Social Anxiety in Sexual Minority Individuals: The Role of Hypervigilance

By

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Abstract

The current study aimed to investigate the associations between hypervigilance and social anxiety disorder (SA) in sexual minority (SM) individuals, as well as the role of gay, lesbian, bisexual, or other non-heterosexual identities (LGBTQ+) discrimination as a moderator of this association. Data from 392 SM individuals were obtained from a larger online study that examined the impact of minority stressors on health behaviors among a diverse sample of SM adults. Participants completed measures of hypervigilance, SA, and LGBTQ+ discrimination at baseline and 1-month follow-up. Cross-sectional findings revealed hypervigilance and age were both significantly associated with SA symptoms at baseline. However, hypervigilance did not significantly predict SA symptoms at 1-month follow-up. Discrimination was not significantly associated with SA symptoms either cross-sectionally or longitudinally, nor did it moderate the relationship between hypervigilance and SA symptoms, either cross-sectionally or longitudinally. The findings of the current study help expand our understanding of how hypervigilance is associated with SA symptoms in SM individuals. Results suggest that hypervigilance may play a role in understanding SA in SM populations, and more research is needed on how LGBTQ+ discrimination may impact SA symptoms.

Keywords: Hypervigilance, Social Anxiety, LGBTQ+, Minority Stress

Introduction

Social Anxiety Prevalence

Social anxiety (SA) disorder is a highly prevalent psychological disorder with a lifetime prevalence of 12% within the general population (Ruscio et al., 2008). SA is distinguished by an excessive fear of negative social evaluation and aversion to social situations (Konovalova et al., 2021). Individuals suffering from SA often place a high value on social acceptance by others, but paradoxically, by viewing others as fundamentally threatening, increase their chances of being negatively evaluated by others due to their cognitive and behavioral responses to this perceived social threat. Furthermore, SA is linked to significant impairment in a variety of areas of functioning (Aderka et al., 2012). High subclinical SA symptoms and SA disorder are both linked to a number of impairments, such as poorer social, occupational, and educational functioning, as well as psychiatric comorbidities (e.g., depression and generalized anxiety disorder; Aderka et al., 2012; Alden & Taylor, 2004; Dell'Osso et al., 2003; Fehm et al., 2008; Kessler, 2003; Moitra et al., 2011; Wong et al., 2012).

Hypervigilance and Social Anxiety

Hypervigilance is a state of increased awareness or alertness that is associated with SA and other anxiety- and fear-related disorders (Bögels & Mansell, 2004; Wermes et al., 2018). Hypervigilance specifically refers to heightened vigilance for threats through either excessive environment scanning or maintaining a broad focus of attention (Wermes et al., 2018). Further, hypervigilant behavior has been investigated as a maintenance factor in clinical and non-clinical samples with high levels of SA (Bögels & Mansell, 2004), in which individuals with SA exhibit signs of hypervigilance when subjected to state anxiety (Wermes et al., 2018). Based on evolutionary models, being hypervigilant in general helps individuals survive by enabling them

to quickly identify potential threat signals (Petersen & Posner, 2012). According to this premise, the Attentional Control Theory (Eysenck et al., 2007) asserts that anxious individuals are hypervigilant before threat detection and narrow their attention after threat detection. Continuous environmental scanning, however, may also result in difficulties with attentional focus and increased distractibility by task-irrelevant threat (Reinholdt-Dunne et al., 2012; Richards et al., 2014; Wermes et al., 2018). Hypervigilance in the context of SA may appear as inadequate processing of significant social information, such as exhibiting excessive alertness or vigilance that could lead to difficulties in properly processing important social cues (Wermes et al., 2018). This may lead to a lack of disconfirmation of negative beliefs and persistent anxiety in social situations, similar to impairments brought on by self-focused attention (Wells et al., 1995; Wermes et al., 2018).

Several experimental research studies have investigated associations between hypervigilance and SA symptoms in participants with SAD, using eye tracking technology to measure visual attention (i.e. hypervigilant behavior; Boll et al., 2016; Chen et al., 2015; Reichenberger et al., 2020; Wermes et al., 2018). Further, these studies exposed participants to social stimuli, such as faces or virtual reality social situations, to elicit SA symptoms and assess attentional biases (Boll et al., 2016; Chen et al., 2015; Reichenberger et al., 2020; Wermes et al., 2018). Chen et al. (2015) found that SA participants displayed hypervigilant gaze patterns toward emotional faces, irrespective of the emotion. The authors suggested this attentional bias toward emotional faces may contribute to the maintenance of SA by reinforcing negative beliefs about social situations. Boll et al. (2016) found that a clinical sample of patients with SA exhibited a

clear hypervigilance toward the eye region compared to the mouth area. This finding suggests that SA individuals may be particularly sensitive to the gaze of others, which could contribute to their heightened anxiety in social situations (Boll et al., 2016). Reichenberger et al. (2020) examined hypervigilance in low and high SA individuals during social fear conditioning and extinction utilizing virtual reality. The authors found that SA individuals exhibited a vigilant-avoidant attention pattern, initially directing their attention toward social threats and then avoiding them (Reichenberger et al., 2020). The authors argued that this pattern of attention may contribute to the maintenance of SA by reinforcing negative beliefs about social situations and preventing the disconfirmation of these beliefs (Reichenberger et al., 2020). While the findings from these experimental studies have demonstrated a connection between hypervigilance and symptoms of SA, they support the idea that attentional biases and hypervigilance may be relevant to the maintenance of SA. Further investigation is necessary to gain a deeper understanding of the mechanisms behind these attentional biases. Furthermore, as far as we are aware, there have been no previous studies investigating the relationship between self-reported hypervigilance and SA. Previous research has primarily relied on eye tracking technology to assess visual attention. Additionally, there is a lack of studies examining how hypervigilance can predict SA symptoms over time through self-report measures.

Social Anxiety in SM Individuals

Individuals who identify as a sexual minority (SM; those who identify as gay, lesbian, bisexual, queer, or another non-heterosexual identity) report higher prevalence of SAD and elevated SA symptoms compared to heterosexual individuals (Akibar et al., 2019; Mahon et al., 2021; Pachankis & Goldfried, 2006). However, empirical examination of SA among SM community is woefully rare despite this disparity (Akibar et al., 2019; Mahon et al., 2021;

Roberts et al., 2010). In-depth studies of SA determinants in SM individuals are lacking despite the obvious disparity in symptoms across sexual orientation (Mahon et al., 2021).

The Minority Stress Model and the Role of Hypervigilance

The minority stress model provides a conceptual framework for understanding how significant health consequences (such as SA, trauma, and discrimination) may disproportionally impact SM individuals (Balsam et al., 2013; Hatzenbuehler, 2016; Meyer & Frost, 2013; Meyer, 2003). In accordance with this theory, experiencing discrimination, prejudice, and stigma due to being SM, results in minority stress reactions including internalized stigma, sexual orientation concealment, and expectations of rejection, all of which have a negative impact on one's mental health (Meyer & Frost, 2013; Meyer, 2003). Growing evidence from cross-sectional research suggests that SM stress processes such as discrimination experiences, rejection sensitivity (i.e., anxious expectations of rejection based on one's SM status), internalized stigma (i.e., the internalization of heterosexist attitudes), and sexual identity concealment are associated with SA across samples consisting of SM women, SM men, and men and women combined (Cohen et al., 2016; Mahon et al., 2021; Mason & Lewis, 2016; Puckett et al., 2016).

Hypervigilance in SM Individuals

Hypervigilance is associated with negative mental health outcomes for SM individuals, including posttraumatic stress symptoms and GAD (Wandschneider et al., 2020). Consistent with the minority stress model, discrimination-related traumatic events may result in hypervigilance and other posttraumatic stress symptoms in LGBTQ+ individuals (Alessi et al., 2017; Alessi & Kahn, 2023; Keating & Muller, 2020). For

example, in a qualitative study on sexual and gender minority refugee victimization experiences in the United States and Canada, participants described "living in a perpetual state of hypervigilance" in their place of origin due to fear of persecution and violence (Alessi et al., 2017). The authors posit that the hypervigilance described by the study's participants was a reaction to previous traumas and a persistent dread of dangers in their home country.

Moreover, changes in the environment may impact hypervigilant behavior in LGBTQ+ individuals (Drabble et al., 2019; Gonzalez et al., 2018; Veldhuis et al., 2018). Gonzalez et al. (2018) discovered that following the 2016 U.S. Presidential election, a sample of LGBTQ+ individuals displayed greater levels of alertness around their identification and experiences of discrimination. Similarly, Drabble et al. (2019) discovered in a sample of SM women and gender nonconforming persons that respondents expressed increased vigilance and evasion following the 2016 U.S. presidential election. Considering the context of these studies, the recent social and political contexts in the U.S. in recent years may contribute to heightened vigilance among LGBTQ+ individuals (Drabble et al., 2019; Gonzalez et al., 2018; Veldhuis et al., 2018). Some individuals experienced increased alertness, while others adopted a more cautious and avoidant approach, such as avoiding certain places, events, or strangers that they perceived as threatening (Drabble et al., 2019; Gonzalez et al., 2018; Veldhuis et al., 2018).

Prior qualitative research has also examined LGBTQ+ individuals' reactions to or expectations of LGBTQ+-related discrimination and stigma (Keating & Muller, 2020; Mink et al., 2014; Riggle et al., 2021; Rostosky et al., 2022; Timmins et al., 2017). Indeed, a recent study utilizing an online interview to explore 245 LGBTQ+ individuals' lived experiences of hypervigilance revealed that participants described self-monitoring and social withdrawal as ways to protect themselves from stress and risk of harm (Rostosky et al., 2022). Rostosky et al.

(2022) discovered that participants reported feeling hypervigilant around relatives, coworkers, strangers, and those believed to be biased or anti-LGBTQ+. Participants in the survey also reported hypervigilance in a variety of contexts or places, including employment, rural regions, pubs and restaurants, conservative religious spaces or organizations, and public bathrooms (Rostosky et al., 2022). The authors argue that negative emotions such as worry, anxiety, or tiredness, and coping strategies, can arise from hypervigilance, which involves being constantly on guard or engaging in self-monitoring (Rostosky et al., 2022).

Hypervigilance has also been associated with sexual orientation concealment (Balsam et al., 2013; Timmins et al., 2017), given that disclosing one's sexual identity puts one at danger of prejudice. Indeed, LGBTQ+ individuals describe watching others' reactions when they disclose their sexual and/or gender identities (Solomon et al., 2015). Hypervigilance in some contexts may result in changes in controlling and monitoring visibility (Dewaele et al., 2014). Social withdrawal is a coping mechanism associated with hypervigilance and is an attempt to remove oneself from a potentially dangerous situation (Dewaele et al., 2014). During public debates around marriage limits and equality, for example, LGBTQ+ individuals reported retreating from other individuals or avoiding specific settings to reduce their chance of suffering prejudice or violence (Ecker et al., 2019; Rostosky et al., 2022). When social withdrawal is not accompanied by help-seeking behavior, it raises the risk of negative health consequences and social isolation.

Previous research has found separate connections between hypervigilance and SA, SM status and SA, and SM status and hypervigilance. However, the relationship between hypervigilance and SA in SM individuals has not been studied either cross-

sectionally or longitudinally. Additionally, there is a lack of clear quantitative data connecting hypervigilance and SA in SM individuals through self-report measures. Similarly, no study has looked at LGBTQ+ discrimination as a moderator of the relationship between hypervigilance and SA, either cross-sectionally or longitudinally.

Recent studies have delved into the relationship between hypervigilance and PTSD (Riggle et al, 2021) and GAD (Hollinsaid et al., 2023), shedding light on potential connections that could guide future research in exploring the link between hypervigilance and anxiety and stress-related responses in SM individuals. Riggle et al. (2021), in the context of PTSD, focused on the development of an SM-specific hypervigilance measure examining the specific locations and contextual conditions in which hypervigilance occurred among SM individuals. The researchers found that, overall, SM individuals experienced hypervigilance as social withdrawal, identity concealment, and scanning behaviors (Riggle et al., 2021). Hollinsaid et al. (2023) investigated whether the association between interpersonal stigma (which refers to perceived discrimination) and internalizing symptoms (such as GAD and depression) is solely accounted for by hypervigilance, rather than being mediated by sexual-orientation-related rejection sensitivity or rumination. The study found that while hypervigilance played a significant role in mediating the relationship between perceived discrimination and internalizing symptoms at two years follow-up, it did so independently of sexual-orientation-related rejection sensitivity and rumination. Only up to 40% of the effect was explained by the hypervigilance component alone. On the other hand, two separate sexual orientation-related constructs emerged operationalized as rejection sensitivity and rumination. These constructs were found to partially predict hypervigilance, which in turn had a bearing on future prospective associations between perceived discrimination and internalizing symptoms (Hollinsaid et al., 2023).

In summary, hypervigilance is associated with negative mental health outcomes for SM individuals but has not yet been empirically linked to SA symptoms in previous research. Recently, researchers have advocated for a greater focus on identifying factors that explain why SM individuals have an increased risk of developing SA and similar anxiety and fear-related symptoms compared to heterosexual individuals (Akibar et al., 2019; Keating & Muller, 2020; Roberts et al., 2010; Scheer & Poteat, 2021). Elevated hypervigilance could explain increased risk for SA among SM individuals, however quantitative data is needed to support this hypothesis.

Present Study

Based on the aforementioned rationale, the current study investigated how hypervigilance affects SA in SM individuals. The primary aim of this study was to examine whether 1a) hypervigilance is associated cross-sectionally with greater SA symptoms in SM individuals and whether 1b) hypervigilance prospectively predicts SA symptoms in SM individuals longitudinally. The secondary aim of the current study was to investigate whether 2a) LGBTQ+ discrimination moderates the relationship between hypervigilance and SA cross-sectionally and whether 2b) LGBTQ+ discrimination moderates the relationship between hypervigilance and SA longitudinally. In addition, we also conducted exploratory analyses separately for gay/lesbian individuals and bisexual individuals to further understand these relationships by sexual orientation.

Hypotheses

The following hypotheses were put forth in light of the rationale above and the importance placed on hypervigilance in the literature on anxiety- and fear-related pathology within the minority stress model (Akibar et al., 2019; Bögels & Mansell, 2004;

Boll et al., 2016; Buckner et al., 2010; Butler et al., 2019; Keating & Muller, 2020; McTeague et al., 2018; Meyer & Frost, 2013; Meyer, 2003; Riggle et al., 2021; Roberts et al., 2010; Rostosky et al., 2022; Scheer & Poteat, 2021).

Hypothesis 1a. Hypervigilance would be associated cross-sectionally with greater SA symptoms in SM individuals. That is, SM participants who reported greater hypervigilance would demonstrate greater SA symptoms at baseline compared to participants with no or little hypervigilance. **Hypothesis 1b.** Hypervigilance would predict greater SA symptoms in SM individuals, longitudinally. That is, participants who reported greater hypervigilance at baseline would demonstrate greater SA symptoms at one-month follow-up compared to participants with no or little hypervigilance.

Hypothesis 2a. LGBTQ+ discrimination would moderate the relationship between hypervigilance and SA cross-sectionally, such that the association between hypervigilance and SA symptoms at baseline would be stronger at high versus low discrimination levels. However, we also expected to see significant associations between hypervigilance and SA symptoms at low levels of discrimination. **Hypothesis 2b.** Similarly, LGBTQ+ discrimination would moderate the relationship between hypervigilance and SA longitudinally, such that the relationship between hypervigilance at baseline and SA symptoms at one-month follow-up will be stronger at high versus low discrimination levels.

Method

Participants

Data were drawn from an existing dataset of 392 community adults who identified as gay, lesbian, bisexual, or another non-heterosexual identity, as part of a larger study that aimed to examine the impact of minority stressors on health behaviors among a diverse SM sample.

Individuals who met the following criteria were able to see the ad for the larger studies survey and choose to participate: (1) be at least 18 years old; (2) speak English; (3) identify as Black, Asian, White, or Hispanic/Latine; (4) identify as a gay, lesbian, bisexual, or other non-heterosexual identity; and (5) are citizens of the United States. Participants were recruited through the online platform Academic Prolific, which is a research pool where individuals can complete academic surveys for compensation. The use of Academic Prolific to recruit participants enables the collection of large, demographically varied samples on a national level, as opposed to convenience undergraduate samples, which often lack diversity and may not accurately represent the broader population (Palan & Schitter, 2018; Peer et al., 2017).

Table 1 provides a full description of sample characteristics. Briefly, the average age of participants was 29.8 years (SD = 9.66). With regards to race and ethnicity, 25.0% identified as African American, 73.0% as Non-Hispanic/Latino, 22.2% as Asian, 1.5% as American Indian/Alaska Native, 42.1% as White, 8.7% as Other (e.g., Mixed, Mexican, Mestizo), and 0.5% were found to be Missing. Concerning gender identity, 48.0% identified as Women, 43.4% as Men, 2.3% as Trans Women, 4.6% as Trans Men, 1.3% as Genderqueer, and 2.0% as Other (e.g., Feminine/Questioning). Finally, in terms of sexual orientation, 31.4% identified as Gay or Lesbian, 66.6% as Bisexual, and 2.0% as Other (e.g., Pansexual, Aromantic, Omnisexual, Questioning).

Procedure

Study procedures were approved by the Auburn University institutional review board. Academic Prolific participants searched the Academic Prolific web portal (Palan & Schitter, 2018) for tasks to be completed for compensation. If interested and eligible,

Academic Prolific participants were then able to click on a link redirecting them to the larger existing study (hosted by Qualtrics). Before completing any study materials, participants were presented with a one-page information sheet to make an informed choice about their participation. This was implemented to make it clear to participants that (1) their participation was completely voluntary, (2) none of the information they provided will be linked to their name, (3) they were free to withdraw from the study at any time, and (4) by agreeing to participate in the first study, they were agreeing to receive invitations from the primary investigator to participate in one additional study session in the future. If the participant decided to participate in the larger study after reading the information sheet, they then proceeded with the study, and thereby, provided their informed consent. After the first survey, which occurred four weeks after baseline, participants who had completed the initial study were notified through Prolific Academic's internal system regarding the availability of the follow-up survey.

Data were collected across two study sessions (baseline and one-month follow-up), which took approximately 30 minutes and 10 minutes to complete, respectively. Participants were paid $5.00 for baseline and $1.75 for Time 2. Thus, participants' total compensation could have been up to $6.75 for participating in both parts of the larger study. Payment rates were based on a scale of $10.00 per hour for the 30 minutes required to complete the survey in baseline and 10 minutes required to complete the survey in one-month follow-up. Such rates of compensation are well within the range of what is typically paid to Prolific Academic participants completing questionnaire-based studies of similar length (Palan & Schitter, 2018).

When signing up for Prolific Academic, all participants were given a randomly assigned ID by the Prolific Academic system. The provided random IDs were used to assign participants credit and compensation for completing the survey, to invite participants to take part in the

second wave of data collection, and to link participants' data across time points. Data from the original study were collected via Qualtrics, a secure online survey program.

Data Integrity

To ensure the integrity and accuracy of the collected data, several strategies were implemented. Prior to accessing the online survey, participants were required to pass a Completely Automated Public Turing test to Tell Computers and Humans Apart (CAPTCHA); this method aimed to distinguish human participants from computer programs or robots attempting to enter the survey. Additionally, the Infrequency Insufficient Effort Responding Scale (IER; Huang et al., 2015) was incorporated into the study surveys as an 8-item measure to evaluate participants' level of engagement and discourage careless or incomplete responses. The IER scale was positioned within other study measures in the primary project with the goal of encouraging attentive participation, allowing investigators to identify potential data quality issues, and eliminating participants who exhibited minimal effort from subsequent studies. Analyses were conducted exclusively on participants who answered no more than four items incorrectly on the IER. Moreover, the time taken by participants to complete each survey question was recorded, and individuals who responded too quickly (in less than 2 seconds per item) were disqualified for insufficient effort.

While 417 participants completed the initial survey, two participants were removed due to duplicated responses, five failed attention checks, one identified as heterosexual, and 17 could not complete necessary demographic information, such as sexual orientation, resulting in a final sample size of 392 participants at the initial stage. N = 338 participants completed the one-month follow-up survey, resulting in a retention

rate of 85.2%. However, six participants had to be excluded from the follow-up data due to failing attention checks, which resulted in a final sample size of 332 participants at the one-month follow-up.

Self-Report Measures

The current study is a secondary data analysis of previously collected data; whereas the larger dataset included several survey measures, only those relevant for the present study are included below. At baseline, demographics, the Brief Hypervigilance Scale, the Social Anxiety Interaction Scale, and the Heterosexist Harassment, Rejection, and Discrimination Scale were administered to participants. At the one-month follow-up session, only the Social Anxiety Interaction Scale was administered.

Demographics. Participants provided their age, racial identity, ethnicity, sexual orientation, gender identity, education level, and annual income.

The Brief Hypervigilance Scale (BHS). The BHS (Bernstein et al., 2015) is a 5-item measure of hypervigilance, including questions such as "As soon as I wake up and for the rest of the day, I am watching for signs of trouble" and "I notice that when I am in public or new places, I need to scan the crowd or surroundings." Respondents are asked to indicate the extent to which items have described them in the past month from 0 (*Not at all like me*) to 4 (*Very much like me*). Higher scores indicate higher levels of hypervigilance. Further, this measure has been successfully tested in SM individuals (Matheson et al., 2021; Rostosky et al., 2022). In its original development and validation study, the BHS demonstrated good internal consistency (α = .81) and a strong correlation with the 52-item Hypervigilance Questionnaire from which its items were obtained (r = .83), indicative of good convergent validity. Further, Bernstein et al. (2015) found no significant difference in the scores of the BHS between males and females, suggesting

that there was no significant measurement invariance across gender in their study. The measure had excellent internal consistency at baseline (α = .89) for the current study.

The Social Anxiety Interaction Scale (SIAS). The SIAS (Mattick & Clarke, 1998) is a 20-item measure of self-reported SA symptoms. Respondents rate their self-reported level of SA on a Likert-type scale, ranging from 0 (*not at all characteristic of me*), to 4 (*extremely characteristic of me*) with total possible scores ranging from 0-80. Moreover, this measure has been successfully tested in SM individuals (Mahon et al., 2021). The SIAS evaluates anxiety related to interacting with others, including questions such as "When mixing socially, I am uncomfortable" and "I become tense if I have to talk about myself or my feelings." Two versions of item 14 of the SIAS, which was phrased "I have difficulty talking to attractive persons of the opposite gender", was not presented to study participants. In addition to the original phrasing, several participants were not given a modified version of the item, phrased "I have difficulty talking to persons I am attracted to" to eliminate wording which makes a heteronormative assumption of participants' sexuality. Previous research (Lindner, Martell, Bergstrom, Andersson, & Carlbring, 2013) suggests that this form of alteration is possible while keeping psychometric equivalence to the original item. The SIAS has demonstrated robust psychometric characteristics, including concurrent validity, construct validity, high levels of internal consistency, and exploratory to change during treatment (Brown et al., 1997; Mattick & Clarke, 1998; Osman et al., 1998; Rodebaugh et al., 2006). Further, Osman et al., (1998) found no significant difference in the scores between males and females. The measure had excellent internal consistency at baseline and one-month follow-up (α = .92, .93) for the current study.

Heterosexist Harassment, Rejection, and Discrimination Scale (HHRDS). The HHRDS (Szymanski, 2006) is a 14-item survey that measures experiences with heterosexism, including questions such as “How many times have you been treated unfairly by strangers because you are gay/bisexual/lesbian/queer?” and “How many times have you been treatment unfairly by your family because you are gay/bisexual/lesbian/queer?” The survey is divided into a total score and three subscales: harassment/rejection, work/school, and "other." The total score was used in moderation analyses as an indicator of overall discrimination. To assess experiences with heterosexism in the previous year, the scale employs a 6-point Likert-type response option, with 1 indicating "the event has never happened to you" and 6 indicating "the event occurred almost all of the time (more than 70% of the time)." In Szymanski's (2006) original study of primarily white, lesbian women, it was shown to be internally consistent (α =.90; Szymanski, 2006). The following subscales had acceptable internal consistency: harassment/rejection (α =.89), work/school (α =.84), and other (α =.78). While the original scale was designed for lesbian participants (Szymanski, 2006), the scale items in this study were changed to include the term "gay/bisexual/lesbian/queer " rather than "lesbian." The HHRDS has demonstrated strong convergent validity, according to recent research that conducted a factor analysis on the HHRDS (Smith et al., 2020). The measure had excellent internal consistency at baseline (α = .94) for the current study.

Analytic Procedure

Adhering to our preregistration plan for analysis (https://osf.io/yzbjh), SPSS Statistics (Version 28) was used to analyze the data. Prior to conducting all analyses, assumptions of analyses were evaluated. Specifically, 1) the dependent variable should be a linear function of the independent variables, 2) the model should account for multivariate normality, that is each

data point should be drawn independently from the population; Y = a + bX1 + bX2 + e, 3) there should be no or little multicollinearity within the model, that is it is important that the predictor variables do not exhibit multicollinearity with each other, 4) there should be no auto-correlation, and 5) there should be homoscedasticity, that is the variance of the errors is not a function of any of the independent variables. First, we generated normal Q-Q Plots, and the graph did not indicate great deviation from the norm. Next, we ran a simple linear regression to check for normality of the residuals. Data were determined to approximate normality for both SIAS at baseline and SIAS at one-month follow-up as dependent variables. We then assessed for Outliers in the data using boxplots as a visual indicator and found no outliers for our dependent variables.

Consistent with our retention rate across time, 85.2% (n = 332) of the data for SIAS were missing at one-month follow-up. Little's (1988) test of Missing Completely at Random (MCAR) was conducted to determine whether missing values were randomly distributed. Results supported that data were consistent with MCAR, rather than systematically missing, X^2 (2, N = 392) = .281, p = .87. Several ANOVAs and cross-tabulations were used to further explore possible predictors of missingness or biased attrition. There were no differences between individuals who were missing on age, race, ethnicity, sexuality, education, income, employment, or baseline BHS, HHRDS, or SIAS (all p-values > .07). However, there were differences between individuals who were missing on gender (p = .01), such that cisgender men, transgender women, and genderqueer individuals were less likely to complete the one-month follow-up (miss data: cisgender men – 22%, cisgender women – 8.51%, transgender men – 5%, transgender women – 33%, genderqueer – 20%, other – 0%). As a result, we entered gender into our

multiple imputation (MI) computation. MI was then used to manage missing data, which employs relatively unbiased estimates when data are missing at random (Baraldi & Enders, 2010; Enders, 2022) and improves accuracy and statistical power over other missing data techniques (Dong & Peng, 2013). As noted, gender was added into the MI model, and we then generated and analyzed 20 multiply imputed datasets.

Sample Size and Power Analysis

For Aim 1, based on prior research (Akibar et al., 2019; Bögels & Mansell, 2004; Boll et al., 2016; Buckner et al., 2010; McTeague et al., 2018; Roberts et al., 2010), we anticipated a medium effect size between BHS at baseline and SIAS at baseline and one-month follow-up. Based on these effects, a post-hoc power analysis using a linear multiple regression: fixed model, R^2 deviation from zero was conducted in G*Power and supported that, with a total sample size of 392 and type I error rate of 0.05 (two-sided, 2 df), with an effect size of f = .25 (medium-sized effect, derived from the average of effect sizes in the literature noted above) and predictor variables (1 cross-sectional, 2 longitudinal), we were able to achieve a power of >.99.

For Aim 2, based on conservative estimates and prior research, we anticipated a medium effect size for the interaction between BHS at baseline and HHRDS at baseline in predicting SIAS at baseline and one month follow-up (Butler et al., 2019; Keating & Muller, 2020; Meyer & Frost, 2013; Meyer, 2003; Riggle et al., 2021; Rostosky et al., 2022; Scheer & Poteat, 2021). Based on these effects, a post-hoc power analysis using a linear multiple regression: Fixed model, R^2 increase was conducted in G*Power supported that, with a total sample size of 392 and type I error rate of 0.05 (two-sided, 2 df), with an effect size of f = .25 (medium-sized effect, derived from the average of effect sizes in the literature noted above) and predictor variables (3 cross-sectional, 4 longitudinal), we were able to achieve a power of >.99.

Preliminary Covariate Analysis

To ascertain whether any demographic factor(s) co-varied with the variables of interest, bivariate correlations between demographics and baseline BHS, HHRDS, and SIAS were performed (see Table 2). We did not find any significant associations between gender, race, ethnicity, sexuality, education, income, or baseline BHS, HHRDS, or SIAS; therefore, we did not include these variables as covariates in our analysis. However, we did observe a significant association between age and SIAS at baseline (p <.001) and SIAS at one-month follow-up (p <.001). Therefore, we included age as a covariate in our models.

Aim 1

To address the first aim, that 1a) hypervigilance would be associated cross-sectionally with greater SA symptoms in SM individuals, multiple regression analyses, covarying for age, were conducted to determine whether BHS at baseline was associated with SIAS at baseline in SM individuals. Furthermore, to explore whether results differed by sexual orientation, we also ran model 1a in gay/lesbian and bisexual individuals separately. Along similar lines, regarding hypothesis 1b) that hypervigilance would predict greater SA symptoms longitudinally in SM individuals, multiple regression analyses, covarying for age at baseline, were conducted to determine whether greater BHS at baseline would predict greater SIAS at one-month follow-up in SM individuals, covarying for SIAS scores at baseline. To explore whether results differed by sexual orientation, we also ran model 1b in gay/lesbian and bisexual individuals separately. Given the use of MI, pooled statistics were reported. However, when it came to performing overall F tests, we did not employ pooled statistics since SPSS Statistics lacks

the capability to provide pooled results for omnibus tests involving multiple degrees of freedom.

Aim 2

To address the second aim, that LGBTQ+ discrimination would moderate the relationship between hypervigilance and SA symptoms 2a) cross-sectionally and 2b) longitudinally, multiple regression analyses, covarying for age at baseline, were carried out to determine whether 2a) BHS at baseline, HHRDS at baseline, and the interaction between BHS at baseline and HHRDS at baseline are associated with SIAS at baseline. To explore whether results differed by sexual orientation, we also ran models 2a and 2b in gay/lesbian and bisexual individuals separately. Similarly, for Aim 2b, multiple regression analyses, covarying for age at baseline, were conducted to determine whether BHS at baseline, HHRDS at baseline, and the interaction effect between BHS at baseline and HHRDS at baseline predicts SIAS at one-month follow-up, covarying for SIAS at baseline. To explore whether results differed by sexual orientation, we also ran models 2a and 2b in gay/lesbian and bisexual individuals separately. Significant interactions were probed at one level above and below the mean of HHRDS at time1 scores to determine whether the strength of the relationship between BHS at baseline on SA symptoms depends on level of experienced SM-related stress.

Results

Table 2 provides means, standard deviations, and correlations across study variables, including the BHS at baseline, HHRDS at baseline, and SIAS at baseline and one-month follow-up. The results revealed a positive correlation between BHS at baseline and both HHRDS at baseline (small effect size) and SIAS at baseline (medium effect size). Moreover, BHS at baseline was positively correlated with SIAS at one-month follow-up (medium effect size).

Interestingly, no correlation was found between baseline HHRDS and SIAS at one-month follow-up.

Aim 1a: **Cross-Sectional Associations between Hypervigilance and SA Symptoms**

Table 3 provides regression coefficients for the cross-sectional model examining associations between BHS and SIAS at baseline. Results indicated that the overall model accounted for 28.2% of the variance in SIAS, $F(2,392) = 76.544$, $p < .001$. Age at baseline was significantly associated with SIAS at baseline, with younger ages being associated with higher SIAS. BHS at baseline was significantly associated with SIAS at baseline, with higher BHS being associated with higher SIAS.

Aim 1a Exploratory Analysis in Gay/Lesbian Individuals Only and Bisexual Individuals Only

Results indicated that the regression model overall accounted for 30.6% of the variance of baseline SIAS scores for gay/lesbian individuals, $F(2,122) = 26.458$, $p < .001$, and 27.9% of the variance for bisexual individuals, $F(2,260) = 49.940$, $p < .001$. Age at baseline was significantly associated with SIAS at baseline for both gay/lesbian individuals and bisexual individuals, with younger ages being associated with higher SIAS, ($b = -.325$, $t(122) = -2.396$, $p = .017$, partial $r = -0.214$ and $b = -.356$, $t(260) = -3.302$, $p = .001$, partial $r = -0.201$, respectively). Additionally, BHS at baseline was significantly associated with SIAS at baseline for both gay/lesbian individuals and bisexual individuals, with higher BHS being associated with higher SIAS in both groups, ($b = 1.695$, $t(122) = 6.185$, $p < .001$, partial $r = 0.492$ and $b = 1.689$, $t(260) = 9.192$, $p < .001$, partial $r = 0.497$, respectively).

Aim 1b: Longitudinal Associations between Hypervigilance and SA Symptoms in SM Individuals

Table 4 provides regression coefficients for age at baseline, BHS at baseline, and SIAS at baseline on SIAS at one-month follow-up. Results indicated that the regression model overall accounted for 76.2% of the variance in SIAS at one-month follow-up, $F(3,392) = 413.371$, $p < .001$. Age at baseline did not uniquely predict SIAS at one-month follow-up. SIAS at baseline predicted SIAS at one-month follow-up, with higher SIAS at baseline being associated with higher SIAS at one-month follow-up. [1] BHS at baseline did not uniquely predict SIAS at one-month follow-up.

Aim 1b Exploratory Analysis in Gay/Lesbian Individuals Only and Bisexual Individuals Only

Results indicated that the regression model overall accounted for 76.7% of the variance for gay/lesbian individuals, $F(3,122) = 132.584$, $p < .001$, and 77.0% of the variance for bisexual individuals, $F(3,260) = 286.918$, $p < .001$, in SIAS at one-month follow-up. BHS at baseline did not uniquely predict SIAS at one-month follow-up for both gay/lesbian individuals $b = -.236$, $t(122) = -1.265$, $p = .206$, partial $r = -0.120$ or bisexual individuals, $b = -.034$, $t(260) = -0.252$, $p = .801$, partial $r = -0.018$. Age at baseline did not uniquely predict SIAS at one-month follow-up for both gay/lesbian individuals, $b = -.005$, $t(260) = -0.056$, $p = .955$, partial $r = -0.005$ or bisexual individuals, $b = -.087$, $t(260) = -1.279$, $p = .201$, partial $r = -0.084$. SIAS at baseline uniquely predicted SIAS at one-month follow-up for both gay/lesbian individuals and bisexual individuals, with higher SIAS at baseline being associated with higher SIAS at one-month follow-up in both groups, ($b = .860$, $t(122) = 18.243$, $p < .001$, partial $r = -0.032$ and $b = .875$, $t(260) = 23.921$, $p < .001$, partial $r = -0.032$, respectively). However, BHS at baseline did not

uniquely predict SIAS at one-month follow-up for both gay/lesbian individuals b = -.236, t(122) = -1.265, p = .206, partial r = -0.120 or bisexual individuals, b = -.034, t(260) = -0.252, p = .801, partial r = -0.018.

Aim 2a: Cross-Sectional Analyses Exploring the Moderating Effect of Discrimination on the Association between Hypervigilance and SA Symptoms in SM Individuals

Table 5 provides regression coefficients for age at baseline, BHS at baseline, and HHRDS at baseline on SIAS at baseline. Results indicated that the regression model overall accounted for 28.3% of the variance in SIAS, F(4,392) = 38.243, p < .001. Age at baseline was significantly associated with SIAS at baseline, with younger ages being associated with higher SIAS. BHS at baseline was significantly associated with SIAS at baseline, with higher BHS being associated with higher SIAS. However, HHRDS at baseline was not significantly associated with SIAS at baseline. Further, there was not a significant interaction between HHRDS at baseline and BHS at baseline.

Aim 2a Exploratory Analysis in Gay/Lesbian Individuals Only and Bisexual Individuals Only

Results indicated that the regression model overall accounted for 30.7% of the variance for gay/lesbian individuals, F(4,122) = 13.171, p < .001, and 27.9% of the variance for bisexual individuals, F(4,260) = 24.809, p < .001, in SIAS at baseline. Age at baseline was significantly associated with SIAS at baseline for both gay/lesbian individuals and bisexual individuals, with younger ages being associated with higher SIAS, (b = -.328, t(122) = -2.404, p = .016, partial r = -0.215 and b = -.357, t(260) = -3.290, p = .001, partial r = -0.201). BHS at baseline was significantly associated with SIAS at baseline for both gay/lesbian individuals and bisexual individuals, with higher

BHS being associated with higher SIAS, (b = 1.724, t(122) = 6.043, p < .001, partial r = 0.485 and b = 1.686, t(260) = 8.747, p < .001, partial r = 0.479). Conversely, HHRDS at baseline was not significantly associated with SIAS at baseline for both gay/lesbian individuals, b = -.628, t(122) = -0.379, p = .704, partial r = -0.035 or for bisexual individuals, b = .064, t(260) = 0.047, p = .962, partial r = 0.003. Further, there were not significant interactions between HHRDS at baseline and BHS at baseline for gay/lesbian individuals, b = -.153, t(122) = -0.556, p = .578, partial r = -0.051 or bisexual individuals, b = -.069, t(260) = -0.302, p = .763, partial r = -0.019.

Aim 2b: Longitudinal Analyses Exploring the Moderating Effect of Discrimination on the Association between Hypervigilance and SA Symptoms in SM Individuals

Table 6 provides regression coefficients for age at baseline, BHS at baseline, and HHRDS at baseline on SIAS at one-month follow-up. Results indicated that the regression model overall accounted for 76.2% of the variance in SIAS at one-month follow-up, F(5,392) = 246.767, p < .001. Age at baseline did not uniquely predict SIAS at one-month follow-up. SIAS at baseline uniquely predicted SIAS at one-month follow-up, with higher SIAS at baseline being associated with higher SIAS at one-month follow-up. BHS at baseline was not significantly associated with SIAS at one-month follow-up. HHRDS at baseline was not significantly associated with SIAS at one-month follow-up. Further, there was not a significant interaction between HHRDS at baseline and BHS at baseline in predicting SIAS at one-month follow-up.

Aim 2b Exploratory Analysis in Gay/Lesbian Individuals Only and Bisexual Individuals Only

Results indicated that the regression model overall accounted for 76.7% of the variance for gay/lesbian individuals, F(5,122) = 79.323, p < .001, and 77.0% of the variance for bisexual individuals, F(5,260) = 171.485, p < .001, in SIAS at one-month follow-up. Age at baseline did

not uniquely predict SIAS at one-month follow-up for both gay/lesbian individuals, b = -.005, $t(260)$ = -0.056, p = .955, partial r = -0.005 and bisexual individuals, b = -.087, $t(260)$ = -1.279, p = .201, partial r = -0.084. Notably, SIAS at baseline uniquely predicted SIAS at one-month follow-up for both gay/lesbian individuals and bisexual individuals, with higher SIAS a baseline being associated with higher SIAS at one-month follow-up, (b = .860, $t(122)$ = 18.243, p < .001, partial r = 0.866 and b = .875, $t(260)$ = 23.921, p < .001, partial r = 0.867). However, BHS at baseline did not uniquely predict SIAS at one-month follow-up for both gay/lesbian individuals b = -.221, $t(122)$ = -1.138, p = .255, partial r = -0.109 or bisexual individuals, b = -.046, $t(260)$ -0.334, p = .738, partial r = -0.023. HHRDS at baseline did not uniquely predict SIAS at one-month follow-up for both gay/lesbian individuals, b = -.298, $t(122)$ = -0.298, p = .766, partial r = -0.029 or for bisexual individuals, b = .274, $t(260)$ = 0.276, p = .783, partial r = 0.022. Further, there were not significant interactions between HHRDS at baseline and BHS at baseline for gay/lesbian individuals, b = -.180, $t(122)$ = -1.134, p = .257, partial r = -0.106 or bisexual individuals, b = -.030, $t(260)$ = -0.178, p = .859, partial r = -0.014.

Discussion

The current study investigated the relations between hypervigilance and SA symptoms in SM individuals from both a cross-sectional and longitudinal perspective. Cross-sectional findings revealed that hypervigilance and age were both significantly associated with SA symptoms. However, hypervigilance was not associated with SA symptoms at one-month follow-up. Further, LGBTQ+ discrimination was not significantly associated with SA symptoms in regression models, nor did it moderate the relationship between hypervigilance and SA symptoms, either cross-sectionally or

longitudinally. These patterns of results were comparable across gay/lesbian and bisexual participants in exploratory analyses.

Our hypothesis for aim 1a, that SM participants who reported greater hypervigilance would demonstrate greater SA symptoms cross-sectionally at baseline, was supported. This finding is consistent with previous research that has found associations between hypervigilance and SA symptoms in eye tracking studies (Boll et al., 2016; Chen et al., 2015; Reichenberger et al., 2020) and extends this finding to self-report measures of hypervigilance in an SM sample. In the SM literature, the current study extends previous qualitative research supporting an association between hypervigilant behavior and social withdrawal (Rostosky et al., 2022) by using quantitative methodology and focusing on SA symptoms rather than only social withdrawal. These findings are also consistent with the minority stress model (Meyer & Frost, 2013; Meyer, 2003) which theorizes that SM individuals experience stressors that lead to minority stress reactions like hypervigilance (i.e., rejection sensitivity) which often result in broader negative mental health outcomes such as anxiety.

Our hypothesis for aim 1b, that SM participants who reported greater hypervigilance at baseline would demonstrate greater SA symptoms at one-month follow-up, was not supported. Notably, the current study was the first to longitudinally examine the link between hypervigilance and SA symptoms in any sample, nonetheless a SM sample. However, it is important to note the reasons we might not have seen results supporting our initial hypothesis. It is possible that the hypervigilance questionnaire used in this study, the BHS (Bernstein et al., 2015), may not have been the most optimal choice for measuring hypervigilance specifically experienced by SM individuals. The BHS (Bernstein et al., 2015), although commonly used, is a more general measure of hypervigilance across populations. Instead, the LGBTQ-Hypervigilance

Scale introduced by Riggle et al. (2021), used to measure LGBTQ+-specific hypervigilance, might offer greater insight into the association between hypervigilance and LGBTQ+ status because it was developed and tested directly for use with LGBTQ+ individuals. Another possible reason we might not have seen supporting results could be because the time length between baseline and one-month follow-up was not long enough to see enough change in SA symptoms. Future studies could use a longer timespan to enable enough time to see change. Consistent with this, while we did find significant changes over time on the SIAS using a paired samples t-test, the range of effect sizes were small, suggesting minimal variance to predict SIAS change over time. Another reason we might not have seen supporting results could be because hypervigilance, at least in part, might be working in tandem with avoidance in a hypervigilance-avoidance cycle, as previously suggested by Reichenberger et al. (2020). Reichenberger et al. (2020) examined hypervigilance in individuals with low and high SA during social fear conditioning and extinction utilizing virtual reality. The authors found that individuals with SA exhibited a vigilant-avoidant attention pattern, initially directing their attention toward social threats and then avoiding them (Reichenberger et al., 2020). This vigilant-avoidant pattern could help better explain the current studies lack of support for a link between hypervigilance and SA symptoms longitudinally. This pattern may have masked what is happening temporally between hypervigilance and SA symptoms in a longitudinal model.

Our hypotheses for aim 2a and 2b, that the association between hypervigilance and SA symptoms would be stronger at high versus low discrimination levels cross-sectionally and longitudinally, was not supported. While we did find small, but

significant correlations between discrimination and SA, at baseline, *r* = .13, and one-month follow-up, *r* = .11, prior studies have found moderate correlations between discrimination and SA in SM individuals cross-sectionally (Chaw, 2023; Mahon et al., 2021; *r* range = .28 - .39). Notably, previous research exploring these constructs within SM samples used varying measures of discrimination and SA. Notably, both Mahon et al., (2021) and Chaw (2023) also used different measures of SA. Mahon et al (2021) used the Liebowitz Social Anxiety Scale self-report version (LSAS; Fresco et al., 2001; original scale: Liebowitz, 1987) and the Brief Fear of Negative Evaluation Scale (BFNE; Leary, 1983), while Chaw (2023) used the SIAS (Mattick & Clark,1998) consistent with the present study. Notably, SIAS scores in the present study were slightly higher than in the sample by Chaw (2023) (M = 31.53 (SD = 14.54)) and our SIAS scores were also comparable to prior mean levels in validation studies of the SIAS, so it is unlikely that floor or ceiling effects were an issue in our study sample. Regarding measurement of discrimination, while we used the HHRDS, both Mahon et al (2021) and Chaw (2023) used versions of Williams' discrimination scales - Mahon et al. (202) used the Everyday Discrimination Scale (Williams, Yan, Jackson, & Anderson, 1997) and Chaw (2023) used the Discrimination Scale (Williams, et al.,1995). While the discrimination scale allows individuals to identify which identities they are referring to regarding their experiences of discrimination, the HHRDS is more explicitly focused on LGBTQ experiences of discrimination. Thus, in this case, a more specific measure may have had less of an association with SIAS scores. Notably, our mean levels on the HHRDS are consistent with Szymanski's (2006) original validation study (M=1.63), supporting that we did not experience floor or ceiling effects on the measure. It is also possible that our results reflect a true lack of an impact on discrimination on the association between hypervigilance and SA symptoms. Notably, Mahon et al. (2021) found that experiences

of discrimination were linked to SA by increased sexual orientation concealment, internalized stigma, and community connectedness through mediation analyses. Thus, potentially there may be other SM stress factors impacting SA than the variable (i.e., hypervigilance) examined in the current study.

Strengths, Limitations, and Future Directions

Our study had several methodological strengths that contributed to the rigor and validity of our findings. Notably, our use of a longitudinal design for aims 1b and 2b allowed us to explore the relationship over multiple time points, although it could not definitively establish causality, or lack thereof. Our study had a strong retention rate over time and few indicators of biased attrition. Another notable strength of our study is the use of empirical and psychometrically validated measurements of hypervigilance, SA, and LGBTQ+ discrimination. Further, we employed a large, nationwide, internet-based sample from the US to minimize sampling biases and improve representation of diverse sexual minorities, making our findings more applicable to the general population. We also had a strong retention rate in the present study and used suggested methods (MI) for accounting for missing data at follow-up.

However, several limitations are important to note. Namely, our study relied solely on self-report measures, rather than laboratory-based experiments and physiological indicators, which could introduce biases or limitations such as lack of objectivity when measuring visual and/or neural reaction times to both acute and expected threats (Bögels & Mansell, 2004; Boll et al., 2016; Buckner et al., 2010; Ehrlich et al., 2015; Eysenck et al., 2007; Mogg & Bradley, 2002, 2016, 2018; Reinholdt-Dunne et al., 2012; Richards et al., 2014). In order to address these shortcomings, future

investigations would benefit from implementing experimental paradigms that trigger symptoms associated with SA while simultaneously incorporating more accurate hypervigilance measures. Furthermore, our study's reliance on the BHS (Bernstein et al., 2015) as a measure of hypervigilance may have limited our capacity to distinguish specific components of hypervigilance related to LGBTQ+ individuals and their impact on SM health. As a result, further investigation using alternative methods tailored towards capturing these unique aspects of hypervigilance is necessary to gain a deeper understanding of this phenomenon (Riggle et al., 2021). Lastly, our study's cohort consisted of a large proportion of bisexual individuals (67% compared to 31% identifying as gay or lesbian), which limits the generalizability of our findings to predominantly gay/lesbian populations. Nevertheless, our sample composition aligns with other population-based studies of sexual minorities in the US (Hollinsaid et al., 2023; Keating & Muller, 2020), allowing us to shed light on SA symptoms outcomes for diverse SM groups, particularly those using population-based designs. Similarly, although our study's cohort included predominantly cis-gender individuals, our sample composition mirrors other population-based studies of sexual minorities in the US in terms of gender identity representation (Conron, Mimiaga, & Landers, 2010). Thus, future research could benefit from exploring these questions more specifically gender-diverse populations.

Conclusions

There have been recent calls in the scientific community for a greater emphasis on discovering variables that explain why individuals in the LGBTQ+ community have a higher risk of having SA than those who are not from this group (Akibar et al., 2019; Keating & Muller, 2020; Roberts et al., 2010; Scheer & Poteat, 2021). The findings of the current study help expand our understanding of how hypervigilance is associated with SA symptoms in SM individuals.

Regardless, future research should aim to replicate the findings using SM-specific measures of hypervigilance and longer longitudinal duration paradigms to minimize biases and enhance the internal and external validity of the research. By doing so, we may gain a clearer picture of the complex relationship between hypervigilance and SA symptoms in SM individuals and identify effective interventions to improve their mental health.

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Footnotes

[1] Paired samples t-test supported that SIAS scores significantly increased over the one-month follow-up period (p = .01); however, the range of effect sizes between the two timepoints across the imputed datasets were small (d =.02 - .06). Thus, there was minimal variance to be predicted over time in SIAS scores.

Appendix

Table 1

Means and Standard Deviations for Demographic Variables

	Total	***Gay/Lesbian***	***Bisexual***
	M(SD)/N(%)	**N/%**	**N/%**
Age	29.77 (9.66)	32.11 (10.79)	28.75 (8.97)
Race			
American Indian	6 (1.5%)	1 (0.8%)	5 (1.9%)
Asian	87 (22.2%)	25 (20.3%)	59 (22.6%)
African American	98 (25.0%)	36 (29.3%)	62 (23.8%)
White	165 (42.1%)	55 (44.7%)	106 (40.6%)
Other	34 (8.7%)	5 (4.1%)	28 (10.7%)
Missing	2 (0.5%)	1 (0.8%)	1 (0.4%)
Ethnicity			
Hispanic	106 (27.0%)	30 (24.4%)	72 (27.6%)
Not Hispanic	286 (73.0%)	93 (75.6%)	189 (72.4%)
Sexuality			
Gay or Lesbian	123 (31.4%)	123 (100%)	0 (0%)
Bisexual	261 (66.6%)	0 (0%)	261 (100%)
Other	8 (2.0%)	0 (0%)	0 (0%)
Gender			
Man	170 (43.4%)	67 (54.5%)	100 (38.3%)
Woman	188 (48.0%)	42 (34.1%)	144 (55.2%)
Trans Woman	9 (2.3%)	5 (4.1%)	3 (1.1%)
Trans Man	18 (4.6%)	8 (6.5%)	10 (3.8%)
Genderqueer	5 (1.3%)	1 (0.8%)	4 (1.5%)

Another Term Describes Me	2 (0.5%)	0 (0%)	0 (0%)
Gender Binary			
Man	188 (48.0%)	75 (61.0%)	110 (42.1%)
Woman	197 (50.3%)	47 (38.2%)	147 (56.3%)
Missing	7 (1.8%)	1 (0.8%)	4 (1.5%)
Education			
No HS	3 (0.8%)	1 (0.8%)	2 (0.8%)
HS or BED	62 (15.8%)	20 (16.3%)	40 (15.3%)
Some College	107 (27.3%)	29 (23.6%)	73 (28.0%)
Associate degree	31 (7.9%)	8 (6.5%)	23 (8.8%)
Bachelor's Degree	144 (36.7%)	45 (36.6%)	98 (37.5%)
Grad Degree	45 (11.5%)	20 (16.3%)	25 (9.6%)
Income			
0-30,000	166 (42.3%)	47 (38.2%)	113 (43.3%)
31,000-60,000	115 (29.3%)	43 (35.0%)	70 (26.8%)
61,000-90,000	61 (15.6%)	18 (14.6%)	43 (16.5%)
91,000-120,000	31 (7.9%)	8 (6.5%)	23 (8.8%)
120,000+	16 (4.1%)	5 (4.1%)	11 (4.2%)
Missing	3 (0.8%)	2 (1.6%)	1 (0.4%)

Table 2

Means, Standard Deviations, and Correlations for Study Variables

	M (SD)	1	2	3	4	5	6	7	8	9	10	11	12
1. Baseline BHS	7.10 (5.30)	-	.29**	.50**	.43**	-.12*	.06	-.01	.03	.20**	.12*	-.11*	-.10
2. Baseline HHRDS	1.70 (.85)		-	.13*	.11	.01	-.02	.06	-.15**	.10	-.21**	.11*	.08
3. Baseline SIAS	39.10 (18.36)			-	.87**	-.23**	-.01	-.03	.02	.12*	.07	-.14**	-.22**
4. One-Month Follow-Up SIAS	37.90 (18.54)				-	-.24**	-.04	-.03	.04	.11*	.07	-.13*	-.23**
5. Baseline Age	29.77 (9.66)					-	.14**	.05	-.20**	-.14**	-.07	.27**	.28**
6. Baseline Race	3.85 (1.43)						-	-.45**	.03	-.02	-.04	.17**	-.11*
7. Baseline Ethnicity	1.73 (0.45)							-	-.06	-.00	-.02	.15**	.08
8. Baseline Sexuality	2.71 (0.50)								-	.11*	.16**	-.09	-.03

9. Baseline Gender	1.74 (0.88)	-	.51**	-.02*	-.12*					
10. Baseline Gender Binary	1.51 (0.50)		-	-.06	-.14**					
11. Baseline Education	3.98 (1.34)			-	.44**					
12. Baseline Income	2.01 (1.13)				-					

Note. *$p < .05$, **$p < .01$, ***$p < .001$. BHS = Brief Hypervigilance Scale; HHRDS = Heterosexist Harassment, Rejection, and Discrimination Scale; SIAS = Social Interaction Anxiety Scale.

Table 3

Aim 1a. Regression Coefficients of Age and Hypervigilance on Social Anxiety Symptoms

	Baseline SIAS			
Variable	ΔR^2	Beta	*p*	Partial r
Step 1	**.28****			
Baseline Age		**-.18**	**.001**	**-.20**
Baseline BHS		.49	<.001	.50
Total Adjusted R Square	.28			

Note. **p* < .05, ***p* < .01, ****p* < .001. BHS = Brief Hypervigilance Scale; SIAS = Social Interaction Anxiety Scale. SPSS does not pool r squared change across models, and as a result, we put the range of r squared change scores.

Table 4

Aim 1b. Regression Coefficients of Age, Hypervigilance, and Social Anxiety Symptoms on Social Anxiety Symptoms

	One-Month Follow-Up SIAS			
Variable	ΔR^2	Beta	p	Partial r
Step 1	**.75 - .77*** **			
Baseline Age		-.04	.18	-.07
Baseline SIAS		**.90**	**<.001**	**.86**
Step 2	**.001**			
Baseline Age		-.04	.18	-.07
Baseline SIAS		**.90**	**<.001**	**.83**
Baseline BHS		<.001	.99	<.001
Total Adjusted R Square	.75 - .77			

Note. $*p < .05$, $**p < .01$, $***p < .001$. SIAS = Social Interaction Anxiety Scale; BHS = Brief Hypervigilance Scale. SPSS does not pool r squared change across models, and as a result, we put the range of r squared change scores.

Table 5

Aim 2a. Regression Coefficients of Age, Hypervigilance, and Discrimination on Social Anxiety Symptoms

	Baseline SIAS			
Variable	ΔR^2	Beta	p	Partial r
Step 1	**.28 *****			
Baseline Age		**-.18**	**<.001**	**-.20**
Baseline BHS		**.50**	**<.001**	**.48**
Baseline HHRDS		-.01	.90	-.01
Step 2	**.001**			
Baseline Age		**-.18**	**<.001**	**-.20**
Baseline BHS		**.50**	**<.001**	**.48**
Baseline HHRDS		-.01	.90	-.01
Baseline BHS x Baseline HHRDS		-.03	.50	-.03
Total Adjusted R Square	.28			

Note. **p* < .05, ***p* < .01, ****p* < .001. SIAS = Social Interaction Anxiety Scale; BHS = Brief Hypervigilance Scale; HHRDS = Heterosexist Harassment, Rejection, and Discrimination Scale. SPSS does not pool r squared change across models, and as a result, we put the range of r squared change scores.

Table 6

Aim 2b. Regression Coefficients of Age, Hypervigilance, Social Anxiety Symptoms, and Discrimination on Social Anxiety Symptoms

	One-Month Follow-Up SIAS			
Variable	ΔR^2	Beta	p	Partial r
Step 1	**.75 - .77*** **			
Baseline Age		-.04	.18	-.07
Baseline SIAS		**.86**	**<.001**	**.86**
Step 2	**.001*** **			
Baseline Age		-.04	.20	-.07
Baseline SIAS		**.86**	**<.001**	**.83**
Baseline BHS		-.01	.80	-.02
Baseline HHRDS		.03	.30	.06
Step 3	**.001*** **			
Baseline Age		-.04	.18	-.07
Baseline SIAS		**.86**	**<.001**	**.83**
Baseline BHS		-.01	.80	-.02
Baseline HHRDS		.05	.12	.08
Baseline BHS x Baseline HHRDS		-.04	.18	-.07
Total Adjusted R Square	.75 - .77			

Note. $*p < .05$, $**p < .01$, $***p < .001$. SIAS = Social Interaction Anxiety Scale; BHS = Brief Hypervigilance Scale; HHRDS = Heterosexist Harassment, Rejection, and Discrimination Scale. SPSS does not pool r squared change across models, and as a result, we put the range of r squared change scores.