Anti-Bisexual Discrimination, Hazardous Alcohol Use, and Sexual Victimization Among Bi+ Individuals

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ANTI-BISEXUAL DISCRIMINATION, HAZARDOUS ALCOHOL USE, AND SEXUAL

VICTIMIZATION AMONG BI+ INDIVIDUALS

by

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ABSTRACT

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Bi+ individuals are at an elevated risk of sexual victimization compared to other sexual minorities. Hazardous alcohol use and minority stress are two factors proposed to contribute to increased rates of sexual victimization among bi+ individuals. The present study investigated the roles of distal and proximal minority stress, general life stress, negative affect, and hazardous alcohol use as predictors of sexual victimization in a sample of 192 bi+ young adults. Results indicated that experiences of anti-bisexual discrimination were associated with an increased likelihood of experiencing past year rape victimization. A direct, positive association between hazardous alcohol use and past year rape victimization, as well as an indirect effect of anti-bisexual discrimination on past year rape victimization through increases in hazardous alcohol use, was also found. Results from the present study expand our understanding of predictors of sexual victimization among bi+ individuals and support the notion that a shift to focus on distal minority stressors may be more effective in reducing sexual victimization than targeting proximal minority stressors.

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Sexual Victimization Among Bi+ Individuals

Individuals who are sexually attracted to more than one gender (henceforth referred to as bisexual+ or bi+) experience sexual violence victimization at a disproportionate rate over the course of their lifetimes as compared to heterosexual individuals (Katz-Wise & Hyde, 2012). Indeed, even *within* the sexual and gender minority (SGM) communities, bisexual+ individuals experience elevated rates of sexual victimization relative to their monosexual peers. For example, one nationally representative sample (Walters et al., 2013) found the lifetime prevalence rates of sexual victimization for bisexual men were at 47.4%, substantially higher than prevalence rates for heterosexual men (20.8%) and slightly higher than gay men (40.2%). Among sexual minority women, lifetime victimization rates for lesbians (13.1%) were comparable to that of heterosexual women (17.4%), however bisexual women appear to be an especially at-risk group with rates as high as 46.1% (Drabble et al., 2013; Johnson et al., 2016; Walters et al., 2013). In another national U.S. sample, Canan et al. (2019) examined differences in the experience of sexual assault and rape among lesbian, bisexual, and heterosexual women. After controlling for sociodemographic variables, they found that bisexual women reported a greater likelihood of experiencing both lifetime sexual assault victimization as well as repeat victimization relative to lesbian and heterosexual women. Despite the elevated rates of sexual violence among bisexual+ individuals, less is known about *why* they are particularly vulnerable to the experience of sexual victimization.

Ecological Models of Sexual Victimization

Ecological models of sexual victimization vulnerability (Messman-Moore & Long, 2003) and recovery (Campbell et al., 2009; Dworkin et al., 2020) have been proposed to better characterize the antecedents and consequences of sexual victimization. The ecological model has recently been applied to bisexual+ individuals to better understand their increased vulnerability to sexual victimization (Johnson & Grove, 2017). These models suggest that sexual victimization vulnerability and recovery must be understood in the context of their microsystem, or the individual's immediate environment, as well as the exosystem and macrosystems, or the larger social systems and cultural norms that normalize and perpetuate the occurrence of sexual violence and hinder recovery following such an experience. Oppressive belief systems within the macrosystem (e.g., sexism) often co-occur with other oppressive belief systems (e.g., heterosexism, racism) representing a constellation of intolerant belief systems (Aosved & Long, 2006). These intolerant beliefs are perpetuated via socialization and have a downstream effect on individuals' cognitions and behavior demonstrated through prejudice and discrimination. The targeted individuals may experience a specific form of stress referred to as minority stress (Meyer, 2003) in response to such prejudice and discrimination. This minority stress may be particularly important in understanding the disparate rates of sexual victimization among bisexual+ individuals (Johnson & Grove, 2017). Importantly, the sole responsibility for sexual violence lies with the perpetrator. Any comprehensive sexual assault prevention program will need to take a multi-pronged approach that targets sexual assault from multiple angles. This includes identifying victim vulnerability factors that perpetrators may exploit. The intention in exploring such factors is not to place the moral culpability of sexual violence on the survivor, but rather to empower survivors with knowledge of modifiable risk factors that may help explain risk for victimization and that can ultimately be incorporated within prevention programming. Until

prevention programs examining perpetrators demonstrate reliable change in reducing rates of sexual victimization, it will be important to continue examining vulnerability factors (such as minority stress) that may increase risk for victimization.

Minority Stress Theory

Minority stress can be experienced by individuals who are a member of any socially stigmatized groups or identifies with one or more communities that are marginalized within society. Meyer (2003) extended theories of stress (Dohrenwend, 2000; Lazarus & Folkman, 1984) as well as theory on the adverse effects of prejudice and stigma (Allport, 1954) in the development of his Minority Stress Theory. This theory suggests that the social environment – and not just personal events – contribute to a range of negative physical and mental health outcomes (Hatzenbuehler et al., 2009). In Meyer's (2003) seminal paper introducing Minority Stress Theory, he states: "minority stress processes fall along a continuum from distal stressors, which are typically defined as objective events and conditions, to proximal personal processes, which are by definition subjective because they rely on individual perceptions and appraisals" (p. 5). As noted, both distal and proximal minority stressors are collectively referred to as minority stressors, and research has identified minority stressors are unique to sexual minorities (e.g., concealment of identity and internalized heterosexism; Frost et al., 2013; Pachankis, 2015). These minority stressors are outlined in the following sections.

Distal Minority Stressors

Meyer (2003) indicates that distal minority stressors are objective stressors, such that they do not depend on an individual's perceptions or appraisals, with the caveat that the *reporting* of these stressors does depend upon perception and attribution. Distal minority stressors can be acute, such as in the case of a hate crime or being fired as a result of one's perceived sexual orientation.

Distal minority stressors can also be conceptualized as chronic and include everyday discrimination and prejudice (Katz-Wise & Hyde, 2012).

Proximal Minority Stressors

Proximal minority stressors involve a greater extent of self-perceptions and appraisals, and are internal processes presumed to occur following the exposure to distal stressors (Meyer, 2003). Specifically, proximal minority stressors involve a constellation of cognitive and affective experiences that arise as a result of distal minority stressors. Proximal minority stressors identified in the literature include internalized heterosexism (cf. binegativity), described as "the most insidious effect of the minority stress processes upon the individual" (Baiocco et al., 2010), rejection sensitivity, or the anxious expectation of rejection in interpersonal interactions, (Szymanski, Kashubeck-West, & Meyer, 2008), and concerns related to being out versus concealing one's sexual orientation (Meyer, 2003; Pachankis, 2007). Concealment of one's sexual identity may have negative outcomes, including hypervigilance, fear of discovery, psychological distress, feeling of shame and guilt, anxiety, and social isolation (Hatzenbuehler, 2009; Pachankis & Hatzenbuehler, 2013; Pachankis, 2007).

Dual-Identity Framework and Psychological Mediation Framework

The Dual-Identity Framework (Fingerhut et al., 2005) suggests that sexual minority individuals are vulnerable not only to minority stressors, but also to general life stressors. Additionally, the Psychological Mediation Framework (Hatzenbuehler, 2009) has been used to explain negative health outcomes, such as psychological distress and substance use, among sexual and gender minority individuals. According to the Psychological Mediation Framework, discrimination against sexual minorities increases negative affect, which in turn motivates alcohol use to regulate these emotions (Hatzenbuehler, 2009). Indeed, general life stressors

(Mason et al., 2016) and sexual minority specific stressors (Hatzenbuehler et al., 2009) have also been implicated in heightened negative affect among sexual minorities. Importantly, negative affect and alcohol use have been studied as antecedents and consequences of sexual victimization (Messman-Moore & Salim, 2019; Mouilso & Wilson, 2019). This is thought to occur through a cyclical process whereby negative affect and alcohol use increase risk for victimization, which in turn leads to consequences such as negative affect and alcohol use to cope with victimization-related distress.

Minority Stress and Vulnerability to Sexual Victimization

A growing literature has begun to evaluate the role of minority stress in sexual violence vulnerability among bisexual+ individuals. For example, Flanders et al. (2017, 2019, 2020) asked bisexual women to cite explanations for why they are disproportionately targeted by perpetrators. Participants in these studies cited bisexual stigma as a potential reason. One pervasive stereotype of bisexual+ individuals is that they engage in promiscuous sexual relationships and that they are always wanting of sex. Recently, in a mixed-methods study of young bisexual people, Flanders et al. (2020) examined forms of bisexual stigma in relation to reported experiences of sexual violence. This study replicated prior work suggesting that bisexual stigma significantly predicted an increased likelihood of experiencing unwanted sexual contact, attempted and completed verbal coercion, and attempted rape.

Negative Affect and Vulnerability to Sexual Victimization

Negative affect has also been identified as a likely factor increasing vulnerability to sexual victimization. Psychological distress has been shown to be implicated in the ability to perceive risk for sexual victimization (Yeater et al., 2016). Additionally, symptom clusters of posttraumatic stress, such as dissociation, emotional numbing, and reexperiencing symptoms, may compromise

one's ability to adequate perceive and respond to sexual threat (Messman-Moore & Salim, 2019). Moreover, emotion dysregulation, a transdiagnostic psychological construct often implicated in psychological distress, has been shown to increase vulnerability to sexual revictimization (Walsh et al., 2012). Bisexual+ individuals are at a greater risk for depression and anxiety relative to heterosexuals and other sexual minorities (Bostwick et al., 2010). These disproportionate rates of psychological distress among bisexual+ individuals may be in part due to experiences of discrimination and prejudice faced by this population both within the SGM communities as well as in the heterosexual communities. For example, a recent longitudinal study (Dyar & London, 2018) found that among bisexual women, more frequent experiences of anti-bisexual stigma predict prospective increases in psychological distress via changes in visibility management (cf. identity concealment). According to above mentioned models of sexual violence vulnerability and risk, it is possible that bisexual+ individuals may experience elevated rates of sexual victimization, in part, due to their pronounced rates of psychological distress associated with distal and proximal minority stressors.

There is limited evidence of the association between a history of sexual victimization and psychological distress among bisexual+ individuals. In a Canadian sample of lesbian, bisexual and queer women, Logie et al. (2014) found that after controlling for sociodemographic variables, lifetime sexual assault (defined as presence vs. absence) was associated with greater rates of depressive symptoms. Moreover, they found that lifetime sexual assault was positively associated with greater sexual stigma and perceptions that healthcare providers were not comfortable with their sexual orientation. Taken together, research suggests that bisexual+ individuals are at greater risk for psychological distress relative to other sexual minority individuals, minority stressors prospectively predict this elevated distress, and that specifically among survivors, such distress

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occurs in the context of structural factors (e.g., sexual stigma) that may be implicated in elevated rates of psychological distress and maladaptive strategies to manage such distress, such as hazardous alcohol use (Hatzenbuehler et al., 2009) known to increase vulnerability to sexual victimization.

Hazardous Alcohol Use and Vulnerability to Sexual Victimization

Sexual minority women, including bisexual women, are also at risk for hazardous alcohol use and such women with a history sexual violence report significantly higher rates of alcohol use than individuals without such histories (Rhew et al., 2017). López and Yeater (2018) examined substance use rates among sexual minority and heterosexual women and found that sexual minority women reported increased substance use rates compared with heterosexual women. Other research (Gonzales et al., 2016; Hughes et al., 2010) has also demonstrated that sexual minority women report more hazardous drinking and higher rates of binge drinking and use of drugs relative to heterosexual women, with bisexual women reporting even higher rates of drinking and drug use relative to lesbians. Additionally, Gilmore et al. (2014) found that among a sample of emerging adult lesbian and bisexual women, childhood sexual abuse (CSA) severity was positively associated with the likelihood of experiencing more severe alcohol-involved sexual assaults (based on a severity rating of 0 = no history, 1 = unwanted contact only, or 2 = unwanted attempted or completed sex) in adulthood and more drinking behavior. Moreover, Hequembourg et al. (2013) examined the association between risky alcohol use and adult sexual victimization severity (using five mutually exclusive comparison groups including no victimization, unwanted sexual contact, sexual coercion, attempted rape, and rape) among bisexual and lesbian women. They found that severity of adult sexual victimization was associated with a bisexual identity and that, relative to lesbian women, bisexual women reported more severe experiences of sexual victimization and

riskier drinking patterns (as indicated by number of heavy drinking days). Thus, existing research clearly demonstrates that sexual minority women are drinking at significantly higher rates relative to heterosexuals, and that there appears to be an association between alcohol use severity and a history of sexual victimization, a link that is especially pronounced among bisexual women.

Research has also prospectively examined risk factors for incapacitated rape victimization among sexual minority women. In a nationally representative sample, Jaffe et al. (2019) examined heavy drinking and hookups as a risk factor for past year (yes or no) incapacitated rape. They found an interaction between heavy drinking and number of male hookup partners in prospectively predicting incapacitated rape, such that greater frequency of heavy drinking was associated with an increased risk for incapacitated rape among sexual minority women reporting more than one male hookup partner. Importantly, they found that this association was only significant for bisexual women. In another population-based study, Drabble et al. (2013) examined the association between victimization (presence or absence of physical abuse, sexual abuse, or both) in childhood and adulthood and hazardous drinking. They found that bisexual women reported higher rates of hazardous drinking relative to lesbian and heterosexual participants, and suggest this increased vulnerability may be, in part, due to experiences of marginalization from both the heterosexual and SGM communities. Collectively, these studies begin to shed light in to factors that may help explain the disproportionate rate of sexual victimization among bisexual+ individuals.

Given the pronounced rates of sexual victimization and alcohol use among bisexual+ individuals, research has begun to better characterize the potential contribution of minority stress within these associations. McConnell and Messman-Moore (2019) examined the association between CSA and adult sexual victimization among bisexual women, and specifically evaluated whether hazardous drinking mediated this link. They examined the indirect effect of CSA on adult

rape victimization (presence vs. absence) through hazardous drinking, and whether antibisexual prejudice moderated this mediated link. McConnell and Messman-Moore (2019) found support for this moderated-mediated association, such that CSA indirectly related to adult rape victimization through alcohol use at mean and high levels of antibisexual prejudice. These results demonstrate preliminary support for the interrelations between minority stress, hazardous alcohol use, and sexual victimization among bisexual+ individuals.

The Present Study

The literature to date points to various potential contributors to the disparate rates of sexual victimization among bisexual+ individuals. Despite emerging evidence evaluating these factors, to date research has largely focused on either alcohol use exclusively, or alcohol use and negative affect, with only recent work beginning to evaluate the synergistic role of minority stress and hazardous alcohol use in predicting a greater likelihood of reporting sexual victimization. Indeed, even within the literature that has begun to examine minority stress in relation to sexual victimization among bisexual+ individuals, this research does not consider the relative and collective contribution of general life stress in the exacerbation of hazardous alcohol use and negative affect, as emphasized by the Dual-Identity Framework (Fingerhut et al., 2005). The collective examination of these factors may offer a more comprehensive model explaining the increased rate of sexual violence experienced by bisexual+ individuals (Walters et al., 2013). Thus, the present study aimed to evaluate a conceptual model that integrates existing frameworks within (Johnson & Grove, 2017; Messman-Moore & Long, 2003) and outside (Fingerhut et al., 2005; Hatzenbuehler et al., 2008) the sexual violence literature, to determine whether this model may offer insights into factors contributing to sexual violence among bisexual+ individuals, in order to inform sexual violence prevention efforts.

The proposed model is summarized in Figure 1. This model aims to test the indirect effects of distal (anti-bisexual discrimination) and proximal minority stress and general life stress on sexual victimization via positive associations with negative affect and hazardous alcohol use. This model suggests that a greater extent of both minority stress and general life stress will be associated with greater levels of negative affect and hazardous alcohol use, which in turn will be associated with an increased likelihood of reporting sexual victimization. (Note. Detailed information can be found in the *A Priori* Model Hypotheses section.)

Primary Aim

In order to better characterize factors that may explain increased vulnerability to sexual victimization among bisexual+ individuals, the primary aim of this study was to:

1. Evaluate a structural equation model that proposes relations among minority stress variables (i.e., distal and proximal minority stressors), perceived general life stress, negative affect, hazardous alcohol use, and sexual victimization history.

***A Priori* Model Hypotheses**

Based on the model in Figure 1, the hypotheses to be tested are described below.

Hypothesis 1: Minority Stress and General Life Stress will be Related to Hazardous Alcohol Use, Negative Affect, and Sexual Victimization History.

The purpose of the present study was to evaluate whether there is a significant indirect effect of minority stress and general life stress on sexual violence history through hazardous alcohol use and negative affect. Below I have detailed hypotheses for these associations.

Hypothesis 1a: Distal Minority Stress (anti-bisexual discrimination) will be Related to General Life Stress. It was hypothesized that minority stress will covary with general life stress. Higher scores on minority stress will be related to higher scores on general life stress. Therefore,

the *a priori* model reflects a curved bidirectional arrow between anti-bisexual discrimination and general life stress.

Hypothesis 1b: Minority Stress will be Related to Hazardous Alcohol Use and Negative Affect. Minority stress has been shown to be associated with both hazardous alcohol use and negative affect. Given literature supporting the directional link from minority stress to hazardous alcohol use and minority stress and negative affect, the *a priori* model includes straight, unidirectional arrows from both distal (anti-bisexual discrimination) and proximal minority stress to hazardous alcohol use and these minority stress variables to negative affect.

Hypothesis 1c: General Life Stress will be Related to Hazardous Alcohol Use and Negative Affect. As outlined in the above review of the literature, general life stress has been associated with both hazardous alcohol use and negative affect. Given literature supporting the directional links from general life stress to hazardous alcohol use and negative affect, the *a priori* model includes straight, unidirectional arrows from general life stress to hazardous alcohol use and general life stress to negative affect.

Hypothesis 1d: Hazardous Alcohol Use and Negative Affect will be Related to Sexual Victimization History. Considering the well documented drinking to cope literature, as well as the literature documenting the roles of hazardous alcohol use and negative affect in increasing vulnerability to sexual victimization, the *a priori* model includes a straight, unidirectional arrow from negative affect to hazardous alcohol use. This model also includes straight unidirectional arrows from hazardous alcohol use to sexual victimization history and negative affect to sexual victimization history.

Method

Participants

A sample of 192 young adults living in the United States was recruited for the present study via Qualtrics Panel. To be eligible for this study, individuals must have (a) identified their sexual orientation as bi+ (i.e., someone reporting attraction to individuals of more than one gender, including those identifying with various identity labels such as bisexual, pansexual, polysexual, or omnisexual; Dyar et al., 2019) of any gender identity; (b) been aged 18-25 at the time of participation, (c) experienced at least one sexual encounter (ranging from kissing to intercourse) with another person; (d) consumed at least one alcoholic beverage during the past year, and (e) been able to read and understand English.

Measures

Sexual Victimization. Participants were asked to report their sexual victimization histories using the recently modified version of the Sexual Experiences Survey-Victimization Version Revised (SES-SFV; Koss et al., 2007) by Canan et al. (2019). The SES-SFV is a behaviorally specific questionnaire assessing a series of unwanted sexual experiences separately for the past 12 months and since 14 until one year ago. Participants are asked to report on the frequency with which they have experienced five types of sexual experiences (ranging from unwanted kissing and fondling to completed penetration) and the use of seven different tactics by a perpetrator (e.g., verbal coercion and pressure, intoxication, threat, force). Each of these items are rated by respondents on a scale with anchors of 0 = *happened 0 times*, 1 = *happened 1 time*, 2 = *happened 2 times*, 3-9 = *happened three to nine times*, 10+ = *happened ten or more times*. The use of the original SES and the revised SES-SFV has been supported across many studies, with recent work supporting the reliability and validity of this revised version of the survey (Johnson, Murphy, & Gidycz, 2017). Canan et al. (2020) examined the SES-SFV using lesbian, bisexual, and heterosexual women participants and found that lesbian and bisexual survivors reported

perpetration tactics at comparable rates to heterosexuals, concluding that the SES-SFV satisfactorily assesses sexual victimization among sexual minorities. There is also prior empirical support for the use of the SES-SFV among gender diverse bisexual individuals (Flanders et al., 2020).

Past year rape victimization was used as the primary index of sexual victimization and was defined as oral, anal, or vaginal penetration by force, threat of force, or when participants were unable to consent because of intoxication (i.e., they indicated having experienced at least one of these nine specific items one or more times). Eight participants were unable to be classified due to missing data. Of the remaining 184 participants, 57 (31.0%) reported experiences that met our operational definition of rape victimization.

Hazardous Alcohol Use. Alcohol use severity was assessed using the Alcohol Use Disorder Identification Test (AUDIT; Saunders et al., 1993). The AUDIT is a 10-item self-report measure designed to assess excessive drinking and risk for alcohol use disorder. The first 8 items on the AUDIT are responded to on the following ordinal scale: 0 (*Never*) 1 (*Monthly or less*) 2 (*2-4 times a month*) 3 (*2-3 times a week*) 4 (*4 or more times a week*). The last two items ask whether and, if so, when participants have been injured as a result from drinking and whether another person has expressed concern or suggested cutting down on drinking. These items are responded to on the following ordinal scale: 0 (*No*) 2 (*Yes, but not in the last year*) and 4 (*Yes, during the last year*). Items are summed and scores range from 0 to 40. Higher scores indicate greater severity of alcohol use. Scores less than 8 represent a low level of alcohol problems, scores 8 to 15 reflect a medium level, and scores 16 or higher reflect a high level of alcohol problems (Babor et al., 1992).

Coping with Discrimination. The Drug and Alcohol Use Subscale of the Coping with Discrimination Scale (CDS; Wei et al., 2010) was used to measure methods of coping with exposure to discrimination. Example items include, "I try to stop thinking about it by taking alcohol or drugs" and "I do not use drugs or alcohol to help me forget about discrimination" (reverse scored). Items are responded to on a 6-point Likert-type scale ranging from 1 (*never like me*) to 6 (*always like me*). Higher scores indicate greater use of drugs and alcohol to cope with discrimination. The CDS has evidenced good internal consistency reliability and adequate-to-strong test-retest reliability (Wei et al., 2010) and construct validity within prior samples of sexual (Ngamake et al., 2014) and gender minority (Puckett et al., 2019) individuals. The CDS instructions were adapted to explicitly ask participants to respond to the items with regard to how much each strategy best describes their way of coping with discrimination related to their sexual orientation.

Negative Affect. Global negative affect was examined using the 21-item version of the Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995). The DASS was developed to assess the negative emotional states of depression, anxiety, and stress. Participants are instructed to read items related to these emotional states (e.g., "I found it hard to wind down") and asked to indicate the frequency of symptoms within the last week on a 4-point Likert-type scale ranging from 0 (*did not apply to me at all*) to 3 (*Applied to me very much or most of the time*). Scores were summed and multiplied by a factor of 2 for comparability with the 42-item version of the instrument, and higher scores indicate greater levels of negative affect. The use of the DASS has been supported in both clinical and non-clinical samples (Antony et al., 1998; Henry & Crawford, 2005).

Proximal Minority Stress. Proximal minority stress was assessed via a latent variable comprised of two measures that collectively represent the construct of proximal minority stress as outlined by Meyer (2003). Indicators of proximal minority stressors outlined by Meyer et al. (2003) include sexual orientation concealment and internalized binegativity.

Sexual Orientation Concealment/Outness. Participants' levels of sexual orientation concealment/outness was assessed using five items from the Nebraska Outness Scale (NOS; Meidlinger & Hope, 2014). Participants were asked to indicate the proportion of groups aware of the participant's bi+ identity (e.g., immediate family, friends, strangers). Items were responded to on a Likert-type scale ranging from 0 = *0%* to 10 = *100%*. Scores were averaged, with higher scores indicating a greater level of disclosure. There is good internal consistent for the NOS (Meidlinger & Hope, 2014).

Internalized Binegativity. Internalized binegativity was assessed using the 5-item Internalized Binegativity subscale of the Bisexual Identity Inventory (Paul et al., 2014). This subscale assesses a series of negative affective responses to being bisexual (e.g., "My life would be better if I were not bisexual"). Participants were instructed to indicate the degree to which they agree with each item on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Item responses were averaged, and higher scores reflect greater internalized binegativity. Prior psychometric examinations support the use of the BII (Paul et al., 2014).

Distal Minority Stress. Distal minority stress was assessed using the brief version of the Anti-Bisexual Experiences Scale (ABES-BV; Dyar et al., 2019). The ABES-BV is an 8-item self-report measure and abbreviated version of the original 16-item Anti-Bisexual Experiences Scale by Brewster and Moradi (2010). The original instrument was developed to assess

perceived experiences of anti-bisexual prejudice and assesses three domains of monosexism, including *sexual orientation instability* (e.g., "People have acted as if my bisexuality is only a sexual curiosity, not a stable sexual orientation"), *sexual irresponsibility* (e.g., "People have assumed that I will cheat in a relationship because I am bisexual"), and *general hostility* (e.g., "Others have treated me negatively because I am bisexual"). Participants were instructed to report the frequency with which they have encountered prejudicial experiences from lesbian/gay and heterosexual individuals. Participants responded to each item on a 6-point Likert-type scale ranging from 1 (*never)* to 6 (*almost all of the time*). Higher scores indicate more frequent experiences of anti-bisexual discrimination. Recent work indicates that the ABES-BV contains the same factor structure as the original ABES (Dyar et al., 2019) and there is psychometric support for both instruments (Brewster & Moradi, 2010; Dyar et al., 2019).

Life Stress. Perceived stress was examined using the Perceived Stress Scale (PSS; Cohen et al., 1983). The PSS is a 10-item self-report measure designed to assess perceptions of stress within the past month. Items are responded to on a 5-point Likert-type scale ranging from 0 (*never*) to 4 (*very often*) and summed to obtain a total scale score. Higher scores indicate greater perceptions of stress. Prior work supports the use of the PSS (Hughes, 2007; Kohn & Gurevich, 1993).

Procedure

Participants were recruited online via Qualtric Panels (Qualtrics, 2020). Qualtrics Panel is an online market research panel that allows for access to a broad sample of individuals across the U.S. with known demographic characteristics that allow researchers to identify a population of individuals based on a characteristic of interest (e.g., self-identified sexual orientation) who are interested in participating in research. A growing literature suggests that participants and data

obtained via online platforms are nearly indistinguishable from those recruited via social media

and in-vivo behavioral testing (Casler et al., 2013). Additionally, a recent study examining

trauma-related constructs found self-report data collected via online panels to be comparable to

more traditional (e.g., undergraduate and treatment-seeking) samples (Engle et al.,

2019). Furthermore, there is evidence supporting the feasibility of recruiting individuals

engaging in hazardous alcohol consumption via online panels (Cunningham et al.,

2017). Existing literature therefore supports the feasibility of using online panels as a recruitment

source. Response validity indicators were used (Chmielewski & Kucker, 2019; Shorey, personal

communication, January 15, 2021) to enhance data quality and were included in the present

study.

A brief description of the study was distributed online for potential participants to read

and participate if interested. Those meeting the screening criteria were directed to

a separate Qualtrics survey containing an informed consent form for the main study

survey. Participants agreeing to participate in the main study were directed to the main study

survey. The main survey took approximately 30 minutes to complete and

contained questionnaires assessing the primary research questions in the present study, as well as

a series of secondary measures not included in the current project. Participants were

compensated according to a rate of approximately $8 in the form of gift cards or other desired

forms of compensation consistent with Qualtrics Panel's panel provider guidelines.

Data Analytic Strategy

Structural Equation Modeling

The current study used Structural Equation Modeling (SEM) to test the conceptual model

predicting sexual victimization vulnerability among bi+ individuals. The dataset was prepared

using Statistical Package for the Social Sciences (SPSS) and subsequently processed in Mplus Version 8.5 (Muthén & Muthén, 2020) to evaluate the model. Bootstrapping with 10,000 iterations and a 95% confidence interval was applied to examine the significance of specific indirect, or mediational, effects.

Assumptions of SEM

Skewness and Kurtosis. Variables were assessed for skewness (defined as values exceeding two standard errors of skewness) and kurtosis (defined as values exceeding two standard errors of kurtosis) according to recommended criteria (George & Mallery, 2010). No skewness or kurtosis was observed among study variables (see Table 2).

Multicollinearity. Multicollinearity occurs in the event of strong linear correlations among variables. A threshold of .7 or higher in magnitude indicates multicollinearity (Dormann et al., 2013). No multicollinearity was observed among study variables (see Table 3).

Operational Definitions of SEM Indices (See Figure 1)

Observed Variables (Manifest Variables). Observed variables reflect categorical, continuous, or ordinal variables that are represented via total sum scores or mean scores within a dataset. There were six observed variables in the proposed model: distal minority stress, life stress, proximal minority stress, hazardous alcohol use, negative affect, and sexual victimization. These variables are depicted as large rectangles in Figure 1.

Latent Variables (Hypothetical Constructs). Latent variables reflect constructs that are not directly observed but rather are hypothesized to exist and measured indirectly. Latent variables are typically comprised of multiple items or measurements. The model contained one latent variable, proximal minority stress, which is depicted by an oval in Figure 1. This latent variable was comprised of scores on self-report measures assessing sexual

orientation concealment and internalized binegativity, which are depicted as small rectangles in Figure 1.

Structural Model. Causal links, or paths for cross-sectional data, among observed and latent variables represent the structural model. The conceptual model represents a cross-sectional design intended to provide a first attempt at characterizing the associations among the current study variables that may inform future longitudinal research.

Estimation. Estimation techniques within SEM were used to establish estimates of free parameters in the model. This was done in an iterative manner to produce a covariance matrix. This process aimed to minimize the difference between an observed matrix and implied covariance matrix. The iterative process concluded at the point at which the difference between these matrices became minimized.

Evaluation. The model was assessed for model fit. *Overall fit* was determined via a chi-square test (χ^2). Models with good fit produce χ^2 values that are smaller than degrees of freedom. A model that is determined to have a poor fit if the χ^2 value is larger than the degrees of freedom (Ullman, 2007). *Goodness of fit* was determined via the following indices: Non-normed fit index (NNFI)/tucker-lewis index (TLI), comparative fit index (CFI), and root mean square error of approximation (RMSEA). The CFI, NNFI, and TLI were be used to compare the fit of the estimated model relative to the null model. CFI and NNFI/TLI values ≥ 0.95 indicate a good fit (Ullman, 2007), and ≥ 0.90 indicate an acceptable model fit. RMSEA compares model fit based on degrees of freedom and reflects an index of discrepancy per degree of freedom in the model. Lower RMSEA values indicate that each parameter explains a large amount of variance and reflect a better fit. RMSEA values ≤ .05 indicate a very good fit, and values between .05 to .08 reflect a reasonably good fit (Ullman, 2007).

Handling Missing Data

In order to minimize accidental missing data, the survey was programmed to identify any items that were not answered and offered participants the opportunity to provide the missing information or to specify they chose to not provide it. Because systematic removal of participants may introduce a biased estimation of model fit, particularly if missing values are not missing completely at random (MCAR), Mplus uses techniques to handle missing data. Full information maximum likelihood (FILM; Kline, 2012), a common technique to handle missing data, was implemented. FIML estimates values for missing data based on observed data patterns. FIML produces less biased parameter estimates compared to alternative methods used to treat missing data (e.g., listwise or pairwise deletion) and single imputation. Moreover, FIML allows the full sample to be retained (Kline, 2012).

Power Analysis, Timeline, Sample Size, and Feasibility.

A power analysis was conducted using the SEM sample size calculator by Soper (2020) to identify the recommended minimum sample size needed for the current study. With a level of significant set at .05, the conceptual model in Figure 1 containing one latent variable and six observed variables (see "Operational Definitions of SEM Indices" in the Data Analytic Strategy for detailed explanation of the differences between latent and observed variables) recommended a minimum sample size of 200 to detect an effect size of 0.2 with 80% statistical power (Soper, 2020). Thus, our sample of 192 approached, but did not quite achieve our desired sample size. A post-hoc power analysis revealed an achieved power of .20, given an alpha of .05, a sample size of 192, effect size of .06, and 3 degrees of freedom (Moshagen & Erdfelder, 2016).

Results

Demographics

Table 1 presents the full list of demographics for the study sample. One hundred thirty-three (69.3%) of the total sample self-identified as bisexual, followed by pansexual (21.9%), queer (6.8%), fluid (1.0%) and different identity (1.0%). The mean age was 21.88 ($SD = 2.18$), with ages ranging from 18 to 25. With respect to gender, participants predominantly self-identified as woman (79.7%), followed by non-binary (9.4%), man (4.2%), genderqueer (3.6%), trans man (1.0%), trans woman (1.0%), and different identity (1.0%). Regarding race, 122 (63.5%) identified as White or Euro-American, followed by multiracial (13.5%), Black, Afro-Caribbean, or African American (9.4%), Latino or Hispanic American (7.8%), East Asian or Asian American (3.1%), South Asian or Indian American (1.0%), Native Hawaiian or Pacific Islander (0.5%) and prefer not to answer (1.0%). Regarding ethnicity, 156 (81.3%) identified as not Hispanic/Latino/a/x/e, followed by Hispanic/Latino/a/x/e (16.1%) and prefer not to answer (2.6%). With respect to relationship status, 31.8% of participants identified as single, followed by in a committed relationship with one partner (29.2%), dating one person (19.8%), married (6.3%), dating more than one person (4.7%), cohabiting (3.1%), domestic partnership (2.1%), in a committed relationship with more than one partner (1.6%), and not listed (1.6%).

Descriptive Statistics for Sexual Victimization History

Past year rape victimization, the primary dependent variable in the subsequent analyses, was reported by 31% of the 184 participants who provided adequate SES data. Participants were classified according to the most severe tactic used. Accordingly, prevalence rates by tactics are as follows: Taken advantage of when too drunk or out of it to stop what was happening ($n = 15$; 26.3%), threats of physical harm ($n = 8$; 14%) and using force or having a weapon ($n = 34$; 59.6%). There were no significant differences in life stress, proximal or distal minority stress, coping with discrimination, hazardous alcohol use, or negative affect among these groups of rape

survivors. Thus, a dichotomous variable representing presence vs. absence of past year rape victimization was used in the current model.

In addition to past year rape victimization, lifetime prevalence of rape victimization (defined as any time since the age of 14) was examined. The rate of lifetime rape victimization in the current sample was 46.7% ($n = 84$). Forty-one participants (22.8% of the 180 participants with adequate data) reported rape victimization since age 14 until one year ago *and* within the past year; 29 (16.1%) reported rape victimization since age 14 until one year ago *but not* within the past year; 14 (7.8%) reported past year rape victimization *but not* since age 14 until one year ago; and 96 (53.3%) reported no rape victimization since age 14 until one year ago *nor* within the past year.

Missing Data for SEM Analysis

Cases with missing variables were not removed to avoid biased estimation. Mplus used full information maximum likelihood (Kline, 2012), a procedure for estimating missing data values based on patterns observed from the data. This approach allowed us to retain the full sample. Table 1 presents descriptive statistics for each variable included in the SEM analyses along with the number (percent) of missing cases. As can be seen, missing data was minimal.

Assumptions of SEM

Skewness and Kurtosis. Table 2 presents values for indices of skewness and kurtosis, along with descriptive statistics for each variable included in the SEM analysis. Values of two standard errors of skewness or higher indicate skewness and values of two standard errors of kurtosis or more suggest a difference from mesokurtic distributions, indicating significant kurtosis. In the current study, all variables were within acceptable ranges of skew and kurtosis.

Multicollinearity. Table 3 presents bivariate correlations among study variables. Results

revealed small ($r = .09$) to strong ($r = .63$) correlations among study variables. Correlations of r

$\geq |0.7|$ were used as a threshold for determining multicollinearity (Dormann et al., 2013). None

of the variables in our model indicated multicollinearity, and therefore all were used in analysis.

Of the 21 correlations reported in Table 3, 14 were significant ($p < .05$), with values ranging

between 0.15 – 0.63. Of particular relevance to our specific hypotheses, contrary to hypothesis

1a, minority stress and general life stress were not significantly correlated. Consistent with

hypothesis 1b, minority stress, both anti-bisexual discrimination and internalized binegativity,

was significantly related to both hazardous alcohol use and negative affect; with regard to

hypothesis 1c, general life stress was significantly related to negative affect, but not hazardous

alcohol use; and consistent with hypothesis 1d, both hazardous alcohol use and negative affect

were positively correlated with past year rape victimization.

Model Results

      Model Modification – *Dropping Latent Variable of Proximal Minority Stress.* See

Figure 2 for a graphical representation of the second model. Considering a low and non-

significant loading (-.07) of outness onto the proximal minority stress latent variable, we decided

to remove outness from the model and modified the proximal minority stress variable to an

observed variable representing the average score of the Internalized Binegativity subscale of the

Bisexual Identity Inventory (Paul et al., 2014).

      Model 2 – Path Analysis (Measured Model). See Figure 3 for a graphical

representation of our second model, wherein we removed the latent variable. This model

converged and adequately fit the data. Specifically, χ^2 (3, $N = 192$) $= 4.75$, $p = .19$; RMSEA =

0.06, 90% confidence interval (0.000, 0.144); CFI = 0.99; TLI = 0.96. For interpretation

purposes, numbers provided in the figures represent standardized beta coefficients and standard errors. Solid lines reflect significant direct effects. Dashed lines reflect non-significant direct effects.

The model indicated significant positive associations between anti-bisexual discrimination and a) internalized binegativity ($\beta = 0.28$, $p < .001$), b) hazardous alcohol use ($\beta = 0.18$, $p = .03$), c) and past year rape victimization ($\beta = 0.21$, $p = .002$). The model further indicated significant positive associations between life stress and negative affect ($\beta = 0.63$, $p < .001$) and between hazardous alcohol use and past year rape victimization ($\beta = 0.48$, $p < .001$) Moreover, there was a significant indirect effect of anti-bisexual discrimination on past year rape victimization through hazardous alcohol use ($\beta = 0.09$, $p = .04$, 95% CI$_{95}$ [0.013, 0.17]). There were no other significant direct or indirect effects observed in the model.

Discussion

The goal of the present study was to empirically test a conceptual model of vulnerability factors for sexual victimization among bi+ individuals. The present study investigated the roles of distal and proximal minority stress, general life stress, negative affect, and hazardous alcohol use as predictors of sexual violence victimization among a sample of bi+ young adults. In general, the findings of the present study contribute to and extend literature on the associations between minority stress, alcohol use, and sexual victimization among bi+ individuals.

Key Findings

Results of the present study replicate and extend the literature on the associations between minority stress, alcohol use, and sexual victimization among bi+ individuals. The current study found that experiences of anti-bisexual discrimination was associated with an increased likelihood of experiencing past year sexual victimization. These results replicate work

conducted by Flanders et al. (2020) who found that bisexual stigma significantly predicted an increased likelihood of experiencing sexual violence.

Results of the current study also extend research on alcohol use and sexual violence victimization among bi+ individuals. We found a direct association between hazardous alcohol use and past year rape victimization, such that greater hazardous alcohol use was associated with an increased likelihood of reporting past year rape victimization. These results are consistent with research documenting an association between frequency of heavy drinking and risk for rape victimization among bisexual women (Jaffe et al., 2019).

Results of the current study indicate that general life stressors are associated with increased negative affect among this sample of bi+ individuals. These results are consistent with previous research on the association between general life stressors and heightened negative affect among sexual minorities (Mason et al., 2016). There was not support, however, for a direct link between life stress and hazardous alcohol use. Furthermore, there was not a significant association between general life stress and anti-bisexual discrimination, possibly suggesting that these experiences are statistically orthogonal.

There are limitations that need to be considered in light of the findings from the present study. Given the cross-sectional nature of the data, it is not possible to definitively establish the temporal order of the development of associations among anti-bisexual discrimination, internalized binegativity, negative affect, hazardous alcohol use, and sexual victimization. For example, although it is possible that negative affect and hazardous alcohol use lead to sexual victimization, it is possible that both negative affect and hazardous alcohol use reflect consequences of sexual victimization. Similarly, although it is possible that anti-bisexual discrimination leads to hazardous alcohol use, perhaps hazardous alcohol use may predispose

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individuals to experiences of anti-bisexual discrimination. Thus, future research should investigate the temporal associations among the present study variables to disentangle the directionality of the associations observed in the model. Advances in methodology, including the use of ambulatory assessment (e.g., Ecological Momentary Assessment) may provide an avenue for future examination of the temporal nature of these associations. Another limitation includes the demographic composition of the present sample. The sample was predominantly White, and therefore results of the present study may not reflect the lived experience of Black, Indigenous, and survivors of color. Bi+ individuals with intersecting marginalized identities (e.g., Black bisexual women) may experience a unique form of intersectional minority stress related to racism and monosexism. Future research should aim to incorporate a larger sample size to evaluate the current model among individuals of differing racial and ethnic identities.

Implications and Future Directions

The current model suggests that anti-bisexual discrimination is directly associated with a history of past year rape victimization, as well as indirectly via increases in hazardous alcohol use. Indeed, there was no evidence provided for the contribution of proximal minority stress (i.e., internalized binegativity) in explaining increased vulnerability to sexual victimization. These results suggest that prevention programming targeting distal minority stressors, such as hostile experiences directed towards lesbian/gay and heterosexual individuals, may be more potent in reducing vulnerability to sexual victimization than targeting proximal minority stressors, such as internalized binegativity. It might be that anti-bisexual discrimination is directly associated with past year rape victimization history, such that perpetrators target individuals specifically due to their bi+ identities. Alternatively, experiences of anti-bisexual discrimination may increase alcohol use in order to cope with minority stress. Such increased alcohol use may predispose

individuals to an increased likelihood of experiencing sexual victimization. However, it should be noted that at least in the present sample, elevations in internalized binegativity do not explain the link between anti-bisexual discrimination and hazardous alcohol use. That is, internalized negative beliefs about one's bi+ identity are not predicting hazardous alcohol use in the present sample. Rather, distal minority stressors, such as hostility directed at lesbian/gay and heterosexual individuals is exerting a direct effect on increased hazardous alcohol use. Importantly, this finding supports the notion that a shift to focus on distal minority stressors may be more effective in reducing sexual victimization than targeting proximal minority stressors. These findings may further empower bi+ survivors by targeting discrimination experiences as opposed to targeting more internalized experiences of discrimination, which may be seen as disempowering and not survivor centric.

The current study examined perceptions of general life stress as opposed to alternative approaches (e.g., examining discrete major life stressors over a specified time). Future research should continue to examine the relative contribution of minority-specific stressors and general life stressors in the increased vulnerability to sexual violence victimization among bi+ individuals. The current study did not find a significant direct association between negative affect and sexual victimization, which is in contrast with previous research (Yeater et al., 2016). It might be that other aspects of psychological distress (e.g., dissociation, emotional numbing) may be more salient factors compromising individual's ability to effectively perceive and respond to a sexual threat (Messman-Moore & Salim, 2019). Alternatively, difficulties in emotion regulation may alter one's ability to execute necessary behavioral responses in the face of sexual threat. Future research would benefit from examining these constructs to elucidate how psychological distress increases vulnerability to sexual victimization.

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Tables

Table 1

Demographic Information for Sample (N = 192)

	n (%)	*M* (*SD*)	Range	Missing: n (%)
Gender	-	-	-	0 (0%)
Man	8 (4.2%)	-	-	-
Woman	153 (79.7%)	-	-	-
Transgender man (trans man)	2 (1.0%)	-	-	-
Transgender woman (trans woman)	2 (1.0%)	-	-	-
Genderqueer	7 (3.6%)	-	-	-
Non-binary	18 (9.4%)	-	-	-
Different identity	2 (1.0%)	-	-	-
Sexual Orientation	-	-	-	0 (0%)
Bisexual	133 (69.3%)	-	-	-
Pansexual	42 (21.9%)	-	-	-
Queer	13 (6.8%)	-	-	-
Fluid	2 (1.0%)	-	-	-
Different identity	2 (1.0%)	-	-	-
Age	192 (100%)	21.88 (2.18)	18-25	0 (0%)
Race	-	-	-	2 (1.0%)
Black, Afro-Caribbean, or African American	18 (9.4%)	-	-	-
East Asian or Asian American	6 (3.1%)	-	-	-
Latino or Hispanic American	15 (7.8%)	-	-	-
Native Hawaiian or Pacific Islander	1 (0.5%)	-	-	-
South Asian or Indian American	2 (1.0%)	-	-	-
White or Euro-American	122 (63.5%)	-	-	-
Multiracial	26 (13.5%)	-	-	-
Prefer not to answer	2 (1.0%)	-	-	-
Ethnicity	-	-	-	5 (2.6%)
Hispanic/Latino/a/x/e	31 (16.1%)	-	-	-
Not Hispanic/Latino/a/x/e	156 (81.3%)	-	-	-
Prefer not to answer	5 (2.6%)	-	-	-
Relationship status	-	-	-	0 (0%)
Single	61 (31.8%)	-	-	-
Dating one person	38 (19.8%)	-	-	-
Dating more than one person	9 (4.7%)	-	-	-
In a committed relationship with one partner	56 (29.2%)	-	-	-
In a committed relationship with more than one partner	3 (1.6%)	-	-	-
Cohabitating	6 (3.1%)	-	-	-
Married	12 (6.3%)	-	-	-
Domestic partnership	4 (2.1%)	-	-	-
Not listed	3 (1.6%)	-	-	-

Education				1 (0.5%)
Some high school	11 (5.8%)	-	-	-
Graduated high school (or equivalent)	57 (29.8%)	-	-	-
Some college, but no college degree	65 (34.0%)	-	-	-
Associate's degree	15 (7.9%)	-	-	-
Bachelor's degree	32 (16.8%)	-	-	-
Some graduate school, but no graduate degree	4 (2.1%)	-	-	-
Graduate degree	7 (3.7%)	-	-	-
Prefer not to answer	1 (0.5%)	-	-	-
Household Income	-	-	-	11 (5.7%)
Under $12,000	25 (13.8%)	-	-	-
$12,000 - $23,999	36 (19.9%)	-	-	-
$24,000 - $44,999	46 (25.4%)	-	-	-
$45,000 - $74,999	38 (21.0%)	-	-	-
$75,000 - $119,999	22 (12.2%)	-	-	-
$120,000 or more	14 (7.7%)	-	-	-
Prefer not to answer	11 (5.7%)	-	-	-

Table 2

Descriptive Statistics for Variables in Model

	M (SD)	Min	Max	Median	Mode	Skewness	Kurtosis	Missing: n (%)
Anti-bisexual Discrimination	0.97 (0.85)	0	4.56	0.75	0	0.966	0.718	1 (0.5%)
Life Stress	25.48 (7.32)	3.00	39.00	26.00	26.00	-0.643	0.261	1 (0.5%)
Internalized Binegativity	2.02 (1.14)	1.00	5.80	1.60	1.00	1.253	0.986	0 (0%)
Coping with Discrimination	8.24 (7.14)	0	25.00	8.00	0	0.366	-1.093	2 (1.0%)
Negative Affect	60.02 (32.15)	0	126	64.00	38.00	-0.216	-0.890	2 (1.0%)
Hazardous Alcohol Use	7.50 (6.43)	0	31.00	5.00	2.00	1.387	1.504	0 (0%)
Sexual Victimization	N/A	0	1	0	0	0.823	-1.323	8 (4.2%)

Table 3

Intercorrelations of Study Variables

	1	2	3	4	5	6	7
1. Anti-bisexual discrimination	-						
2. Life Stress	.12	-					
	.11						
	190						
3. Internalized binegativity	.28**	-.06	-				
	.001	.43					
	191	191					
4. Coping with Discrimination	.27**	.26**	.08	-			
	.001	.001	.29				
	189	189	190				
5. Hazardous Alcohol Use	.23**	.12	.16*	.44**	-		
	.001	.10	.03	.001			
	191	191	192	190			
6. Negative Affect	.15*	.63**	.03	.29**	.17*	-	
	.04	.001	.70	.001	.02		
	189	189	190	188	190		
7. Sexual victimization	.31**	.09	.19*	.37**	.47**	.15*	-
	.001	.25	.01	.001	.001	.04	
	183	183	184	182	184	183	

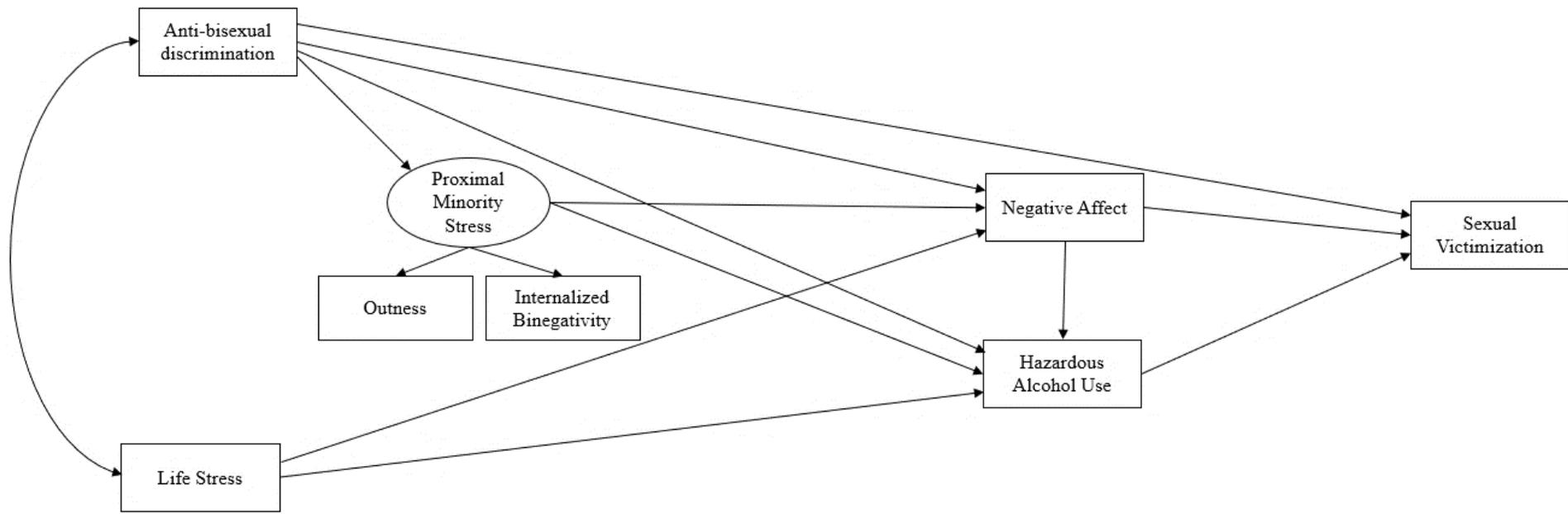*Note*. Categorical variable: Sexual victimization. * = $p < .05$; ** = $p < .01$.

Figures

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Figure 1. Conceptual model (model 1). This figure illustrates the *a priori* conceptual model, derived from literature review and theory.
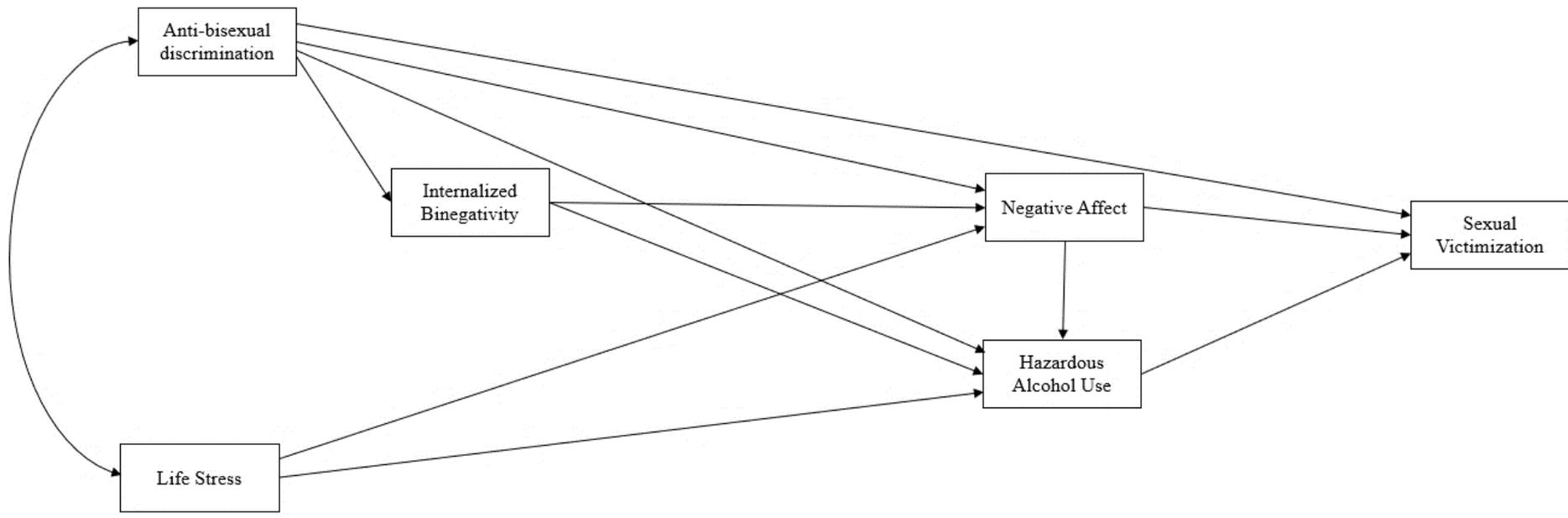
Figure 2. Model 2. This figure illustrates the revised conceptual model, removing the latent construct of proximal minority stress.
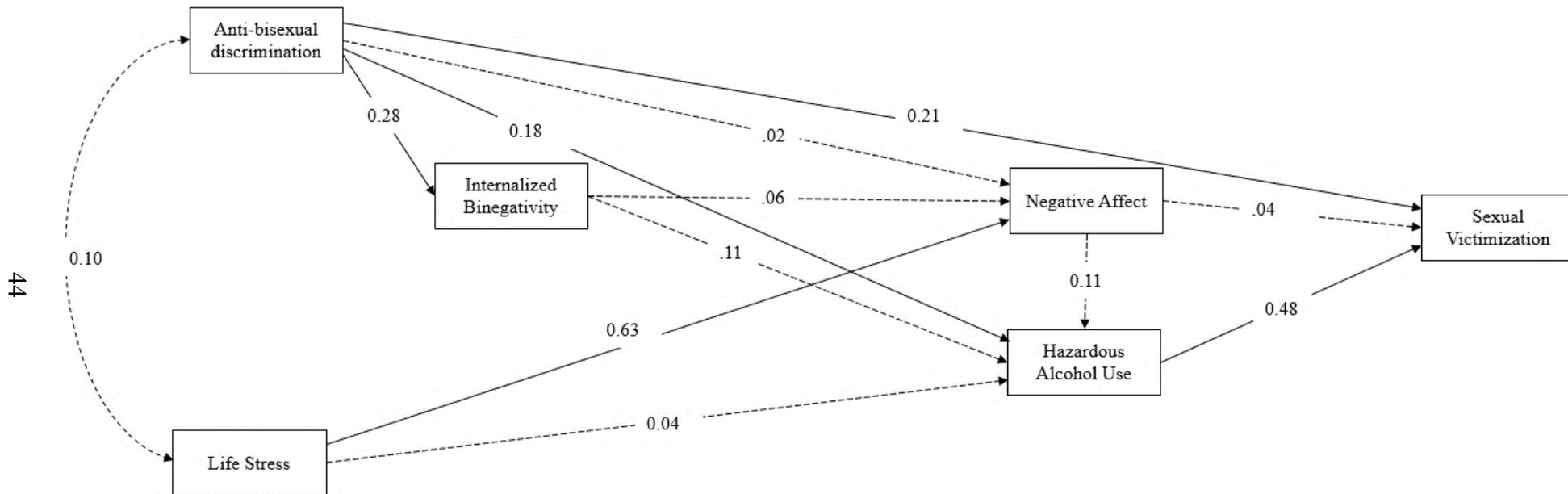
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Figure 3. Model 2. This figure represents a path analysis with standardized estimates, after removing the latent proximal minority stress construct. Paths represented with solid lines reflect significance with $p < .05$; dashed lines reflect non-significant paths. Model indices: χ^2 (3, $N = 192$) = 4.75, $p = .19$; RMSEA = 0.06, 90% confidence interval (0.000, 0.144); CFI = 0.99; TLI = 0.96.