td>
<td>.74**</td>
</tr>
<tr>
<td>Anxiety&lt;sup&gt;a&lt;/sup&gt;</td>
<td>18</td>
<td>.78***</td>
</tr>
<tr>
<td>Substance&lt;sup&gt;a&lt;/sup&gt;</td>
<td>4</td>
<td>.22</td>
</tr>
<tr>
<td>Comorbid&lt;sup&gt;a&lt;/sup&gt;</td>
<td>10</td>
<td>.32</td>
</tr>
<tr>
<td>Any&lt;sup&gt;a&lt;/sup&gt;</td>
<td>25</td>
<td>.69***</td>
</tr>
</tbody>
</table>

*Note.* Age and sex are included as covariates. OR = odds ratio; CI = confidence interval; Sexual orientation (LGB = 1, heterosexual = 0)

<sup>a</sup> Assessed in the Part 2 sample (n = 5,692)

* p < .05.  ** p < .01.  *** p < .001.
Table 2
Logistic Regression Analyses of the Association between Sexual Orientation and 12-Month Use of Mental Health Service Utilization by Specific Treatment Sector

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Psychiatrist</th>
<th>Non-psychiatrist</th>
<th>General Medical</th>
<th>Human Service</th>
<th>CAM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
<td>95% CI</td>
<td>OR</td>
<td>95% CI</td>
<td>OR</td>
</tr>
<tr>
<td>Mood</td>
<td>1.23</td>
<td>.41, 3.71</td>
<td>1.15</td>
<td>.57, 2.35</td>
<td>1.24</td>
</tr>
<tr>
<td>Anxiety*</td>
<td>1.58</td>
<td>.69, 3.61</td>
<td>2.09*</td>
<td>1.09, 4.03</td>
<td>1.56</td>
</tr>
<tr>
<td>Comorbid*</td>
<td>0.98</td>
<td>.28, 3.46</td>
<td>1.41</td>
<td>.65, 3.06</td>
<td>1.10</td>
</tr>
<tr>
<td>Any*</td>
<td>1.66</td>
<td>.81, 3.39</td>
<td>2.00*</td>
<td>1.13, 3.54</td>
<td>1.67</td>
</tr>
</tbody>
</table>

Note: Age and sex are included as covariates. OR = odds ratio; CI = confidence interval; Sexual orientation (LGB = 1, heterosexual = 0); CAM = complementary alternative medicine.
* Assessed in the Part 2 sample (n = 5,692)
* p < .05. **p < .01. *** p < .001.
Table 3

Logistic Regression Analyses of the Association between Sexual Orientation and 12-Month Use of Mental Health Service Utilization by Broad Treatment Provider Categories

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Mental Health Specialty</th>
<th></th>
<th>Health Care</th>
<th></th>
<th>Non-Health Care</th>
<th></th>
<th>Any Service Provider</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
<td>95% CI</td>
<td>OR</td>
<td>95% CI</td>
<td>OR</td>
<td>95% CI</td>
<td>OR</td>
<td>95% CI</td>
</tr>
<tr>
<td>Mood</td>
<td>1.46</td>
<td>0.68, 3.14</td>
<td>1.62</td>
<td>0.76, 3.46</td>
<td>1.27</td>
<td>0.61, 2.65</td>
<td>1.54</td>
<td>0.77, 3.10</td>
</tr>
<tr>
<td>Anxiety</td>
<td>2.50**</td>
<td>1.30, 4.80</td>
<td>2.15*</td>
<td>1.17, 3.95</td>
<td>2.02</td>
<td>0.98, 4.19</td>
<td>2.10*</td>
<td>1.02, 4.33</td>
</tr>
<tr>
<td>Comorbid</td>
<td>1.52</td>
<td>0.65, 3.59</td>
<td>1.24</td>
<td>0.54, 2.84</td>
<td>1.27</td>
<td>0.55, 2.93</td>
<td>1.16</td>
<td>0.48, 2.76</td>
</tr>
<tr>
<td>Any</td>
<td>2.39**</td>
<td>1.42, 4.03</td>
<td>2.41**</td>
<td>1.45, 4.02</td>
<td>1.71</td>
<td>0.89, 3.27</td>
<td>2.29**</td>
<td>1.27, 4.12</td>
</tr>
</tbody>
</table>

Note. Age and sex are included as covariates. OR = odds ratio; CI = confidence interval; Sexual orientation (LGB = 1, heterosexual = 0). Mental health specialty is comprised of psychiatrist and non-psychiatrist mental health providers. Health care is comprised of all mental health specialty and general medical. Non-health care is comprised of human service and CAM.

* Assessed in the Part 2 sample ($n = 5,692$)

* $p < .05$. ** $p < .01$. *** $p < .001$. 


Table 4

*Participants’ Sexual Behavior in the Past Year*

<table>
<thead>
<tr>
<th></th>
<th>Only M</th>
<th>Only F</th>
<th>M &amp; F</th>
<th>No Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Sample</td>
<td>39%</td>
<td>37.5%</td>
<td>23%</td>
<td>1%</td>
</tr>
<tr>
<td>Lesbian</td>
<td>1%</td>
<td>94%</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>Gay</td>
<td>97%</td>
<td>0%</td>
<td>3%</td>
<td>0%</td>
</tr>
<tr>
<td>Bisexual Female</td>
<td>30%</td>
<td>13%</td>
<td>55%</td>
<td>2%</td>
</tr>
<tr>
<td>Bisexual Male</td>
<td>6%</td>
<td>31%</td>
<td>63%</td>
<td>0%</td>
</tr>
</tbody>
</table>

F = female, M = male

*Note: Given that everyone in the study identifies as having been in a serious romantic relationship lasting at least the past 6 months, it is unclear if people may have accidentally read the question as being lifetime history of sexual behavior, are in relationships allowing for other sexual relationships, or if there is engagement in sexual behavior outside of the relationship which is unknown to the relationship partner.*
Table 5

Participants' Sexual Attraction

<table>
<thead>
<tr>
<th></th>
<th>Only F</th>
<th>Mostly F</th>
<th>Equal</th>
<th>Mostly M</th>
<th>Only M</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Sample</td>
<td>23%</td>
<td>16%</td>
<td>21%</td>
<td>12%</td>
<td>27%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Lesbian</td>
<td>73%</td>
<td>23%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Gay</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>19%</td>
<td>81%</td>
<td>0%</td>
</tr>
<tr>
<td>Bisexual Female</td>
<td>0%</td>
<td>17%</td>
<td>57%</td>
<td>26%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Bisexual Male</td>
<td>0%</td>
<td>37%</td>
<td>59%</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

F = female, M = male

*One lesbian woman endorsed being only attracted to men, but indicated only having sex with women in the past year. It is unclear if she intended to endorse only being attracted to men. Another lesbian woman identified both only being attracted to and only having sex with men in the past year. It is also unclear if her identity is misclassified in some way.
### Table 6

*Means and Standard Deviations for Study Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>$M$</th>
<th>$SD$</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship quality</td>
<td>63.83</td>
<td>13.69</td>
<td>19-81</td>
</tr>
<tr>
<td>Depressive symptoms</td>
<td>12.72</td>
<td>11.91</td>
<td>0-51</td>
</tr>
<tr>
<td>Anxiety symptoms</td>
<td>8.26</td>
<td>10.41</td>
<td>0-42</td>
</tr>
<tr>
<td>Alcohol use symptoms</td>
<td>4.73</td>
<td>5.45</td>
<td>0-23</td>
</tr>
<tr>
<td>Drug use symptoms</td>
<td>3.25</td>
<td>6.12</td>
<td>0-27</td>
</tr>
<tr>
<td>Internalized heterosexism</td>
<td>13.76</td>
<td>5.10</td>
<td>7-26</td>
</tr>
<tr>
<td>Stigma sensitivity</td>
<td>2.99</td>
<td>.64</td>
<td>1-4.9</td>
</tr>
<tr>
<td>Discrimination (settings)</td>
<td>2.01</td>
<td>1.89</td>
<td>0-8pre</td>
</tr>
<tr>
<td>Discrimination (frequency)</td>
<td>5.63</td>
<td>6.08</td>
<td>0-26</td>
</tr>
<tr>
<td>Friend support</td>
<td>12.71</td>
<td>3.14</td>
<td>2-20</td>
</tr>
<tr>
<td>Family support</td>
<td>11.73</td>
<td>4.45</td>
<td>0-20</td>
</tr>
<tr>
<td>Social support number</td>
<td>3.13</td>
<td>1.86</td>
<td>1-9</td>
</tr>
<tr>
<td>Social support satisfaction</td>
<td>4.98</td>
<td>1.33</td>
<td>1-6</td>
</tr>
<tr>
<td>Community connectedness</td>
<td>24.71</td>
<td>5.25</td>
<td>8-32</td>
</tr>
</tbody>
</table>
Table 7
Correlations Among Study Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Relationship Quality</td>
<td>-.41</td>
<td>-.24</td>
<td>-.34</td>
<td>-.23</td>
<td>-.49</td>
<td>-.22</td>
<td>-.12</td>
<td>-.07</td>
<td>.33</td>
<td>.31</td>
<td>.23</td>
<td>.43</td>
<td>.35</td>
<td></td>
</tr>
<tr>
<td>2. Depressive Symptoms</td>
<td>.74</td>
<td>.37</td>
<td>.35</td>
<td>.34</td>
<td>.23</td>
<td>.25</td>
<td>.23</td>
<td>-.28</td>
<td>-.30</td>
<td>-.21</td>
<td>-.38</td>
<td>-.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Anxiety Symptoms</td>
<td>.42</td>
<td>.51</td>
<td>.25</td>
<td>.25</td>
<td>.39</td>
<td>.37</td>
<td>-.17</td>
<td>-.22</td>
<td>-.10</td>
<td>-.26</td>
<td>-.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Alcohol Use Symptoms</td>
<td>.52</td>
<td>.28</td>
<td>.17</td>
<td>.31</td>
<td>.23</td>
<td>-.11</td>
<td>-.06</td>
<td>-.04</td>
<td>-.21</td>
<td>-.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Drug Use Symptoms</td>
<td>.24</td>
<td>.10</td>
<td>.36</td>
<td>.28</td>
<td>-.15</td>
<td>-.08</td>
<td>-.04</td>
<td>-.20</td>
<td>-.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Internalized Heterosexism</td>
<td>.28</td>
<td>.07</td>
<td>.03</td>
<td>-.27</td>
<td>-.22</td>
<td>-.23</td>
<td>-.28</td>
<td>-.53</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Stigma Sensitivity</td>
<td>.39</td>
<td>.42</td>
<td>-.03</td>
<td>-.11</td>
<td>-.03</td>
<td>-.17</td>
<td>-.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Discrimination (settings)</td>
<td>.90</td>
<td>.02</td>
<td>-.08</td>
<td>.02</td>
<td>-.15</td>
<td>.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Discrimination (frequency)</td>
<td>.02</td>
<td>-.11</td>
<td>.04</td>
<td>-.14</td>
<td>.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Friend support</td>
<td>.42</td>
<td>.21</td>
<td>.38</td>
<td>.39</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Family support</td>
<td>.12</td>
<td>.41</td>
<td>.27</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>12. Social support number</td>
<td>.15</td>
<td>.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>13. Social support satisfaction</td>
<td>.20</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Community connectedness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: For all correlations, the sample size was around 290. The critical values for N=300 are 0.113 for p<.05, 0.149 for p<.01, and 0.189 for p<.001.
Table 8
*Linear Regression Analyses of the Association between Relationship Quality and Mental Health Symptoms*

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>-.36</td>
<td>.05</td>
<td>-.41***</td>
</tr>
<tr>
<td>Anxiety</td>
<td>-.18</td>
<td>.04</td>
<td>-.24***</td>
</tr>
<tr>
<td>Alcohol use</td>
<td>-.13</td>
<td>.02</td>
<td>-.33***</td>
</tr>
<tr>
<td>Drug use</td>
<td>-.10</td>
<td>.03</td>
<td>-.23***</td>
</tr>
</tbody>
</table>

*Note. Age and sex are included as covariates.  
* p < .05.  ** p < .01.  *** p < .001.*
# Table 9

Linear Regression Analyses of the Associations between Interaction Terms and Mental Health Symptoms

<table>
<thead>
<tr>
<th>Variable</th>
<th>Depression</th>
<th>Anxiety</th>
<th>Alcohol Use</th>
<th>Substance Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$SE$</td>
<td>$\beta$</td>
<td>$B$</td>
</tr>
<tr>
<td>Relationship Quality</td>
<td>-0.29</td>
<td>0.06</td>
<td>-0.33**</td>
<td>-0.13</td>
</tr>
<tr>
<td>Internalized Heterosexism</td>
<td>0.37</td>
<td>0.14</td>
<td>0.16**</td>
<td>0.32</td>
</tr>
<tr>
<td>Interaction</td>
<td>0.00</td>
<td>0.01</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>Relationship Quality</td>
<td>-0.34</td>
<td>0.05</td>
<td>-0.38***</td>
<td>-0.15</td>
</tr>
<tr>
<td>Stigma Sensitivity</td>
<td>2.24</td>
<td>1.08</td>
<td>0.12*</td>
<td>3.27</td>
</tr>
<tr>
<td>Interaction</td>
<td>-0.02</td>
<td>0.08</td>
<td>0.02</td>
<td>-0.04</td>
</tr>
<tr>
<td>Relationship Quality</td>
<td>-0.35</td>
<td>0.05</td>
<td>-0.39***</td>
<td>-0.16</td>
</tr>
<tr>
<td>Experiences of Discrimination (settings)</td>
<td>1.10</td>
<td>0.33</td>
<td>0.18**</td>
<td>1.85</td>
</tr>
<tr>
<td>Interaction</td>
<td>-0.01</td>
<td>0.02</td>
<td>0.02</td>
<td>-0.06</td>
</tr>
<tr>
<td>Relationship Quality</td>
<td>-0.35</td>
<td>0.05</td>
<td>-0.40***</td>
<td>-0.18</td>
</tr>
<tr>
<td>Experiences of Discrimination (frequency)</td>
<td>0.36</td>
<td>0.10</td>
<td>0.18***</td>
<td>0.58</td>
</tr>
<tr>
<td>Interaction</td>
<td>-0.01</td>
<td>0.01</td>
<td>0.03</td>
<td>-0.02</td>
</tr>
<tr>
<td>Relationship Quality</td>
<td>-0.39</td>
<td>0.06</td>
<td>-0.44***</td>
<td>-0.19</td>
</tr>
<tr>
<td>Institutional Discrimination</td>
<td>1.54</td>
<td>1.35</td>
<td>0.06</td>
<td>0.52</td>
</tr>
<tr>
<td>Interaction</td>
<td>0.11</td>
<td>0.10</td>
<td>0.06</td>
<td>0.04</td>
</tr>
<tr>
<td>Relationship Quality</td>
<td>-0.33</td>
<td>0.05</td>
<td>-0.37***</td>
<td>-0.17</td>
</tr>
<tr>
<td>Family Support</td>
<td>-0.53</td>
<td>0.15</td>
<td>-0.20***</td>
<td>-0.42</td>
</tr>
<tr>
<td>Interaction</td>
<td>-0.03</td>
<td>0.01</td>
<td>-0.14**</td>
<td>-0.03</td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Variable</th>
<th>Depression</th>
<th>Anxiety</th>
<th>Alcohol Use</th>
<th>Substance Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
<td>β</td>
<td>B</td>
</tr>
<tr>
<td>Relationship Quality</td>
<td>-.32</td>
<td>.05</td>
<td>-.36***</td>
<td>-.16</td>
</tr>
<tr>
<td>Friend Support</td>
<td>-.60</td>
<td>.23</td>
<td>-.16**</td>
<td>-.38</td>
</tr>
<tr>
<td>Interaction</td>
<td>-.00</td>
<td>.01</td>
<td>-.01</td>
<td>-.01</td>
</tr>
<tr>
<td>Relationship Quality</td>
<td>-.34</td>
<td>.05</td>
<td>-.37***</td>
<td>-.19</td>
</tr>
<tr>
<td>General Support (number)</td>
<td>-.80</td>
<td>.36</td>
<td>-.12*</td>
<td>-.17</td>
</tr>
<tr>
<td>Interaction</td>
<td>.05</td>
<td>.03</td>
<td>.09</td>
<td>.01</td>
</tr>
<tr>
<td>Relationship Quality</td>
<td>-.27</td>
<td>.05</td>
<td>-.31***</td>
<td>-.12</td>
</tr>
<tr>
<td>General Support (satisfaction)</td>
<td>-2.18</td>
<td>.51</td>
<td>-.24***</td>
<td>-1.52</td>
</tr>
<tr>
<td>Interaction</td>
<td>.01</td>
<td>.03</td>
<td>.02</td>
<td>.00</td>
</tr>
<tr>
<td>Relationship Quality</td>
<td>-.34</td>
<td>.05</td>
<td>-.39***</td>
<td>-.21</td>
</tr>
<tr>
<td>Community Connectedness</td>
<td>-.20</td>
<td>.13</td>
<td>-.09</td>
<td>-.02</td>
</tr>
<tr>
<td>Interaction</td>
<td>-.00</td>
<td>.01</td>
<td>-.02</td>
<td>-.02</td>
</tr>
</tbody>
</table>

Note. Age and sex are included as covariates.

* p < .05. ** p < .01. *** p < .001.
Appendix B

Figure 1
*Interaction Effects of Experiences of Discrimination (Number of Settings) and Relationship Quality on Mental Health Symptoms*

(a)

*Interaction Effect of Experiences of Discrimination (Number of Settings) and Relationship Quality on Symptoms of Anxiety*

(b)

*Interaction Effect of Experiences of Discrimination (Number of Settings) and Relationship Quality on Alcohol Use Symptoms*
Interaction Effect of Experiences of Discrimination (Number of Settings) and Relationship Quality on Drug Use Symptoms
Figure 2
*Interaction Effects of Experiences of Discrimination (Frequency) and Relationship Quality on Mental Health Symptoms*

(a)

*Interaction Effect of Experiences of Discrimination (Frequency) and Relationship Quality on Symptoms of Anxiety*

(b)

*Interaction Effect of Experiences of Discrimination (Frequency) and Relationship Quality on Alcohol Use Symptoms*
Interaction Effect of Experiences of Discrimination (Frequency) and Relationship Quality on Drug Use Symptoms
Figure 3
Interaction Effects of Perceived Family Support and Relationship Quality on Mental Health Symptoms

(a) Interaction of Perceived Family Support and Relationship Quality on Depressive Symptoms

(b) Interaction Effect of Perceived Family Support and Relationship Quality on Symptoms of Anxiety
Figure 4

Interaction Effect of Community Connectedness and Relationship Quality on Symptoms of Anxiety

- Low Community Connectedness
- Average Community Connectedness
- High Community Connectedness

Y-axis: Anxiety Symptoms
X-axis: Relationship Quality

Low Relationship Quality  Average Relationship Quality  High Relationship Quality