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The Role of Shame in the Sexual-Orientation Disparity in Mental Health: A Prospective Population-Based Study of Multimodal Emotional Reactions to Stigma

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Abstract

Despite the prominence of shame in stigma theories, its role in explaining population-level mental health disparities between the stigmatized and non-stigmatized has not been investigated. We assessed shame explicitly (via self-report) and implicitly (via a behavioral task) in a prospective, representative cohort of sexual minority and heterosexual young adults in Sweden (baseline $n=2,222$). Compared to heterosexuals, sexual minorities evidenced higher explicit and implicit shame, which explained sexual orientation disparities in depression, social anxiety, and suicidal thoughts. Among sexual minorities, there was an indirect effect of shame in the association between interpersonal stigma (i.e., past-year family rejection and childhood bullying) and later experiences of adverse mental health; an indirect effect did not exist for the related construct, internalized stigma. Results suggest extending existing stigma theories to consider emotions like shame as characteristic reactions to stigma and guide the search for treatment targets focused on reducing the mental health sequelae of stigma.

Keywords

shame; stigma; sexual minorities; mental health disparities

Although the study of shame (an emotion) has tended to proceed separately from the study of stigma (a social process), the two constructs conceptually overlap. Shame is a self-evaluative emotion that involves seeing the self as socially inferior, flawed, and inadequate, often arising from perceived moral transgression (Tangney, 1995). Shame is distinguished from other emotions in being primarily characterized by perceptions of a

negative, uncontrollable aspect of oneself (e.g., “I am a bad person”). Shame can also be distinguished from other emotions in its behavioral outcomes, including a desire to hide, isolate from others, and erase the self (Niedenthal et al., 1994; Sznycer et al., 2021).

Stigma refers to the loss of social status following the acquisition of a socially devalued label that marks someone as morally transgressive and/or socially inferior (e.g., Goffman, 1963; Link & Phelan, 2001). While the sociological study of stigma focuses on the powerful societal forces that uphold the boundaries between socially esteemed individuals versus socially degraded individuals (Phelan et al., 2008), the psychological study of stigma has tended to focus on ways in which stigmatized individuals react and adapt to the social degradation and accompanying identity threat of stigma (e.g., Major & O’Brien, 2005). Psychological research finds that stigmatized individuals display characteristic reactions to stigma, such as chronic expectations of rejection, identity concealment, and internalized stigma (Earnshaw & Chaudoir, 2009; Mendoza-Denton et al., 2002; Newcomb & Mustanski, 2010; Pachankis, Mahon, et al., 2020). Disrupted emotional processes, such as emotion dysregulation, have also been examined as stigma reactions (e.g., Hatzenbuehler et al., 2009; Villarreal et al., 2021; Wang et al., 2021). Yet, very little research has examined the impact of stigma on specific emotions themselves (Cardona et al., 2022). Because shame represents the emotional experience of seeing oneself as morally transgressive and socially inferior, it represents a candidate marker, if not a pathognomonic sign, of stigma processes at work. Indeed, stigma has been defined as a “mark of shame” (Hinshaw, 2007; Merriam-Webster).

The few studies that have simultaneously examined stigma and shame have found that, when stigmatized individuals are asked to recall a similarly stigmatized individual who behaved in negative ways, the level of their shame predicted their greater desired distance from their stigmatized identity and greater attempts to repair the image of their stigmatized group (Schmader & Lickel, 2006). Among individuals with mental illness symptoms, shame about mental illness has been associated with social withdrawal and secrecy (Schibalski et al., 2017) and with poorer recovery (Wood et al., 2017). Otherwise, despite the prominence of shame in stigma theories and discourse (e.g., Allport et al., 1954; Hinshaw, 2007), the extent to which shame mediates the well-established negative mental health effects of stigma experiences (Hatzenbuehler et al., 2013; Pachankis, Hatzenbuehler, et al., 2018) has rarely been explored. Strikingly, the role of shame in explaining population-level mental health disparities between the stigmatized and non-stigmatized has never been investigated.

Sexual minority individuals (e.g., those who identify as gay, lesbian, bisexual, pansexual, or queer) are frequently stigmatized as morally transgressive and socially inferior because of their presumed threat to societal expectations of sexuality and gender roles (Herek, 2009; Thoma et al., 2021). At the interpersonal level, this stigma manifests in social rejection, including from important others (Bränström et al., 2022). For instance, sexual minority individuals are more likely than heterosexual individuals to report family rejection and childhood bullying (Austin et al., 2008; Clark et al., 2020; Corliss et al., 2002; Friedman et al., 2011), often directed toward gender nonconforming expressions and mannerisms (Landolt et al., 2004; Roberts et al., 2012; Schope & Eliason, 2004). By communicating that one’s natural preferences, expressions, and mannerisms are wrong and deviant, this mistreatment from important others is argued to generate psychological and behavioral

reactions over time characterized by self-invalidation (Cardona et al., 2022). Although self-invalidation stemming from invalidation by important others is argued to generate disrupted emotion processes, including lack of emotion awareness and acceptance (Cardona et al., 2022; Fruzzetti et al., 2005; Keyes et al., 2008; Orcutt et al., 2020), no research has investigated whether chronic invalidation toward the stigmatized might also generate excess shame, ostensibly the emotional hallmark of invalidation from others and oneself. Further, no study has examined whether excess shame might explain the sizeable sexual orientation disparities in adverse mental health (Bränström, 2017; Rice et al., 2019). Indeed, previous evidence has been limited to cross-sectional associations between self-reported shame and sexual orientation victimization and discrimination, family rejection, psychological distress, and suicidality in non-probability samples of sexual minorities (Mereish et al., 2021; Mereish et al., 2019; Mereish & Poteat, 2015). However, cross-sectional designs using non-probability sampling without a heterosexual comparison preclude identifying prospective mediators, including those underlying population disparities.

Previous research into self-invalidating processes among sexual minority individuals has tended to focus on a construct known as internalized stigma (Shidlo, 1994). However, internalized stigma shows consistently weak associations with mental health outcomes (Lefevor et al., 2023; Newcomb & Mustanski, 2010), calling into question the operationalization and conceptualization of this construct. Indeed, internalized stigma is typically measured with self-report items across affective (“You have felt alienated from yourself because of being [a sexual minority];” Martin & Dean, 1992), cognitive (e.g., “I wish I were heterosexual;” Mohr & Kendra, 2011), and behavioral (“You have tried to become more sexually attracted to [the opposite sex];” Martin & Dean, 1992) domains without considering potential distinctions across these psychological components involved in self-invalidation (Cardona et al., 2022). Further, because internalized stigma has only been assessed as an identity-specific phenomenon, its measurement has been limited to self-report by the stigmatized group, thereby precluding comparisons between the stigmatized and non-stigmatized and the role of this self-invalidating process in explaining group differences in mental health. By focusing squarely on the affective experience of self-invalidation, namely shame, we highlight a distinct affective component of self-invalidation with more precision, and perhaps greater conceptual clarity, than previous research into related constructs, such as internalized stigma. Further, because shame is a universal process, rather than an identity-specific process, it can be assessed across populations, thereby permitting comparisons between the stigmatized and non-stigmatized and examinations of its role in explaining mental health differences between groups.

Given their pervasive exposure to stigma and its interpersonal manifestations, sexual minorities might be particularly likely to experience shame and its characteristic outcomes, namely depression, social anxiety, and suicidal thoughts (Sznycer et al., 2021; Tangney, 1995). In fact, sexual minority individuals are more likely to experience these outcomes than heterosexual individuals (McDanal et al., 2021; Plöderl et al., 2013; Raifman et al., 2020; Sandfort et al., 2001). Yet, whether shame serves as a mechanism underlying these disparities and as a mechanism linking sexual minority individuals’ experiences of interpersonal stigma, such as family rejection and childhood bullying, to these outcomes remains unknown. Determining whether shame serves as such a mechanism not only

advances stigma theories (e.g., Hatzenbuehler et al., 2009; Major & O'Brien, 2005), but can also aid in the search for candidate treatment targets.

The present study takes advantage of a large prospective cohort of sexual minority and heterosexual young adults living in Sweden that includes a comprehensive assessment of stigma experiences, emotions, and mental health outcomes. The sexual orientation disparity in several mental health problems peaks in young adulthood (Rice et al., 2019), which represents the highest risk period for such problems of any age group (Kessler et al., 2007). In this study, shame was assessed both explicitly by self-report and implicitly by a reaction time task, given that emotion processes can occur below awareness (e.g., Zajonc, 2000) with potential to drive behavioral outcomes (Winkelman & Berridge, 2004). Taking advantage of this combination of methodological features, the present study permitted a test of the mechanistic role of shame in the sexual orientation disparity in depression, social anxiety, and suicidal thoughts and in the prospective association between interpersonal stigma and these outcomes. We hypothesize that shame will mediate the sexual orientation disparity in depression, social anxiety, and suicidal thoughts. We also hypothesize that, among the sexual minority sample, there will be a significant indirect effect of shame in the association between past-year family rejection and childhood bullying and these outcomes. As an exploratory aim, we compare the relative mediating role of two distinct approaches to measuring shame, both explicit and implicit. As a second exploratory aim, we examine the association between shame and internalized stigma and compare the relative strength of the indirect effect of shame versus internalized stigma in the association between past-year family rejection and childhood bullying and the three mental health outcomes of this study.

Method

Transparency and Openness

We report how we determined our sample size, all data exclusions, all manipulations, and all measures in the study. All data were produced under the Swedish Statistics Act and the European Union Data Protection Regulation, according to which privacy concerns restrict the availability of personal data for research. Aggregated data can be made available by the authors, subject to ethical vetting. Questionnaires, scoring protocols, and data syntax are available on Open Science Framework, (<https://osf.io/ws3p8/>). This study was approved by the Yale University Human Subjects Committee (#2000024703).

Participants

Data for the present study come from three annual waves of the Pathways to Longitudinally Understanding Stress (PLUS) study, an ongoing longitudinal population-based cohort study among young adults in Sweden. The study was initiated in 2019 to understand mechanisms that explain sexual minority individuals' increased risk for internalizing mental health problems during young adulthood (Rice et al., 2019). Participants in the PLUS cohort were recruited among participants from the Swedish National Public Health Survey (SNPHS) conducted by the Public Health Agency of Sweden. In 2015, 2016, and 2018, nationally representative randomly selected samples were invited to the SNPHS using information from the Swedish Total Population Register that contains personal identification and address

information of all individuals living in Sweden. By using the comprehensive population register, the sampling frame for the SNPHS includes all individuals living in Sweden at the time of the study. In the 2015, 2016, and 2018 data collections, one question regarding sexual orientation self-identification was included: “What is your sexual orientation?” with the Swedish-language equivalent of the response categories: “heterosexual,” “bisexual,” “homosexual” (the commonly accepted term in Sweden), “not sure,” and “other.” Most participants (96%) responded to this item.

To create the PLUS cohort, we selected all 2,973 young adult participants (ages 18-34) who identified as non-heterosexual in the 2015, 2016, and 2018 SNPHS. We also selected a random sample of 2,973 heterosexual participants ages 18-34 in the 2015, 2016, and 2018 SNPHS. Statistics Sweden used personal identification numbers for these individuals to match them with their current home addresses in order for them to receive a mailed invitation. The mail invitation directed interested individuals to an online survey located on a secure server, available in both Swedish and English. A total of 5,885 individuals with current home addresses in Sweden were invited; 2,222 (37.8%) provided consent and completed the Wave 1 survey assessment (October 2019). At Wave 2 (October 2020), 1,395 (62.8% of the Wave 1 participants) completed all assessments (including the Self-referential Encoding Task described below) and, of those, 1,081 (77.5% of the Wave 2 participants) completed the Wave 3 assessments (October 2021). The final analytic sample included participants who were retained at Wave 3. No significant differences between retained and attrited participants were found across Wave 1 or Wave 2 study measures, and we found no significant difference due to attrition on the distribution of any of the demographic variables (age, gender, education level, urbanicity, country of birth, and sexual minority status) (all $p > .05$).

Self-report Assessments

A team of sexual minority health experts developed the English version of the questionnaire, which was then translated into Swedish using a forward translation procedure (RAND; Wild et al., 2005), followed by back translation and subsequent cognitive interviews to verify comprehension in the target population.

Sexual Orientation.—At Wave 1, participants’ sexual orientation was assessed using a series of questions, namely: (1) “Which of the following best represents how you think of yourself?” with the response options being “lesbian or gay;” “straight, that is, not lesbian or gay;” “bisexual;” “something else;” or “I don’t know the answer.” Those participants responding “something else” were asked a second question: (2) “What do you mean by something else?” with the response options being “queer;” “pansexual;” “asexual;” “demisexual;” and “none of the above.” Participants responding “none of the above” were then asked (3): “What term or terms do you use to identify your sexual orientation?” with an open text response (e.g., gray-sexual, open), and the subsequent question: (4) “This study is about individuals who are not heterosexual/straight and so asks about people’s experiences being LGBTQ+. You indicated that you identify as [participant response to question (3)]. Are you comfortable being referred to as LGBTQ+ throughout this survey?” with the response options “yes” or “no.” All participants were classified as sexual minorities

if they reported identifying as: lesbian, gay, bisexual, queer, pansexual, asexual, demisexual, or otherwise confirmed that they were comfortable being referred to as LGBTQ+. A total of 165 individuals were excluded from the cohort because they responded “I don’t know the answer” to the question about sexual orientation. Another six were excluded because they indicated their sexual orientation as “something else” but not being comfortable being referred to as LGBTQ+ throughout the survey.

Sociodemographic Characteristics.—Several additional sociodemographic variables were assessed at Wave 1, including: age, sex assigned at birth (“What sex were you assigned at birth?” with the response options being “male” and “female”), gender identity (“What is your current gender identity?” with the response options: “male,” “female,” “trans male/trans man,” “trans female/trans woman,” “genderqueer/gender non-conforming,” and “different identity [please state]: ___”), income (“Which best describes your total yearly personal income during the last year?” with eight response alternatives ranging from “less than 5,000 SEK/month” to “60,000 SEK/month or more”), level of education (“What is the highest grade of school you have completed?” with seven response alternatives ranging from “some high school” to “advanced graduate school degree [Ph.D., M.D., J.D.]”), and country of birth (“Were you born in Sweden?” with the response alternatives “yes” or “no”).

Interpersonal Stigma.—At Wave 2, sexual minority participants completed measures of two prominent types of past interpersonal stigma: family rejection and childhood bullying. Past-year family rejection was assessed with the family reaction subscale of the Gay-related Stress Scale (Lewis et al., 2002), consisting of nine items asking about experiences of rejection from family during the past 12 months (e.g., “I was rejected by family members because of my sexual orientation” and “I experienced a lack of support from family members because of my sexual orientation,” with the response options “yes” and “no”). The responses were used to create a score ranging from 0 to 9 (mean = 1.10, SD = 1.38), with higher numbers indicating greater experiences of past-year family rejection. This scale has previously shown associations with depression and social stress in community samples of sexual minority individuals (Lewis et al., 2002). Childhood bullying was assessed with a question, derived from a composite of bullying items previously administered to sexual minorities, created for a US population-based study of sexual minority adults (Meyer et al., 2016): “How often, if ever, were you bullied before you were 18 years old?” with response options being 0 (*never*), 1 (*rarely*), 2 (*sometimes*), and 3 (*often*) (mean = 1.52, SD = 1.06).

Internalized Stigma.—Internalized stigma was measured at Wave 2 using the self-report internalized homonegativity subscale of the Lesbian, Gay, Bisexual Identity Scale (Mohr & Kendra, 2011), including three items reflecting the cognitive components of self-invalidation of one’s minority sexual orientation (e.g., “I wish I were heterosexual”) with response options ranging from 1 (*disagree strongly*) to 6 (*agree strongly*) (mean = 1.60, SD = 1.02). This scale is commonly administered to sexual minority samples and has shown small-to-medium correlations with exposure to minority stressors (e.g., discrimination) and poor mental health (e.g., depression and anxiety; Newcomb & Mustanski, 2010; Szymanski & Ikizler, 2013).

Mental Health.—Mental health outcomes were assessed at Wave 3 and included depression, social anxiety, and suicidal thoughts, given their theoretical and empirical role as characteristic behavioral outcomes of shame (Dickerson et al., 2004; Kim et al., 2011; Scheff, 2001; Sznycer et al., 2021; Tangney, 1995). Depressive symptoms were assessed using the Center for Epidemiologic Studies Depression (CES-D) scale (Radloff, 1977), a 20-item scale assessing frequency of depressive symptoms during the past week on a 4-point scale (i.e., “rarely or none of the time [less than 1 day], some or a little of the time [1-2 days], occasionally or a moderate amount of time [3-4 days], most of all of the time [5-7 days]”). Responses to the 20 items were summed, creating a score with a range from 0 to 60, with higher scores indicating more frequent experiences of depressive symptoms (Cronbach’s $\alpha = 0.91$). Social anxiety was assessed using the Social Interaction Anxiety Scale Short Form (SIAS-SF; Mattick & Clarke, 1998). The SIAS-SF consists of six items asking participants to rate how characteristic different experiences of social interaction are for them (e.g., “I have difficulty making eye contact with others,” “I feel tense if I am alone with just one other person”) using a 5-point scale ranging from 0 (*not at all characteristic or true of me*) to 4 (*extremely characteristic or true of me*). Responses to the six items were averaged, creating a range from 0 to 4, with higher numbers indicating greater experiences of social anxiety (Cronbach’s $\alpha = 0.84$). Suicidal thoughts were assessed using the Suicidal Ideation Attributes Scale (SIDAS; van Spijker et al., 2014). The SIDAS consists of five items assessing frequency of suicide thoughts (i.e., “In the past month, how often have you had thoughts about suicide?”) and their severity (e.g., “In the past month, how much control have you had over these thoughts?”) on 10-point scales. Responses can be naturally conceptualized as reflecting either the presence or absence of suicidal thoughts or else the severity of such thoughts among individuals who experience any such thoughts. Because our score distribution showed a large mass of responses at zero, indicating no suicidal thoughts (and therefore necessarily no concerns about controllability or distress associated with such thoughts), we modelled the scale as a dichotomous indicator of any (= 1) or no (= 0) suicidal thoughts rather than as a transformed continuous indicator of severity of suicidal thoughts in a sample in which most respondents indicated no such thoughts. This cut-off is supported by previous research demonstrating adequate sensitivity and specificity for predicting suicide plans and attempts (van Spijker et al., 2014). The three above mental health assessments have previously been administered in longitudinal studies of sexual minority individuals, have shown hypothesized associations with social stressors, and have shown reductions in response to tailored interventions for sexual minority young adults (e.g., Clark et al., 2022; Lindner et al., 2013; Pachankis, Sullivan, et al., 2018; Pachankis, Williams, et al., 2020).

Shame.—At Wave 2, participants completed the shame subscale of the Personal Feelings Questionnaire-2 (PFQ-2; Harder & Greenwald, 1999) consisting of 10 items regarding the frequency of shame-related emotions during the past 12 months (e.g., “feeling embarrassed,” “feeling humiliated”), with response options ranging from 0 (*never*) to 4 (*continuously or almost continuously*). This scale has previously been found to be significantly correlated with depression and stressful life events among sexual minority samples (e.g., Scheer et al., 2020). Responses to the 10 items were averaged, creating a range from 0 to 4, with higher numbers indicating greater experiences of shame (Cronbach’s $\alpha = 0.81$).

Implicit Assessment

Self-referential Encoding Task.—At Wave 2, all participants were invited to complete the Self-referential Encoding Task (SRET; Derry & Kuiper, 1981), which 1,395 completed (584 sexual minorities, 811 heterosexuals). The SRET consisted of 11 positive (e.g., talented, terrific) and 11 negative adjectives (e.g., boring, selfish) following previous uses (Burke et al., 2016). Participants were required to complete the task online using a desktop or laptop computer and were directed to complete the task at a later time if they were not currently working from a device that contained a keyboard. At the start of the task, participants completed a mood induction procedure in which they were asked to write about an emotionally negative event while listening to sad music (i.e., “*Alone in the Dark*” by Vadim Kiselev). To evaluate the effectiveness of the mood induction procedure, in which participants were instructed to write about a sad event in their lives while listening to the sad music that accompanied this task, participants were asked to report their current mood on a 5-point scale (i.e., 0 = “very happy” to 4 = “very sad”) before and after the mood induction. The mood induction resulted in a significant shift from positive mood towards more negative mood in both the sexual minority group (before mood induction: mean = 1.90 [SD = 0.77]; after mood induction: mean = 2.48 [SD = 0.78]; $t = 11.62, p < .001$) and heterosexual group (before mood induction: mean = 1.52 [SD = 0.70]; after mood induction: mean = 2.24 [SD = 0.81]; $t = 23.34, p < .001$).

Thereafter, participants were instructed to use the “Z” key to indicate a “yes” response with their left finger and the “M” key to indicate a “no” response using their right finger. Participants were then asked to complete 44 trials in which either a positive or negative word was displayed on the computer screen along with a question asking them to select “Yes” or “No” to one of two questions (“Like Me?” and “Has an E?”). “Like Me?” represents a self-referential judgment and “Has an E?” represents an objective judgment about whether the word contains an “e.” The response time for each trial was recorded.

Given the purpose of the current study to specifically examine the role of shame, we used the SRET to calculate a ratio of reaction times for endorsing (i.e., responding “Yes”) or not endorsing (i.e., responding “No”) the word “ashamed” as self-referential (i.e., “Like Me”) to the reaction times for endorsing or not endorsing the word “proud” as self-referential. Calculating a ratio is necessary to control for general reaction time tendencies, and previous studies using the SRET typically employ a ratio of positive (and negative) words endorsed to the total number of words endorsed (Prieto et al., 1992; Timbremont & Braet, 2004; Zupan et al., 1987). Given that the present study was focused specifically on shame, which was assessed with reaction time to only one word (i.e., “ashamed”), we controlled general reaction time tendencies by using reaction time to the antonym of “ashamed” (i.e., “proud”) as the denominator. This ratio was specifically created from two scores: (1) a score calculated using the reaction time to endorse “ashamed” as self-referential or the reversed reaction time to not endorse “ashamed” as self-referential; and (2) a score calculated using the reaction time to endorse “proud” as self-referential or the reaction time to not endorse “proud” as self-referential. Our implicit measure of shame was thus calculated as the ratio of these two reaction times related to shame and pride, respectively.

Analytical Approach

After examining descriptive statistics of participants' sociodemographic characteristics, we used regression models to estimate sexual orientation differences in depression, social anxiety, and suicidal thoughts. These analyses were adjusted for several sociodemographic covariates known to affect mental health (i.e., age, gender identity, individual income, level of education, and country of birth). To test our primary hypothesis, we used multiple mediation analyses to examine whether shame, measured both explicitly and implicitly at Wave 2, could explain sexual orientation disparities in these outcomes at Wave 3. To statistically test mediation, we calculated the indirect effects of each variable (i.e., explicit and implicit measures of shame) as a mediator of the association between sexual orientation and each outcome. Bootstrap confidence intervals for indirect effects were calculated and a significance level of $p < 0.05$ was interpreted as evidence of mediation (Hayes, 2013). Next, to test our second hypothesis, we estimated the association between past-year family rejection and childhood bullying measured at Wave 2, and depression, social anxiety, and suicidal thoughts at Wave 3 within the sexual minority sample. We then tested whether an indirect effect exists for shame in these associations by entering both the implicit and explicit measures of shame in models for each outcome. After assessing the correlation between explicitly and implicitly measured shame with internalized stigma, we re-ran this test of indirect effects replacing both measures of shame with internalized stigma.

The amount of missing data was very low and varied from 0% for demographic variables (e.g., sex assigned at birth, age, sexual orientation) to 0.4% for suicidal thoughts at Wave 3. Only respondents with complete records on all study variables were included in analyses. In all analyses, survey weights were applied to adjust for selection probabilities and non-response in order to generate nationally representative estimates of prevalence and associations and to reduce bias due to attrition across waves (Chen et al., 2015). At Wave 1, base weights from the original SNPHS were adjusted to account for selection into the PLUS cohort using an algorithm taking into account the distribution of the following variables: age, gender, education level, urbanicity, country of birth, and sexual minority identity. At each subsequent wave of assessment, weights were adjusted to account for attrition to be representative of the Swedish young adult population. For the current study, the Wave 3 weights were used to adjust the sample to represent the national distribution of age and sex in the 2021 Swedish census data. Analyses were conducted with SPSS version 26 and Mplus Version 8.

Results

Descriptive Statistics

Table 1 depicts the sociodemographic characteristics of the study sample. Most of the participants identified as heterosexual (76.9%). Within the sexual minority group, 68.8% identified as bisexual or pansexual, 26.4% as lesbian or gay, and 4.8% as another sexual orientation identity. The sexual minority sample was somewhat younger, had lower income, and a lower level of education than the heterosexual sample. There was no difference in country of birth between the sexual minority and heterosexual samples.

Sexual Orientation Differences in Mental Health Outcomes

Table 2 reports the sexual orientation differences in depression, social anxiety, and suicidal thoughts. The sexual minority sample scored significantly higher on all mental health outcomes as compared to the heterosexual sample.

Sexual Orientation Differences in Implicit and Explicit Measures of Shame

Table 2 also reports sexual orientation differences in explicit and implicit measures of shame. The sexual minority sample reported a significantly higher score on the explicit measure of shame compared to heterosexuals. The sexual minority sample also exhibited a significantly lower score on the implicit measure of shame, indicating a faster reaction time to endorse “ashamed” as self-relevant (if they selected “yes”), or alternatively a longer reaction time to not endorse “ashamed” as self-relevant (if they selected “no”), compared to the heterosexual sample.

Shame as Mediator of Sexual Orientation Disparities in Mental Health Outcomes

The explicit and implicit measures of shame were significantly correlated ($r = -0.323, p < 0.001$). The associations between shame and the mental health outcomes were generally of moderate magnitude. The explicit measure of shame was significantly and positively related to all three mental health outcomes: depression ($r = .500, p < .001$), social anxiety ($r = .454, p < .001$), and suicidal thoughts ($r = .350, p < .001$). The implicit measure of shame was significantly and negatively related to all three mental health outcomes: depression ($r = -.380, p < .001$), social anxiety ($r = -.373, p < .001$), and suicidal thoughts ($r = -.329, p < .001$).

Figure 1 depicts results of the multiple mediation analyses examining explicit and implicit measures of shame as mediators of the sexual orientation disparity in mental health (i.e., depression, social anxiety, and suicidal thoughts). In these analyses adjusted for sociodemographic covariates, significant direct effects were found between sexual orientation and all mental health outcomes. Sexual minority participants were more likely to report depression, social anxiety, and suicidal thoughts than heterosexuals. Multiple mediation models using our two measures of shame as potential mediators showed support for significant indirect effects of both the explicit and implicit measure of shame, indicating that they serve as mediators of the higher scores on mental health outcome measures among sexual minorities compared to heterosexuals. Although the two shame measures were significantly correlated, the mediational pathway for each of them was uniquely significant (i.e., they were significant even after adjusting for the other measure of shame).

Indirect Effect of Shame in the Association Between Past-year Family Rejection and Childhood Bullying and Mental Health Outcomes among Sexual Minorities

Figure 2 depicts results from the analyses examining the role of both explicit and implicit measures of shame in the association between past-year family rejection and childhood bullying with depression, social anxiety, and suicidal thoughts among the sexual minority sample. In these analyses adjusted for sociodemographic covariates, there were significant direct effects between experiences of past-year family rejection with depression and social anxiety, but not suicidal thoughts. The results revealed a significant indirect effect of the

explicit and implicit measures of shame in the association between past-year family rejection and depression and social anxiety. However, only explicit shame had a significant indirect effect in the association between past-year family rejection and suicidal thoughts.

For the models using childhood bullying as the main predictor variable, significant direct effects were observed for all three mental health outcomes. Only the explicit measure of shame had a significant indirect effect in the association between childhood bullying and the three mental health problems.

For both primary analyses above, we additionally tested the indirect effect of the two measures of shame (i.e., explicit and implicit) separately. These models of single indirect effects generated almost identical patterns of results as models testing multiple indirect effects.

Indirect Effect of Internalized Stigma (versus Shame) in the Association Between Past-year Family Rejection and Childhood Bullying and Mental Health Outcomes among Sexual Minorities

The association between explicit shame and internalized stigma was non-significant ($r = .001, p = .988$). The association between implicit shame and internalized stigma was also non-significant ($r = -.067, p = .395$). Tests of indirect effects showed no significant indirect effect of internalized stigma from either predictor to any of the three outcomes (see Supplementary Figure S1).

Discussion

Based on evidence that sexual minorities experience pervasive negative social evaluation by virtue of their stigmatized social status (Friedman et al., 2011; Hatzenbuehler et al., 2009; Pachankis & Bränström, 2019; Poteat et al., 2011; Ryan et al., 2009), this study hypothesized and found evidence that sexual minorities are particularly likely to experience shame – assessed both explicitly and implicitly – and shame-related action tendencies, namely depression, social anxiety, and suicidal thoughts, compared to heterosexuals. Moreover, shame partially explained the association between sexual minority status and these three outcomes. Although the indirect effects of shame in the present study were of small to medium size, the explicit and implicit measures of shame explained about 40-70% of the total sexual orientation difference in depression, social anxiety, and suicidal thoughts. This study also found evidence that shame explains the association between sexual minority individuals' interpersonal stigma experiences, namely past-year family rejection and childhood bullying, and these three adverse mental health outcomes, with these indirect associations being more consistent for the explicit compared to the implicit measure of shame. Sexual minority individuals' relatively low levels of reported past-year family rejection and childhood bullying might have also explained the small indirect effects in associations involving these factors. Shame was not significantly associated with internalized stigma, a related but more conceptually heterogeneous construct, and internalized stigma did not exert an indirect effect in the association between interpersonal stigma exposures and the three mental health outcomes. By employing several combined methodological strengths, namely a longitudinal design, population-based sampling of

sexual minorities and heterosexuals, and multimodal assessment of shame, this study's results advance stigma theory and the science of sexual minority mental health with implications for intervention.

Results of this study advance stigma theory, which has long proposed, but rarely empirically investigated, a close association between the social process of stigma and the emotional experience of shame (e.g., Allport et al., 1954; Hinshaw, 2007). Both minority stress theory (Meyer, 2003) and the psychological mediation framework (Hatzenbuehler et al., 2009) propose that sexual minorities' disproportionate risk of stress-sensitive mental health outcomes, such as those investigated here, are a function of their exposure to stigma. Drawing on theories of stigma and coping, minority stress theory (Meyer, 2003) focuses on the mediating role of stressful psychological reactions to stigma, whereas the psychological mediation framework (Hatzenbuehler et al., 2009) focuses on the mediating role of sexual minorities' elevated risk of precursors (e.g., cognitive schemas, emotion regulation processes, social isolation) to mental health problems compared to heterosexuals. Studies guided by both theories have tended to find evidence for the mediating role of cognitive (e.g., internalized stigma, hopelessness) and behavioral (e.g., identity concealment, social isolation) reactions to stigma as well as disrupted emotion processes (e.g., emotion dysregulation) in explaining sexual minority individuals' greater risk of adverse mental health. Strikingly, however, despite the long-proposed theoretical association between stigma and shame (Allport et al., 1954; Hinshaw, 2007), very few studies informed by minority stress theory or the psychological mediation framework have investigated the mediating role of distinct emotions like shame in the stigma-mental health association. The present findings suggest that shame occupies an important role in the association between stigma exposure and mental health and direct existing stigma theories to incorporate this emotional experience.

Results of this study also advance the science of sexual minority mental health. Qualitative research with young sexual minority individuals has found that the resolution of shame, as a learned reaction to stigma, represents a central goal of sexual minority identity development (McDermott et al., 2008). Quantitative research based on stage models of sexual minority identity development has found lower levels of shame to be a marker of healthier identity development (Greene & Britton, 2012). One quantitative study using a community sample of sexual minority adults found self-reported shame to partially account for the cross-sectional association between interpersonal stigma (i.e., sexual orientation victimization and discrimination) and psychological distress (Mereish & Poteat, 2015) and suicidality (Mereish et al., 2019). In a study of 94 sexual minority adolescents, self-reported shame also partially accounted for the cross-sectional association between family rejection and depression (Mereish et al., 2021). Further, clinical accounts of sexual minority identity development have posited that "shame is probably the most fundamental, pervasive, and destructive consequence of stigmatization" with commensurately damaging impact on sexual minority mental health (Odets, 2019, p. 68). The current research offers the first epidemiological investigation of shame and sexual minority individuals' mental health, with results cohering with these previous studies and clinical accounts. In particular, the present research highlights that shame is, in fact, more pervasive among sexual minorities than heterosexuals, and that shame among sexual minorities is partially a function of their greater

experiences of early and ongoing rejection from important others and associated with their subsequent mental health.

Examining the emotional experience of shame alongside internalized stigma, which is a more conceptually heterogeneous construct composed of cognitive, affective, and behavioral components, allowed the present study to compare the relative validity of both. Using a common measure of internalized stigma, we found that it was not significantly related to shame and, unlike shame, did not occupy a significant role in explaining the association between interpersonal minority stress exposures and poor mental health. This finding suggests that shame might represent a more valid construct for capturing sexual minority young adults' experiences that emerge from stigma to predict mental health and therefore a more promising therapeutic target than internalized stigma, at least as it is typically measured. Simultaneously, these results call for future research to further define and validate the internalized stigma construct to specify its component parts and to identify measures that reliably capture those discrete components (Lefevor et al., 2023). Until then, the present results suggest the primacy of the emotional experience of shame, as compared to the cognitive experience of internalized stigma, in sexual minority young adults' psychological responses to interpersonal experiences of minority stress. This finding parallels findings in developmental stress research more broadly showing that early social threats have a greater impact on primarily emotional, as compared to primarily cognitive, neurobiological processes (e.g., Lambert et al., 2017; Sheridan & McLaughlin, 2016).

Methodologically, results of the present study suggest utility in employing multimodal assessments of emotional experiences such as shame in epidemiological studies of mental health among stigmatized populations and contribute initial support for the validity of the implicit measure used here. By its very nature, shame might be psychologically difficult for individuals to self-report. Past research has described shame as the "unspoken emotion" in sexual minority young people's personal narratives, noting that the accurate expression of shame is impeded by the very emotional suppression encouraged by stigma (McDermott et al., 2008). Similarly, clinical accounts of sexual minority mental health treatment note that "shame is often deeply unconscious and remains unrecognized" (Odets, 2019, p. 69). By utilizing a behavioral reaction time task in which individuals are instructed to quickly associate positive and negative emotion words with oneself, the present study was able to capture implicit self-associations to shame. Although shame is typically assessed by self-reported endorsement of shame-related emotional experiences (e.g., "feeling ridiculous"), to the extent that shame represents a characteristic way of viewing the self, it can also be assessed as more implicit emotional self-schemas. The Self-referential Encoding Task (SRET) assesses implicit emotional self-schemas by asking individuals to indicate which in a series of emotional words are self-descriptive while assessing the pairing speed and recall of these words (Dobson & Shaw, 1987). Although the SRET has previously only been used to assess depression-related self-schemas (e.g., Goldstein et al., 2015), we took advantage of its inclusion of shame-related words (e.g., "ashamed," "proud") to create an implicit measure of shame-related self-schemas. One previous study of stigma used an implicit association task to predict outcomes such as perceived legitimacy of stigma toward mental illness (Rüsch et al., 2010). The present study extends the use of implicit measures of shame in the study of stigma by showing that such a measure explains population-level disparities

in mental health outcomes and the association between interpersonal stigma experiences, namely childhood bullying, and those outcomes. Because both the explicit and implicit measure of shame evinced indirect effects within several of the associations examined here, future research might identify particular situations in which the implicit measure might be more useful than self-report. At the same time, use of multi-modal assessments overcomes methodological limitations introduced by same-source bias and therefore lends greater confidence to our results than had we relied solely on self-report of all constructs (Campbell & Fiske, 1959). Further, the indirect effects for the two measures of shame were independent of each other, indicating that each captures unique variance and that therefore both might be useful to include in future studies.

Results of this study should be interpreted in light of several limitations, with implications for future research. First, although our assessment of outcomes sequentially followed our assessment of interpersonal stigma exposures and shame, future repeated assessment of all variables would strengthen causal inference and the tenets of temporal mediation. The present analyses in which baseline mental health was not controlled cannot tease apart the temporal sequence of these variables. At the same time, we encourage future researchers of these associations to consider theory and prior research when determining temporal ordering. For instance, given that prior longitudinal research finds that shame might be more of a consequence rather than cause of mental health outcomes like depression (e.g., Bilevicius et al., 2018; Tilghman-Osborne et al., 2008), future research might wish to model this association recursively. Still, because it is unlikely that shame would affect sexual orientation, lack of repeated assessment of all variables is unlikely to undermine our finding that sexual minority individuals report poorer mental health at least partially as a function of greater experiences of shame.

Second, while the present study focused on three mental health outcomes known to be associated with shame-related tendencies to hide and erase oneself, future research might investigate additional outcomes. In fact, research has found associations between shame and other behavioral outcomes, including substance use problems (Dealing et al., 2005), compulsive sexual behavior (Brem et al., 2017, 2018), and eating disorders (Blythin et al., 2020), all of which are more common among at least some subgroups of sexual minorities compared to heterosexuals (B the et al., 2018; Feldman & Meyer, 2007; Green & Feinstein, 2012). Whether shame might explain sexual orientation disparities in these outcomes remains to be determined.

Third, future research is needed to examine shame as a mechanism linking stigma experiences to mental health in other stigmatized populations, including transgender and gender non-binary individuals and those whose stigma is qualitatively different from that of sexual minority status along relevant dimensions such as concealability and developmental timing (Pachankis, Hatzenbuehler, et al., 2018). Fourth, because the present study assessed individuals across young adulthood, future research might wish to study the emergence of shame earlier in sexual minority identity development by assessing stigma and associated mental health mechanisms across childhood and adolescence. Indeed, assessing the present study's constructs earlier in development (e.g., adolescence) could allow for capturing the initial emergence of excess shame experienced by sexual minorities and therefore more

strongly identifying causal directions from exposure to outcome through this emotional experience. Still, the present study assessed exposures at two distinct developmental time points, one in childhood (i.e., childhood bullying) and the other in young adulthood (i.e., past-year family rejection), to capture early and ongoing experiences that might be related to current shame. Fifth, although the psychological processes we examined should be relatively generalizable across contexts, this study takes place in a distinct national context (i.e., Sweden). Like most other Western societies, Sweden has experienced an increase in societal acceptance and legal protections for sexual minorities over the past few decades (e.g., Hatzenbuehler et al., 2018) and is today one of the most tolerant countries toward sexual minorities in the world (International Lesbian, Gay, Bisexual, Trans, and Intersex Association, 2017). Indeed, sexual minority respondents in this study reported relatively low levels of past-year family rejection and childhood bullying on average, potentially reflecting this broad support. Sweden is also distinct from countries like the US in its robust social safety net, including universal mental health care and relatively low socioeconomic inequality. Future comparative research can determine whether emotional experiences such as shame, and any mediating role in stigma experiences and mental health, might vary across countries, as has been recently examined for internalized stigma and other psychosocial mediators (Pachankis et al., 2021).

Sixth, future studies might use more comprehensive assessments of the stigma exposures and shame examined here. For instance, the measure of bullying relied on one item of bullying frequency and was not specific to one's sexual orientation. At the same time, prior research on stigma-based bullying among sexual minorities (Espelage & Swearer, 2003) and the sexual orientation disparity in bullying found here suggests that our measure of general bullying likely captured sexual orientation-based bullying for many sexual minorities. Future research might wish to include more comprehensive measures of stigma-related stressors. Further, the implicit measure of shame relied on two words (i.e., "ashamed" and "proud"). Although this approach produced robust associations with the other study variables, future research might wish to include additional shame-related words (e.g., humiliated, mortified) in implicit measures of this particular construct. Finally, evidence suggests that the composition of the sexual minority young adult population today includes more individuals than in previous years, especially those who identify as bisexual, pansexual, and other plurisexual identities (Pellicane & Ciesla, 2022). Indeed, the majority of the present cohort of sexual minority individuals was bisexual or pansexual. How the distinct composition of this sample might affect associations studied here requires larger samples of sexual minorities across age cohorts suitable for stratified analyses by sexual identity and age.

Given the role of shame in sexual minorities' greater experiences of mental health outcomes, namely depression, social anxiety, and suicidal thoughts, results of this study suggest the need for intervention approaches to prevent the development of shame among sexual minorities and for approaches that reduce chronic shame to improve mental health. Previous research shows that family and school-based interventions to reduce family rejection and childhood bullying can prevent adverse mental health outcomes such as suicidal thoughts among sexual minority young adults (Diamond et al., 2012; Hatzenbuehler & Keyes, 2013; Meyer, 2015; Meyer et al., 2019); results of the present study suggest that such interventions

might work because they prevent or reduce shame. Future intervention research might seek to verify this as an emotional mediator of the effectiveness of these interventions. Results also suggest the importance of assessing shame in depression, social anxiety, and suicidal thoughts among sexual minority individuals seeking mental health services and delivering interventions with efficacy for addressing this emotion target. Emerging research suggests that cognitive-behavioral interventions adapted to address stigma-related stressors among sexual minorities can be efficacious in improving the mental health of this population (Pachankis et al., 2022; Pachankis, McConocha, et al., 2020). Whether these interventions work by reducing shame remains to be explored. Additionally, treatment approaches for the general treatment-seeking population have shown that dialectical behavior therapy is effective in addressing shame (Rizvi & Linehan, 2005) and that baseline levels of shame can dampen benefit from such treatments (Rizvi & Fitzpatrick, 2021). Whether existing treatments like dialectical behavior therapy need specific adaptation for sexual minorities, especially those who are shame-prone, remains to be tested, although case reports suggest the promise of such adaptations for sexual minorities more generally (Cohen et al., 2021). Nonetheless, as long as the source of sexual minority individuals' excess experience of shame lies in upstream sources such as family rejection and childhood bullying, intervention resources should primarily focus on reducing these exposures, thereby placing the burden of change not on the individual but on the systems that perpetuate excess mental health problems among this stigmatized population.

In summary, extending results of prior research (Mereish et al., 2021; Mereish et al., 2019; Mereish & Poteat, 2015), this study's findings emphasize the central role of shame in explaining the sexual orientation disparity in depression, social anxiety, and suicidal thoughts and its indirect role linking mistreatment from families and peers to these subsequent outcomes. Further supporting the central role of shame in sexual minority individuals' experience, shame exerted a stronger indirect effect in the association between interpersonal stigma and adverse mental health than the more commonly measured cognitive experience of internalized stigma. These results suggest the potential benefit of extending existing stigma theories to consider the role of emotions like shame as characteristic reactions to stigma. This study also highlights the methodological benefit of incorporating innovative measures of psychological experiences, like shame, into population-based studies. Future research is needed to identify whether and how targeted interventions can reduce shame to alleviate population disparities in mental health affecting the stigmatized, including sexual minority populations.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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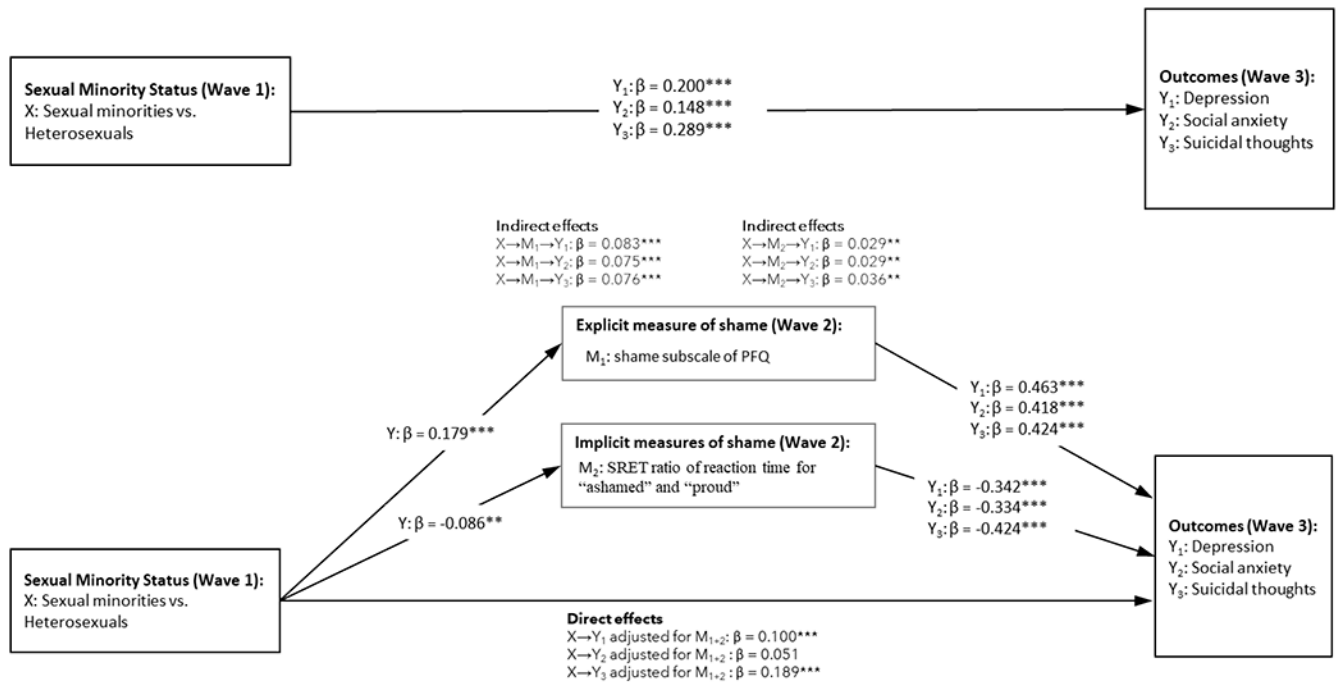


Figure 1.
The role of shame in sexual orientation disparities in mental health outcomes.

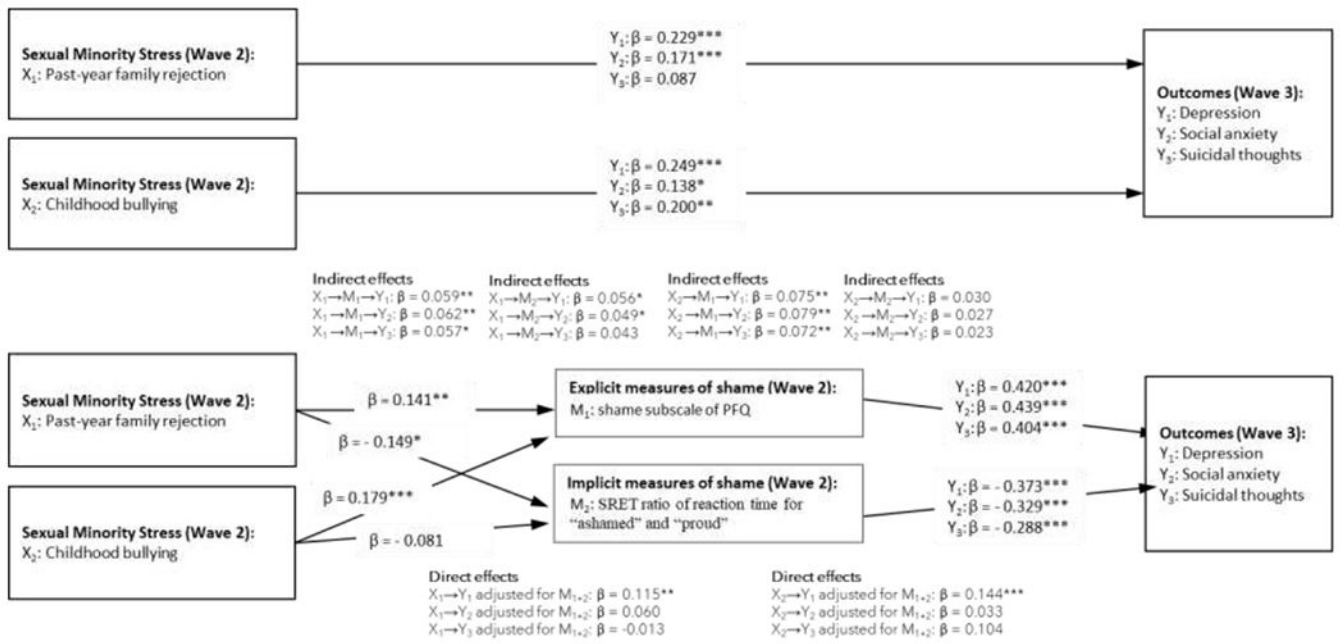


Figure 2. The role of shame in the association between minority stress exposure and mental health outcomes.

Table 1.

Demographic characteristics by sexual orientation among participants in the PLUS cohort (n=1,081).

	Heterosexual n=616	Sexual minority n=465	Sig.	
Sexual orientation identity – n (weighted %)			-	-
Heterosexual	616 (100.0)	0 (0.0)		
Lesbian/gay	0 (0.0)	107 (26.4)		
Bisexual or pansexual	0 (0.0)	332 (68.8)		
Other sexual orientation	0 (0.0)	26 (4.8)		
Mean age - years (SD)	26.3 (5.0)	25.1 (4.9)	$t = 3.56$	$P < .001$
Sex assigned at birth – n (weighted %)			$\chi^2 = 16.66$	$P < .001$
Male	206 (48.3)	97 (37.5)		
Female	409 (48.3)	368 (62.5)		
Gender identity – n (weighted %)			$\chi^2 = 47.27$	$P < .001$
Men	208 (51.8)	99 (37.2)		
Women	408 (48.2)	346 (59.1)		
Gender non-conforming, gender queer, or other gender	0 (0.0)	20 (3.7)		
Income – n (weighted %)			$\chi^2 = 22.66$	$P < .001$
Less than 9,999 SEK/month	161 (26.9)	162 (36.9)		
10,000-29,999 SEK/month	268 (42.0)	223 (45.9)		
30,000 SEK/month or more	186 (31.2)	79 (17.2)		
Education – n (weighted %)			$\chi^2 = 5.30$	$P = .021$
Less than university degree	372 (65.7)	326 (73.2)		
University degree	243 (34.3)	138 (26.6)		
Country of birth – n (weighted %)			$\chi^2 = 0.72$	$P = .395$
Sweden	569 (91.7)	436 (93.3)		
Born outside of Sweden	47 (8.3)	29 (6.7)		

Table 2.

Study variables by sexual orientation.

	Sexual orientation		Sig.	Cohen's <i>d</i> (95% CI)
	Heterosexual	Sexual minority		
	Mean (SD)	Mean (SD)		
Mental health outcomes			<i>t</i> -score	
Depressive symptoms (Wave 3)	14.4 (9.9)	20.1 (11.4)	7.91	<i>P</i> < .001
Social anxiety (Wave 3)	.96 (.74)	1.31 (.93)	6.42	<i>P</i> < .001
	n (%)	n (%)	χ^2	
Suicidal thoughts (Wave 3)	154 (22.5)	201 (48.1)	66.72	<i>P</i> < .001
	Mean (SD)	Mean (SD)	<i>t</i> -score	
Shame				
Explicit shame (Wave 2)	1.21 (0.55)	1.51 (0.66)	7.54	<i>P</i> < .001
Implicit shame (Wave 2)	0.26 (0.45)	0.11 (0.43)	4.60	<i>P</i> < .001