



Published in final edited form as:

*Subst Use Misuse*. 2018 June 07; 53(7): 1146–1157. doi:10.1080/10826084.2017.1400565.

## Sexual Coercion, Drinking to Cope Motives, and Alcohol-related Consequences among Self-identified Bisexual Women

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### Abstract

**Background**—Given higher sexual victimization and greater alcohol use among bisexual women, a critical public health challenge is to understand within-group variation that may heighten or explain these associations in bisexual women.

**Objectives**—The present study tested a moderated mediation model in which sexual coercion was hypothesized to be associated with alcohol-related consequences via drinking to cope motives in self-identified bisexual women who reported at least occasional binge drinking. Negative affect was hypothesized to moderate the sexual coercion-drinking to cope motives association.

**Methods**—Participants were a community sample of 107 self-identified bisexual women (age  $M = 20.97$ ,  $SD = 2.11$ ) who completed an online survey and reported at least one binge drinking episode as well as engaging in sexual activity in the past 30 days.

**Results**—Of these participants, 57 (53.3%) reported one or more experiences of sexual coercion in the past 30 days. Sexual coercion was associated with negative alcohol-related consequences via drinking to cope motives. Negative affect moderated the association between sexual coercion and drinking to cope motives such that the association was stronger among women with greater negative affect.

**Conclusions/Importance**—Methods of addressing vulnerability to sexual coercion and educating young bisexual women about the association between sexual coercion and potentially problematic affective coping through alcohol use are needed.

### Keywords

sexual coercion; alcohol-related consequences; drinking to cope motives; bisexual women

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**Declaration of interest:** The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

Bisexual women report more sexual victimization than heterosexual women (Hequembourg, Livingston, & Parks, 2013; Hughes, Szalacha & McNair, 2010; Walters, Chen, & Breiding, 2013). Bisexual women also report greater binge drinking and more alcohol-related consequences than heterosexual (Drabble, Trocki, Hughes, Korcha, & Lown, 2013; Goldberg, Strutz, Herring, & Halpern, 2013; Green & Feinstein, 2012) or lesbian (Coker, Austin, & Schuster, 2010; Parnes, Rahm-Knigge, & Conner, 2017) women. Links between sexual victimization and hazardous alcohol use have been demonstrated in heterosexual women (e.g., Parks, Hsieh, Bradizza, & Romosz, 2008) but there is a paucity of research on sexual minorities. Given higher sexual victimization and greater alcohol use among bisexual women, a critical public health challenge is to understand within-group variation that may heighten or explain these associations in bisexual women. In the present study, we tested a model that examined sexual coercion, drinking to cope motives, negative affect, and negative alcohol-related consequences in a community sample of young adult self-identified bisexual women.

### **Sexual coercion and Alcohol Use among Bisexual Women**

Compared to their heterosexual peers, sexual minority girls (Brewster & Tillman, 2012; Oshri, Handley, Sutton, Wortel, & Burnette, 2014; Talley, Hughes, Aranda, Birkett, & Marshal, 2014) and women (Ford & Soto-Marquez, 2016; Johnson, Matthews, & Napper, 2016; Martin, Fisher, Warner, Krebs, & Lindquist, 2011; Murchison, Boyd, & Pachankis, 2016; Satinsky & Jozkowski, 2014) report greater sexual victimization. A limitation of much of the previous research is that bisexual and lesbian girls/women have been combined into a single category (e.g., Martin et al., 2011; Oshri et al., 2014; Rothman, Exner, & Baughman, 2011). Thus, important variation between sexual minority women has been ignored in order to make general statements about all sexual minority women as a whole. This concern has led to calls for a strong revisionist effort to study sexual minority subgroups separately (Brewster & Moradi, 2010; Institute of Medicine, 2011).

Although sexual victimization is a significant problem, there is no standard definition of sexual victimization. In the present investigation, our emphasis was on common forms of sexual coercion. Consistent with previous research (Struckman-Johnson, Struckman-Johnson, & Anderson, 2003), we define sexual coercion as attempts, successful or not, to try to persuade the participant to engage in sexual activity, despite their unwillingness to do so, by using verbal pressure, physical force, and encouragement to use alcohol or drugs. This definition is broad and considers common forms of sexual coercion of interest here.

In the same way that there is evidence that bisexual girls and women are at greater risk for sexual victimization, bisexual women also are at greater risk for probable alcohol use disorder (e.g., Lea, Reynolds, & de Wit, 2013) and negative alcohol consequences (Kerr, Ding, & Chaya, 2014; see Talley et al., 2016 for a review). Using data from the National College Health Assessment, bisexual women reported significantly greater odds of using alcohol and all other drugs (except steroids) as compared to heterosexual and lesbian women (Kerr, Ding, Burke, & Ott-Walter, 2015). Among women age 50 and younger, 20.22% of bisexual women reported past month binge drinking (4 or more standard drinks) as compared to 8.83% of heterosexual women (Boehmer, Miao, Linkletter, & Clark, 2012).

Using data derived from the 2012–2013 National Epidemiologic Survey on Alcohol and Related Conditions-III (Grant et al., 2014) relative to heterosexual women, bisexual women are more likely to meet criteria for alcohol use disorder (Kerridge et al., 2017). Further, as compared to heterosexual women, bisexual women were two times more likely to report drinking at least two drinks per day, report binge drinking, and report having been intoxicated in the previous 12 months (Drabble et al., 2013).

## Theoretical Explanation for the Sexual coercion-Alcohol Consequences Link

A number of theories may help explain associations between sexual coercion and negative alcohol consequences. Coping theory contends that individuals engage in alcohol use in an effort to cope with victimization or traumatic experiences (Lazarus, 1993). Coping theory is similar to the self-medication model of addiction, in which hazardous substance use serves to reduce negative mood states associated with distressing events (Khantzian & Albanese, 2008). Stress-coping and self-medication models have received considerable support in general populations of adolescent girls and women when explaining hazardous alcohol use (e.g., Fossos, Kaysen, Neighbors, Lindgren, & Hove, 2011; Kelley et al., 2013; Yeater, Montanaro, & Bryan, 2015). For instance, in a longitudinal study with four annual assessments, experience of severe sexual assault at a prior assessment was associated with 71% more weekly drinks and 63% more alcohol-related consequences at a later assessment (Rhew, Stappenbeck, Bedard-Gilligan, Hughes, & Kaysen, 2017) but whether these theories/models generalize to bisexual women is not known.

Stemming from the self-medication model, drinking to cope motives is a specific mechanism by which sexual coercion may result in negative alcohol-related consequences. Drinking motives are defined as the extent to which an individual consumes alcohol to achieve a desired effect (Cooper, 1994) and coping motives specifically involve the use of alcohol “to escape, avoid, or otherwise regulate negative emotions” (Cooper, Frone, Russell, & Mudar, 1995). Drinking to cope with distress is a powerful predictor of both heavy alcohol use and alcohol use-related problems (Cooper, 1994; Cooper et al., 1995; Immonen, Valvanne, & Pitkälä, 2010; LaBrie, Hummer, & Pedersen, 2007) as well as alcohol dependence diagnosis one (Carpenter & Hasin, 1998) and 10 (Beseler, Aharonovich, Keyes, & Hasin, 2008) years later. In addition, drinking to cope motives have been specified as an important individual difference that may underlie problematic drinking (Armeli, O’Hara, Ehrenberg, Sullivan, & Tennen, 2014). Among college students, drinking to cope is associated with alcohol-related consequences even when controlling for alcohol consumption, personality traits, and emotional adjustment (Ham & Hope, 2003). Among heterosexual women (but not heterosexual men) drinking to cope with negative emotions was shown to mediate the relationship between sexual coercion and alcohol use and alcohol-related consequences (Fossos et al., 2011).

In addition to the relationship between sexual coercion and alcohol-related consequences via drinking to cope motives, among college student women, sexual coercion is also associated with depression (Salwen, Solano, & O’Leary, 2015). With respect to bisexual women, sexual

minority stress theories (i.e., Hatzenbuehler, 2009; Meyer, 2003) contend that discrimination, stigma, prejudice, and expectations of fitting into a largely heterosexual society result in negative mental health outcomes, such as depression and substance use problems. Further, some bisexual women report unique components of minority stress such as an “invisible status” (p. 293), rejection by both the gay and straight communities, and the absence of a supportive bisexual community (Hequembourg & Brallier, 2009). These forms of discrimination may indicate why bisexual women report greater psychological distress, compared to heterosexual women (Gonzales, Przedworski, & Henning-Smith, 2016; see Oswalt, 2009 for a review). In samples of lesbian, gay, and bisexual (LGB) individuals, both daily reports (Mohr & Sarno, 2016) and reports of day-to-day (Douglass, Conlin, Duffy, & Allan, 2017) discrimination are positively associated with negative affect. Further, college women may be more likely to drink as a result of negative affect (e.g., Park, Armeli, & Tennen, 2004). In the present study we included negative affect in the model given its implication in the development of depression (Jolly, Dyck, Kramer, & Wherry, 1994), it is a primary characteristic of depression (American Psychological Association, 2013), and we surveyed a community sample for which negative affect versus depression may be more germane.

Although some conceptual models specify drinking to cope motives as a mediator between negative affect and alcohol-related consequences, other research suggests the additive or interactive effects of negative affect and drinking to cope motives on problematic drinking among college drinkers (e.g., Grant, Stewart, & Mohr, 2009; Martens et al., 2008). In the present study, however, our focus was young bisexual women who are at considerable risk for sexual coercion. We hypothesized that bisexual women who had experienced recent sexual coercion and who reported greater negative affect would report higher drinking motives to cope. When individuals drink in the context of distress, which may be the case for women who have experienced recent sexual coercion, having stronger drinking to cope motives may lead to difficulty disengaging their attention from negative affect, thus, increasing the risk for negative alcohol consequences (Colder, 2001). It was this synergistic effect in particular that was believed to place women at particularly high risk for negative alcohol consequences via greater drinking motives to cope. Taken together, we expected that the association between sexual coercion and drinking motives would be stronger for women high in negative affect. Thus, greater negative affect was expected to strengthen the association between sexual coercion and drinking to cope motives, thus, increasing alcohol-related consequences.

## Present Study

Given calls for research that examines bisexual women as a separate and unique population (Graham et al., 2011) and the health disparities in alcohol use that young bisexual women experience (Green & Feinstein, 2012), the present study sought to examine key individual differences related to affective functioning and coping that could further our understanding of the heightened risk experienced by bisexual women. We tested a moderated mediation model of the association between coerced sexual activity and alcohol-related consequences (see Figure 1). Among bisexual women who report 1 episode of binge drinking per month, having experienced sexual coercion in the past 30 days (regardless of whether sexual activity

occurred) was hypothesized to be associated with alcohol-related consequences via drinking to cope motives. Negative affect was expected to moderate the association between sexual coercion and drinking to cope motives such that the link between sexual coercion and drinking to cope motives would be stronger among women who report greater negative affect, which would be associated with alcohol-related consequences.

## Method

### Participants

The current study examined data from a sub-sample of 107 participants who self-identified as bisexual ( $M$  age = 20.97 years;  $SD$  = 2.11,  $Range$  = 18 – 29) who took part in a larger online community survey of sexual minority women. Participants were recruited using paid ads on Facebook as well as free internet postings, and personal referrals. Potential participants were told the general purpose of the study was to examine sexual minority women's health, including possible sexual, emotional, and stressful experiences. The survey took approximately 30 minutes to complete. Participants were recruited in the spring of 2016. They could select to enter raffles to win one \$50 Amazon.com gift card or one of ten \$10 Amazon.com gift cards for their participation. IRB approval was obtained prior to data collection.

In addition to self-identifying as bisexual, to be eligible for the current study, participants had to be between 18–30 years old, identify as female, and report at least one binge drinking episode (4 or more drinks in a single occasion) in the past 30 days. On average, participants reported 3.82 ( $SD$  = 4.73) binge drinking episodes in the previous 30 days. As shown in Table 1, the majority were White ( $n$  = 89, 84.8%) and not Hispanic/Latino ( $n$  = 95, 88.8%), and had completed at least some college ( $n$  = 88, 82.3%). Approximately 70% of the sample ( $n$  = 75) reported a household income under \$10,000. The low income may be a function of the sample age which reflects a predominantly emerging adult population and that some participants were college students. Participants were most often in an exclusive relationship but not married ( $n$  = 67, 62.6%). Most reported sexual interactions with only men in the past 30 days ( $n$  = 68, 63.6%), but 23 (21.5%) reported sexual interactions with both men and women, and 16 (15.0%) reported sexual experiences with only women in the past 30 days. Of the 107 participants, 57 women (53.3%) reported having experienced at least one instance of sexual coercion in the past 30 days.

### Overall Measures

Given that retrospective memory biases have been shown for many different types of behaviors, including sexual risk behaviors (e.g., Graham, Catania, Brand, Duong, & Canchola, 2003) and alcohol use (Ekholm, 2004; Gmel & Daeppen, 2007), respondents reported on the previous 30 days for all behaviors.

**Sexual coercion**—A 13-item measure was developed to assess 3 overall types of coercive sexual behaviors (e.g., emotional coercion, anger/physical coercion, and encouragement of alcohol/drugs). This new measure was developed using questions from existing instruments to create a brief measure that assessed multiple domains of coercion, including emotional

coercion, anger/physical coercion, and encouragement of alcohol or drugs for the purpose of engaging in sexual behavior. Items were selected or modified from several well-established instruments (i.e., Sexual Experiences Survey [Koss & Oros, 1982], Sexual Coercion Tactics Scale [Struckman-Johnson et al., 2003], and the National Intimate Partner Violence and Sexual Violence Survey [Breiding, 2014]) that represent a broad range of commonly examined forms of sexual coercion. The stem question and individual follow-up items were structured to assess how often each form of sexual coercion occurred in the past 30 days regardless of whether sexual activity occurred (i.e., “During the past 30 days, on how many days did someone do the following to try to persuade you to engage in sexual activities regardless of whether you actually engaged in sexual activities?”). After reading the stem question, participants reported on 13 specific types of sexual coercion behaviors. Six behaviors assessed experiences of emotional coercion: (1) use of verbal pressure, (2) told them a lie, (3) threatened to end the relationship, (4) threatened to spread rumors about you, (5) made promises you knew were untrue, and (6) criticized your sexuality or attractiveness. Five questions assessed their partner’s use of anger/physical coercion: (1) showed displeasure when you refused sexual advances, (2) got angry or upset with you, (3) yelled at you, (4) physically pushed or grabbed you, and (5) hit, slapped, or punched you. Two questions assessed their partner’s encouragement of substances: (1) encouraged you to drink alcohol with the intent of gaining sexual contact, and (2) encouraged you to use drugs with the intent of gaining sexual contact. Two categories were open-ended to allow participants to report ‘other’ tactics. A dichotomous variable was created from these items where 0 = *did not experience any sexual coercion in the past 30 days*, and 1 = *experienced sexual coercion in the past 30 days*. Table 2 reports the percentage of participants who had experienced each coerced sexual activity attempt as well as totals for each category of behavior and overall coercion. This measure had excellent internal reliability ( $\alpha = .93$ ).

**Gender of sexual partner(s)**—Participants indicated the gender of the person(s) they engaged in sexual behaviors with in the past 30 days. Sexual behavior was defined as behaviors such as kissing, sexual touching, sexual intercourse, gave oral sex to a partner, received oral sex from a partner, anal sex, and mutual masturbation. Participants could also write in other sexual behaviors. Participants indicated if they engaged in sexual activity in the past 30 days with men only, women only, both men and women, ‘not sure’, or ‘other’. Due to very low *n*, endorsements of ‘not sure’ ( $n = 2$ ; 0.4%) and ‘other’ ( $n = 5$ ; 1.0%) were excluded from analyses.

**Alcohol use**—Past 30-day binge drinking was assessed by asking participants on how many days they drank 4 or more standard drinks (i.e., 12 oz. beer, 1 ½ oz. of liquor, or 5 oz. of wine) in one setting (possible range 1–30).

**Alcohol-related consequences**—The Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ; Kahler, Strong, & Read, 2005) was used to examine alcohol-related consequences experienced over the past 30 days. This 24-item measure examines various negative consequences related to drinking using a yes-no format (e.g., “I have often found it difficult to limit how much I drink”, “I have passed out from drinking”, “I have taken foolish risks when I have been drinking”). A total score was computed by summing

the total number of affirmative responses, with higher scores indicating a greater number of consequences experienced. This measure had good internal reliability ( $\alpha = .86$ ). A 30-day version of the BYAACQ has shown good reliability and validity among emerging adult drinkers in a general sample (Kahler, Hustad, Barnett, Strong & Borsari, 2008), as well as adult students 18 – 30 years old (de Haan, Haan, Olivier, & Verster, 2012).

**Drinking to cope motives**—Drinking to cope motives were assessed with the 5-item coping subscale of the Drinking Motives Questionnaire (Cooper, 1994). These items assess the degree to which drinking is motivated by a desire to cope with negative emotions (e.g., “To forget your worries”, “To forget about your problems”, “Because it helps you when you feel depressed or nervous”). Items were scored using a 5-point scale where 1 = *Almost never/Never* and 5 = *Almost always/Always*. This subscale indicated good internal reliability ( $\alpha = .84$ ). This questionnaire is widely used and has shown good validity and reliability among young adults (Grant, Stewart, O’Connor, Blackwell, & Conrod, 2007; Lyvers, Hasking, Hani, Rhodes, & Trew, 2010).

**Negative affect**—Five items (upset, hostile, ashamed, nervous, and afraid) that assessed negative affect from the internationally validated Positive and Negative Affect Short Form (I-PANAS-SF; Thompson, 2007) were used to assess negative affect during the last 30 days. Each item was reported on a 5-point scale where 1 = *Never* and 5 = *Always*. For the current study, internal reliability was acceptable ( $\alpha = .72$ ). The I-PANAS-SF is a shortened version of the PANAS (Watson, Clark, & Tellegen, 1988). In a series of studies, Thompson (2007) demonstrated the factor structure, test-retest reliability, and convergent and criterion-related validity of the I-PANAS-SF.

**Demographic information**—Basic background information about age, race, ethnicity, highest education level, and relationship status was assessed. Sexual orientation was examined using a self-report question in which participants identified as exclusively lesbian/gay, mostly lesbian/gay, bisexual, mostly heterosexual, exclusively heterosexual, or other. Only data from women who identified as bisexual were examined.

## Data Analysis

PROCESS for SPSS (Hayes, 2013) was used to examine the moderated mediation model. First, all continuous variables were standardized (drinking to cope motives, alcohol-related consequences, and negative affect). Second, drinking to cope motives were examined as a mediator between sexual coercion experiences (0 = *no*, 1 = *yes*) and negative alcohol-related consequences. We next tested for moderated mediation. Specifically, we examined if coercive sexual activity and drinking to cope motives were linked to alcohol problems via conditional indirect effects. As shown in Figure 1, negative affect was expected to moderate the sexual coercion-coping motives association (path *a*) of the mediation model.

Significance of the direct and indirect effects in the current study was assessed using 95% bias-corrected confidence interval estimates (generated using 10,000 bootstrapped samples). If zero was not included in the 95% confidence interval, the indirect effect was considered statistically significant. PROCESS allows a test of the conditional indirect effects, which

suggest that the mediation is conditional on the value of the moderator. The relationship between sexual coercion and coping motives was assessed for three levels of the moderator (i.e., high negative affect [one *SD* above the mean of negative affect], average negative affect [mean negative affect], and low negative affect [one *SD* below the mean of negative affect]) to further examine the relationship between the moderator and conditional effect.

## Results

### Preliminary analyses

All data analyses were conducted using SPSS 23.0. First, normality was examined for all variables and frequency of binge drinking was square root transformed to reduce skewness. Boxplots and checks of normality revealed that no other variables were skewed or contained outliers. Missing data were imputed for all continuous measured variables using expectation maximization to minimize bias (see Allison, 2001 for a discussion).

As shown in Table 2, a total of 53.3% ( $n = 57$ ) of women in the current study experienced at least one instance of sexual coercion in the past 30 days. More specifically, 42.1% reported one or more instances of anger/physical coercion by a partner (i.e., displeasure, anger/upset, yelling, pushed or grabbed you), 34.6% reported one or more instances of emotional coercion by a partner (i.e., using verbal pressure, told you a lie, threatened to end the relationship, threatened to spread rumors about you, made promises you knew were untrue), and 30.8% reported one or more instances of alcohol or drug coercion (e.g., encouraged them to drink or use drugs with the intent of gaining sexual contact).

Chi-square analyses revealed that women who experienced sexual coercion in the past 30 days were more likely to have had only male sexual partners (30.8%), relative to only female partners (5.6%) or both male and female (16.8%) sexual partners,  $\chi^2(2) = 7.98, p = .018$ . In addition, specific types of sexual coercion tactics were significantly different based on the sex of the sexual partner in the past 30 days (see Table 2). Therefore, sex of partner in the past 30 days was included as a covariate for all analyses.

As shown in Table 3, the results of correlational analyses revealed that drinking to cope motives was positively correlated with negative alcohol-related consequences,  $r = .54, p < .001$ , and negative affect (NA),  $r = .37, p < .001$ . Also, negative alcohol-related consequences were positively correlated with NA,  $r = .23, p = .02$ . Binge drinking episodes were positively correlated with drinking to cope motives,  $r = .46, p < .001$  and negative alcohol consequences in the past 30 days,  $r = .45, p < .001$ . Moreover, Table 4 shows that women who experienced sexual coercion in the past 30 days reported significantly greater drinking to cope motives,  $t(103.69) = -4.44, p < .001$ , and more negative alcohol-related consequences,  $t(105) = -2.71, p = .008$ , relative to women who did not experience sexual coercion.

### Moderated-Mediation Model Results<sup>1</sup>

Results of the mediation analysis revealed that, after controlling for gender of sexual partner(s) in the past 30 days, drinking to cope motives significantly mediated the association between sexual coercion and negative alcohol-related consequences, indirect  $\beta =$



0.34, 95% CI: 0.14, 0.63. Specifically, sexual coercion was significantly associated with drinking to cope motives (path *a*:  $\beta = 0.68$ , 95% CI: 0.33, 1.04) indicating that those who experienced sexual coercion in the past 30 days reported stronger drinking to cope motives. In turn, drinking to cope motives were significantly associated with negative alcohol-related consequences (path *b*:  $\beta = 0.49$ , 95% CI: 0.28, 0.71) such that those with stronger drink to cope motives reported more negative alcohol-related consequences.

Moderated mediation was examined by determining if NA moderated path *a* of the mediation analysis (sexual coercion predicting drinking to cope motives), controlling for gender of sexual partner(s) in the past 30 days. Results revealed that there was a significant interaction between NA and sexual coercion's impact on drinking to cope motives,  $\beta = 0.44$ , 95% CI [0.05, 0.83] (see Figure 2). Specifically, the indirect effects are significant for high (one *SD* above the mean;  $\beta = 0.53$ , 95% CI [0.23, 0.98]) and average ( $\beta = 0.31$ , 95% CI [0.13, 0.59]) values of NA, but not low values of NA (one *SD* below the mean;  $\beta = 0.09$ , 95% CI [-0.12, 0.32]). Results indicate that drinking to cope motives mediate the relationship between sexual coercion and alcohol-related consequences for those with average and high levels of NA (relative to the sample mean) but not those who report low levels of NA.

## Discussion

Despite recognition that bisexual women report more sexual victimization and alcohol-related problems than heterosexual women or lesbian women (e.g., Ford & Soto-Marquez, 2016; Hequembourg et al., 2013; Hughes et al., 2010; Johnson et al., 2016), knowledge of how sexual coercion and negative alcohol consequences (e.g., Kerr et al., 2014; see Talley et al., 2016 for a review) are associated in this population has advanced slowly. Given the critical role of drinking to cope motives in negative alcohol consequences (e.g., Armeli et al., 2014), in the present study we tested whether drinking to cope motives would mediate the association between past 30 day sexual coercion and negative alcohol consequences. Because young bisexual women may be at particular risk for high levels of negative emotionality, we also tested whether negative affect moderated, that is, strengthened the association between sexual coercion and drinking to cope motives, which in turn would be associated with alcohol-related consequences. We examined women who reported at least one episode of past 30 day binge drinking as negative affect and drinking to cope motives may be more relevant for bisexual women who report binge drinking.

Our results are consistent with coping theory (Lazarus, 1993) and a self-medication framework (Khantzian & Albanese, 2008). That is, the association between having experienced sexual coercion and alcohol-related problems was partially explained by drinking to cope motives (i.e., for all participants except those lower in negative affect). A growing body of research has considered drinking to cope motives as a mechanism linking sexual victimization and alcohol use (e.g., Grayson & Nolen-Hoeksema, 2005; Kaysen et al., 2007). Our findings extend the work of Fossos et al. (2011) who found drinking to cope

<sup>1</sup>Mediation and moderated mediation models were also computed controlling for binge drinking episodes in the past 30 days. Results were consistent when including binge drinking as a covariate; moreover, binge drinking was not associated with outcomes when included in the model. Therefore, the most parsimonious model was presented that did not include binge drinking as a covariate.

with negative emotions mediated the relationship between sexual coercion and alcohol-related consequences among heterosexual women. Drinking as a way to cope with negative emotions may be one avenue by which experiences of sexual coercion are associated with negative alcohol consequences among bisexual women. At a global level, these results also corroborate previous research with female adolescent juveniles (Yeater et al., 2015) and female veterans (Kelley et al., 2013) which have supported stress-coping and self-medication models to explain hazardous alcohol use.

Individuals' past 30-day levels of negative affect (e.g., upset, nervous) interacted with experiences of sexual coercion, such that participants who experienced past 30 day sexual coercion and who reported higher negative affect reported significantly higher drinking to cope motives. Given that bisexual women have been found to report higher levels of psychological distress (e.g., Gonzales et al., 2016) and worry and sadness (Conron, Mimiaga, & Landers, 2010) relative to heterosexual women, negative affect may be a critical variable in understanding alcohol-related consequences. Although not examined here, negative affect may be heightened by the lack of an identified sexual minority community (e.g., Hequembourg & Brallier, 2009) and discrimination, stigma, and prejudice (e.g., Meyer, 2003).

Although the current data do not permit causal conclusions or testing to establish a change or trajectory of behavior, the association between sexual coercion and alcohol-related consequences suggests that these events are temporally linked during a 30-day period. In a study of heterosexual adolescents, sexual coercion was associated with immediate increases in alcohol and drug use and problems, however, substance use decreased to pre-coercion levels over time (e.g., Young, Furman, & Jones, 2012). Moreover, heterosexual girls who experienced sexual victimization during adolescence were more likely to engage in heavy alcohol use after the assault which in turn that increased the likelihood of victimization during college (Testa, Hoffman, & Livingston, 2010). Further, consistent with studies of young heterosexual women (e.g., Testa et al., 2010; Young et al., 2012), sexual coercion may have implications for risky alcohol use. Given robust findings that earlier sexual victimization may be associated with revictimization in general populations (Finkelhor, Ormrod, & Turner, 2007) and the high rates of sexual victimization among young bisexual women (Ford & Soto-Marquez, 2016; Johnson et al., 2016; Martin et al., 2011; Murchison et al., 2016; Satinsky & Jozkowski, 2014), prevention and intervention programs appear critical for this population. It is also possible that a negative feedback loop may develop such that earlier experiences of sexual coercion/victimization may result in problematic drinking. Our findings underscore the need to incorporate variables such as sexual coercion experiences and risk for sexual coercion, drinking to cope motives, and average to high levels of negative affect (relative to their peers) as targets to include in these prevention and intervention programs aimed at the reduction of alcohol-related problems.

It is also important to recognize that, compared to participants who had engaged in sexual activity with only women or both men and women, participants who reported sexual activity with only men, were more likely to report sexual coercion. This finding is consistent with results of a meta-analysis of undergraduate students that reported 80% of males and 40% of females samples had been sexually aggressive (Krahe, Tomaszewska, Kuyper, &

Vanwesenbeeck, 2014). Although it is essential to state that sexual coercion is never the victim's fault, it is important that bisexual women who have sexual activity exclusively with men may be at greater risk for sexual coercion relative to their peers who have sexual activity experiences with men and women or only women. Bisexual women who engage in sexual relationships with men may be more vulnerable to experiencing sexual coercion due to the fact that men are more likely to perpetrate sexual aggression (Krahe & Berger, 2013; Palmer, McMahon, Rounsaville, & Ball, 2010). Women less frequently perpetrate sexual violence and therefore engaging in sexual behaviors with women may serve as a protective factor against sexual coercion. Moreover, it is important to determine the context in which bisexual women experience sexual coercion. Specifically, future research should examine the gender of the perpetrator, where an incident occurs, if drinking is associated with sexual coercion or engaging in sexual behaviors with men, and characteristics of the men who engage in sexual coercion. The context of sexual coercion and engaging in sexual behaviors with men may be a critical component for prevention programs to incorporate to prevent sexual victimization among bisexual women.

### Study Limitations and Future Directions

Our study results should be interpreted in light of several study limitations. Future studies should attempt to capture these variables longitudinally via more sophisticated data collection methods such as a daily diary study (Shiffman, 2009; Wray, Merrill, & Monti, 2014) which would reduce the potential for recall bias and allow a more fine-grained understanding of the temporal ordering of the associations. For instance, it is possible that alcohol-related consequences may disrupt high-order cognitive processes, lead to impulsivity, poor judgment, or disinhibition which may put women in situations in which sexual coercion is more likely to occur (see Lorenz & Ullman, 2016 for a review).

In addition, we did not examine drinking contexts, which may be associated with particularly heavy alcohol use and related risks (e.g., Nyaronga, Greenfield, & McDaniel, 2009) for bisexual women. Future research should also include additional indicators of hazardous alcohol use such as quantity per episode and frequency of extreme binge drinking. Further, participants reported on the past 30 days which may introduce recall biases (Ekholm, 2004; Gmel & Daeppen, 2007). The current sample was a convenience sample of young women, who identify as bisexual, report binge drinking, and who reported past 30-day sexual activity with male partners, female partners, or male and female partners. Our sample was small ( $N = 107$ ), most were White (83.2% were White) and reported relatively low income. Although average income may reflect the young age of the sample, it is unknown how results may generalize to a more affluent or racially and ethnically diverse sample. Also, only participants who identified as being female were included in the current study. Data from those who identified as male, transgender, or "other" were not examined. Given the limitations of the sample, these results should be considered exploratory as it is difficult to know whether these results generalize beyond this convenience sample. For this reason, results should be intended to lay the groundwork for larger studies with more diverse samples. Further, all data were self-report which may introduce recall bias. Also, the measure of sexual coercion was a combination of existing items from other scales. This was done because a brief, yet broad measure of common forms of sexual coercion was not found.

Although the sexual coercion scale demonstrated good internal consistency, additional research is needed to further establish its psychometric properties and concurrent validity with other instruments. Despite the study limitations, this is one of the first studies to test a model that may help explain associations between sexual coercion and negative alcohol consequences among young bisexual women.

## Conclusions

Sexual coercion and alcohol-related consequences are significant public health problems for young adult bisexual women. Rates of problematic alcohol use and sexual violence peak in young adulthood; however, this risk is significantly greater for young bisexual women. In the present study, we found support for a stress-coping and self-medication model of alcohol use, such that past 30-day sexual coercion was associated with alcohol-related consequences via higher drinking to cope motives. Negative affect acted in concert with sexual coercion to strengthen the link between sexual coercion and higher drinking to cope motives. Future micro-longitudinal research is needed to examine temporal associations between sexual coercion and alcohol-related behaviors and consequences. It is possible that young bisexual women who are at particular risk for victimization may benefit from sexual assertiveness training, coping through means other than substance use, and other interventions that address negative affect and support the development of healthy sexual relationships.

## Acknowledgments

Research reported in this publication was supported by the National Institute on Alcohol Abuse and Alcoholism of the National Institutes of Health under award number R15AA020424 to author RJL (PI). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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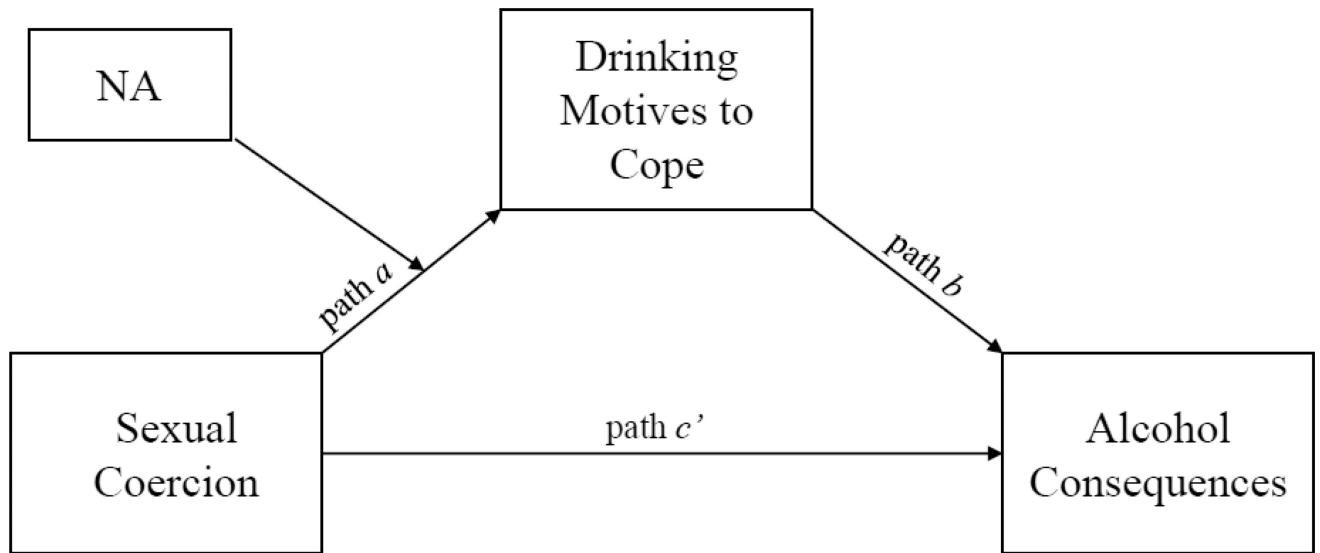
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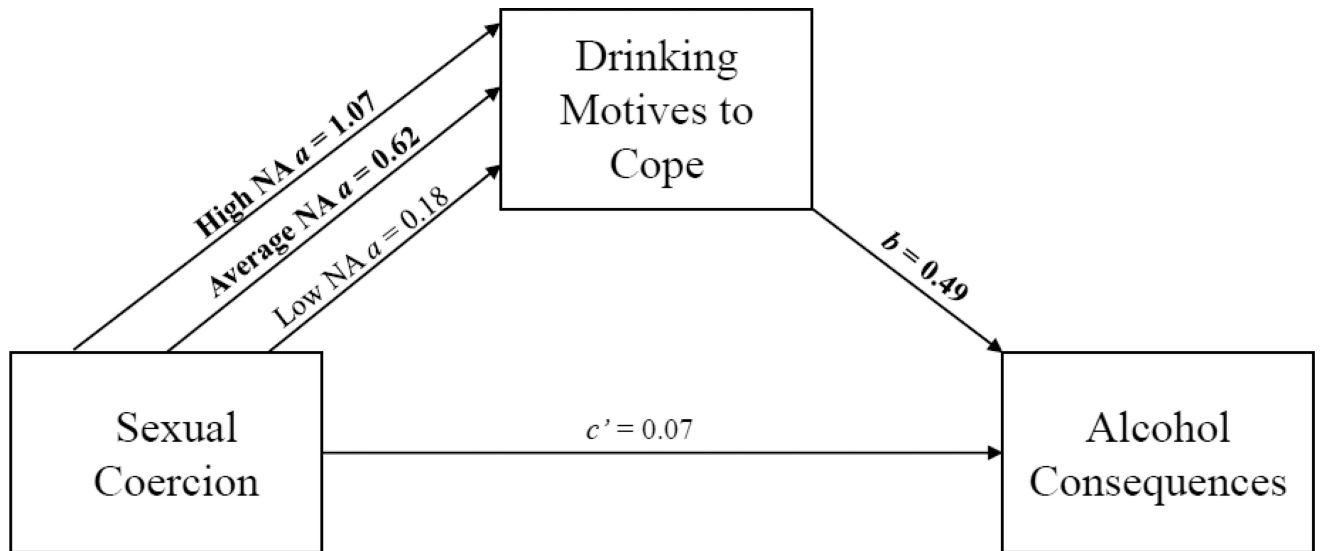
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**Figure 1.**  
Theoretical moderated mediation models.  
Sexual coercion = sexual coercion past 30 days (0 = *no*, 1 = *yes*); NA = Negative Affect items; DMC = Drinking Motives to Cope; BYAACQ = Brief Young Adult Alcohol Consequences Questionnaire (negative alcohol-related consequences). Gender of sexual partner(s) is not pictured, but was included as a covariate.



**Figure 2.** Negative affect moderates the relationship between sexual coercion and drinking to cope motives, which in turn are associated with alcohol-related consequences. Sexual coercion = sexual coercion past 30 days (0 = *no*, 1 = *yes*); NA = Negative Affect. Path *a* coefficients are displayed for high NA (1 SD above the mean), average NA (mean), low NA (1 SD below the mean). Gender of partner(s) is not pictured, but was included as a covariate. Bold values indicate significant values.

**Table 1**

## Demographic characteristics

	<i>n</i>	%
Race		
White	89	83.2%
African American	3	2.8%
Other	13	12.1%
Prefer not to answer	2	1.9%
Hispanic/Latino		
Yes	11	10.3%
No	95	88.8%
Missing	1	0.9%
Education		
Some high school	3	2.8%
High school graduate	18	16.8%
Some college	67	62.7%
Bachelor's degree	18	16.8%
Master's degree	1	0.9%
Individual Income		
\$4,999	52	48.6%
\$5,000–\$9,999	23	21.5%
\$10,000–\$19,999	19	17.8%
\$20,000–\$29,999	8	7.5%
\$30,000–\$39,999	2	1.9%
\$40,000	3	2.7%
Relationship Status		
Single, not dating	14	13.1%
Single, dating	20	18.7%
Exclusively dating one person	67	62.6%
Married or in a civil union	4	3.7%
Other	2	1.9%
Gender of sexual partner past 30 days		
Men only	68	63.5
Women only	16	15.0
Both men and women	23	21.5

Note. *N* = 107

**Table 2**

Type of sexual coercion experienced by gender of sexual partner in the past 30 days

Variable	Men only n (%)	Both men and women n (%)	Women only n (%)	Total n (%)	$\chi^2(df = 2)$
<b>Emotional</b>					
Verbal pressure	10 (9.3%)	11 (10.3%)	3 (2.8%)	24 (22.4%)	10.98**
Told you a lie	7 (6.5%)	8 (7.5%)	1 (0.9%)	16 (15.0%)	9.23*
Threatened to end relationship	1 (0.9%)	5 (4.7%)	0 (0.0%)	6 (5.6%)	14.46**
Threatened to spread rumors	2 (1.9%)	3 (2.8%)	1 (0.9%)	6 (5.6%)	3.33
Made promises you knew were untrue	7 (6.5%)	9 (8.4%)	1 (0.9%)	17 (15.9%)	12.00**
Criticized your sexuality or attractiveness	5 (4.7%)	7 (6.5%)	1 (0.9%)	13 (12.1%)	9.19*
<b>Physical/Anger</b>					
Shown displeasure when you refused	22 (20.6%)	12 (11.2%)	4 (3.7%)	29 (27.1%)	3.86
Got angry or upset	15 (14.0%)	13 (12.1%)	1 (0.9%)	38 (35.5%)	14.47**
Yelled at you	6 (5.6%)	8 (7.5%)	1 (0.9%)	15 (14.0%)	10.55**
Physically pushed or grabbed you	1 (0.9%)	6 (5.6%)	0 (0.0%)	7 (6.5%)	18.35***
Hit, slapped, or punched you	0 (0.0%)	4 (3.7%)	0 (0.0%)	4 (3.7%)	15.18**
<b>Alcohol or Drug</b>					
Encouraged you to drink	12 (11.2%)	12 (11.2%)	3 (2.8%)	27 (25.2%)	11.28**
Encouraged you to use drugs	10 (9.3%)	9 (8.4%)	2 (1.9%)	21 (19.6%)	7.11*
<b>Emotional Coercion</b> (dichotomous)	20 (18.7%)	13 (12.1%)	4 (3.7%)	37 (34.6%)	6.35*
<b>Physical/Anger Coercion</b> (dichotomous)	24 (22.4%)	16 (15.0%)	5 (4.7%)	45 (42.1%)	9.19*
<b>Alcohol or Drug Coercion</b> (dichotomous)	16 (15.0%)	13 (12.1%)	4 (3.7%)	33 (30.8%)	9.07*
<b>Any Coercion</b> (dichotomous)	33 (30.8%)	18 (16.8%)	6 (5.6%)	57 (53.3%)	7.98*

Note. N = 107. Categories are not mutually exclusive.

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

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**Table 3**

Univariate analyses between drinking variables, negative affect, and sexual coercion

	<i>M</i>	<i>SD</i>	Min	Max	1.	2.	3.	4.	5.
1. Binge <sup>a</sup>	3.82	4.73	1.00	30.00	--				
2. DMC	11.48	5.60	5.00	25.00	.46***	--			
3. BYAACQ	5.61	4.74	0.00	19.00	.45***	.54***	--		
4. NA	12.91	3.82	5.00	25.00	.05	.37***	.23*	--	
5. Sexual coercion	0.52	0.50	0.00	1.00	.12	.39***	.26**	.14	--

*Note.* Binge = number of binge ( 4 standard drinks) drinking episodes in the past 30 days; DMC = Drinking Motives Questionnaire coping with negative affect subscale; BYAACQ = Brief Young Adult Alcohol Consequences Questionnaire (negative alcohol-related consequences); NA = Negative Affect items from the I-PANAS-SF; Sexual coercion = sexual coercion past 30 days (0 = no, 1 = yes). Min = minimum value reported; Max = maximum number reported.

<sup>a</sup>Binge drinking is not square root transformed for descriptive purposes. Correlation analyses included the square root transformed variable.

\*  $p < .05$ ;

\*\*  $p < .01$ ;

\*\*\*  $p < .001$ .

**Table 4**

Drinking variables and negative affect by sexual coercion (yes/no)

	Sexual coercion				<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
1. Binge	1.86	0.80	1.64	0.93	-1.29	.202
2. DMC	13.16	4.70	9.56	3.67	-4.44	<.001
3. BYAACQ	6.74	4.99	4.32	4.12	-2.71	.008
4. NA	13.40	3.71	12.35	3.89	-1.43	.157

Note. Binge = number of binge ( 4 standard drinks) drinking episodes in the past 30 days; DMC = Drinking Motives to Cope; BYAACQ = Brief Young Adult Alcohol Consequences Questionnaire (negative alcohol-related consequences); NA = Mean of negative affect items from the Positive and Negative Affect Short Form (I-PANAS-SF).