

Women's Alcohol Sensitivity Predicts Alcohol-Related Regretted Sex

Liana S. E. Hone , Bruce D. Bartholow, Thomas M. Piasecki, and Kenneth J. Sher

Background: Low sensitivity (LS) to alcohol's acute effects is a known risk factor for heavy drinking and its negative consequences. However, LS could be protective due to LS drinkers being less impaired at a given level of consumption. Here, we tested whether LS is associated with differences in men's and women's reports of alcohol-related regretted sex.

Methods: Eight hundred and one young adults (393 women) aged 21 to 35 ($M = 23.11$ years) recruited for a study of alcohol's effects on cognition completed self-report measures of alcohol sensitivity, typical alcohol use, and alcohol consequences (including regretted sex).

Results: Participants whose alcohol sensitivity scores classified them as LS were more likely to experience alcohol-related regretted sex than were high-sensitivity (HS) participants. However, when controlling for typical alcohol use and experience of alcohol consequences in general, alcohol sensitivity was negatively associated with risk of alcohol-related regretted sex, but only among women.

Conclusions: At a given level of consumption, and controlling for experience of alcohol consequences other than regretted sex, reduced sensitivity to certain effects of alcohol may be a protective factor for women against risk for alcohol-related regretted sexual situations. This study provides insight on the unique risks of drinking among LS and HS women.

Key Words: Sex Differences, Alcohol Sensitivity, Alcohol Use, Alcohol Consequences, Alcohol-Related Regretted Sex.

HEAVY DRINKING IS a common problem among emerging adults (Sher et al., 2011), whose binge drinking is associated with numerous problematic outcomes (Hingson et al., 2009; Wechsler et al., 2002). In particular, the relationship between heavy drinking among emerging and young adults and sexual consequences has been well documented (Abbey, 2002; Cooper, 2002; Lewis et al., 2010). Twenty percent of college students report having experienced an alcohol-related regretted sexual experience in the past year (Kypri et al., 2009; Mallett et al., 2006). Compared to their peers, students who report alcohol-related regretted sexual experiences are more likely to report higher levels of weekly (Mallett et al., 2008) and monthly (Morojele et al., 2004) drinking, and alcohol use frequency and quantities consumed are significantly related to regretted sex (Morojele et al., 2004). Furthermore, frequent heavy drinking predicts both sexual assault victimization (Mouilso and Fischer, 2012) and perpetration (Abbey et al., 2012), and about half of all sexual assaults involve intoxication of the

perpetrator, victim, or both (Abbey, 2002). Despite the prevalence of this problem and the magnitude of concerns it raises, aside from consumption levels, few individual difference factors have been investigated as potential moderators of the experience of alcohol-related regretted sex.

One such individual difference suggested by some previous research (e.g., Piasecki et al., 2012) is sensitivity to alcohol's acute effects. Alcohol sensitivity is defined as the amount of alcohol one must consume to experience a given effect, or the extent to which a given alcohol dose influences subjective feelings (Fleming et al., 2016a; Pollock, 1992; Schuckit, 1994) and physiological responses (Bartholow et al., 2003; Schuckit et al., 1987). As used here, alcohol sensitivity reflects a combination of initial sensitivity to alcohol effects in a naïve drinker and acquired tolerance—that is, changes in sensitivity associated with drinking history (Corbin et al., 2013; Kalant, 1996; Morean and Corbin, 2008; National Institute on Alcohol Abuse and Alcoholism, 1995). Within this framework, low-sensitivity (LS) drinkers require the consumption of more alcohol than their high-sensitivity (HS) peers to experience the same alcohol effects. Consistent with this idea, ecological momentary assessment (EMA) data indicate that LS drinkers show steeper rising slopes of the estimated blood alcohol concentration (BAC) curve relative to HS drinkers during self-paced drinking sessions (Trela et al., 2016).

Although LS is a known risk factor for heavy drinking (e.g., Schuckit and Smith, 2001) and thereby for experiencing a host of negative consequences (e.g., Schuckit et al., 2008a, b; Wetherill and Fromme, 2009), in some situations and for

From the Department of Psychological Sciences (LSEH, BDB, TMP, KJS), University of Missouri, Columbia, Missouri.

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Current address: Liana S. E. Hone, Ph.D., Research Institute on Addictions, 1021 Main Street, Buffalo, NY 14203. lhone@ria.buffalo.edu
Reprint requests: Bruce D. Bartholow, PhD, Department of Psychological Sciences, University of Missouri, 200 S 7th Street, Columbia, MO 65211; Tel.: 573-882-1682; Fax: 573-882-7710; E-mail: bartholowb@missouri.edu

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some consequences, LS might be protective. Using EMA data, Piasecki and colleagues (2012) investigated how LS relates to the experience of hangover. These researchers found that although lower alcohol sensitivity was associated with increased odds of hangover and with heavier alcohol consumption on drinking days, when the model predicting hangover occurrence was expanded to account for the number of drinks consumed the night before, lower alcohol sensitivity was associated with *decreased* odds of hangover occurrence. Furthermore, there was a significant interaction between alcohol sensitivity and number of drinks, indicating that the amount consumed was less predictive of hangover endorsement among LS drinkers. These results suggest that lower alcohol sensitivity confers increased risk for more frequent hangover due to the consumption of larger doses, but also protection from or resistance to hangover at a given level of consumption.

The extent to which this profile of protection extends to other types of consequences, like alcohol-related regretted sex, remains unknown. Moreover, and unlike with many other types of consequences (including hangover), regretted sex often means different things to men and women, suggesting that moderation of the experience likely differs by sex. There are several reasons to hypothesize that reports of regretted sex are more likely to be moderated by alcohol sensitivity among young women compared to young men. Recent findings suggest that young adults often rate consequences that researchers deem “negative” as neutral or even positive (e.g., Mallett et al., 2008). Specifically, having a hangover; waking up in someone else’s bed after a night of drinking; and binge-eating late at night after drinking were infrequently rated as negative by college students (Mallett et al., 2008). The extent to which men and women might differentially evaluate these and other consequences, like unplanned sexual encounters, as negative, neutral, or even positive is unknown. However, evidence from research on college “hook-ups” has shown that women are more likely than men to ruminate, feel “regretful or disappointed,” and feel greater shame and self-doubt following a sexual encounter, while men are more likely than women to feel “satisfied” (Paul et al., 2000). Furthermore, fewer reports of regretted sex among men than among women (Orchowski et al., 2012) suggest that men and women might evaluate alcohol-related sexual experiences rather differently.

Indeed, when interpreting an encounter as regretted, men tend to regret having sex with a certain partner while women regret feeling pressured or forced to have sex (Paul and Hayes, 2002). In fact, while a vast majority (72%) of college-aged students report regretting their decision to engage in sexual activity and cite a variety of reasons for this regret (e.g., lack of condom use), women cite regret due to feeling pressured by a partner more often than do men (Oswalt et al., 2005). Thus, the potential role of alcohol sensitivity in moderating the experience of regretted sex is likely to be more evident among young women, for whom sexual experiences are far more perilous in general (i.e., experiencing

forced sex), and who experience more decision conflict when faced with the prospect of a sexual encounter when drinking (Cooper, 2002; Cooper and Orcutt, 1997). That is, women and men have different thresholds for evaluating the risks and benefits associated with sex (Cooper and Orcutt, 1997). Therefore, any factor that reduces a woman’s decisional conflict regarding a sexual encounter is likely to be protective against risk for regretted sex. For men, because sex is less likely to be perceived as perilous overall, whether they experience alcohol-related decisional conflict is less influential in their later reports of regret. Thus, we hypothesize moderation of regretted sex by alcohol sensitivity and other potential individual differences, especially those related alcohol impairment, to be more evident among young women than among young men.

Specifically, as reported by George and colleagues (2005), alcohol seems to impair the ability to weigh the magnitude of potential gains and the likelihood of realizing those gains when potential losses are large. Applied to young adults’ decision making, it follows that certain risks, such as having sex while intoxicated, are associated with greater potential losses (e.g., forced sex and unwanted pregnancy) for women than for men (see Cooper and Orcutt, 1997), and therefore, individual difference factors related to alcohol’s effects would be more likely to have an influence on women’s than on men’s decision making. Indeed, alcohol is known to impair women’s perception of sexual risk (Parks et al., 2016), and the experience of alcohol-related unwanted sexual situations has been linked to failure to recognize and respond to these risks (Parks et al., 2016). For example, women who binge drink are less likely to perceive sexual risk when intoxicated (Davis et al., 2009). Specifically, the physiological effects of alcohol cause impaired judgment as well as slowed motor responses that contribute to deficits in risk perception (Mitchell et al., 2016). An impairment in sexual risk perception may increase the likelihood of regretted sexual experiences if it causes a delay in avoidance responses (Messman-Moore and Brown, 2006) or impedes decision making.

A defining characteristic of LS is experiencing relatively less subjective impairment from a given dose of alcohol, and LS has been linked to functioning of specific neural features (Tapert et al., 2004). Therefore, one potential mechanism through which LS might be protective against the experience of regretted sexual encounters is reduced impairment at a given dose. Particularly at relatively low doses, HS women might be more sensitive to alcohol’s impairment of sexual risk perception and decision making compared to LS women, and therefore might be more likely to engage in sex that they later regret. A reasonable proxy for examining this possibility outside of a laboratory context is to statistically control for typical alcohol involvement when testing the effects of sex, alcohol sensitivity, and their interaction on reports of regretted sex. This approach allows inferences about the effects of those predictors to be made without the confounding influence of alcohol involvement, which tends to be higher in men than women (Wilsnack et al., 2000) and

in LS than HS women (Eng et al., 2005; Heath et al., 1999). The purpose of the current research was to test whether low alcohol sensitivity might help to shield young women from experiencing regretted sex at a given (average) level of typical alcohol consumption.

Young adult drinkers completed questionnaire measures of alcohol sensitivity, typical alcohol use, and alcohol consequences. We hypothesized that (i) lower alcohol sensitivity (determined by validated, retrospective self-report measures) would be positively associated with risk for alcohol-related regretted sex. We further hypothesized that (ii) alcohol sensitivity scores would be inversely related to the frequency of this consequence in statistical models accounting for typical alcohol use, but (iii) only among young women and (iv) after controlling for experience of alcohol consequences broadly.

MATERIALS AND METHODS

Participants

This study comprised data from 801 young adults (393 women and 408 men) aged 21 to 35 recruited from the Columbia, MO community for a study of alcohol's effects on cognition. Data for current analyses were collected during an initial laboratory session that did not involve beverage administration. Individuals interested in participating were instructed to contact the laboratory, after which a research assistant called them for an eligibility interview. For inclusion in the sample, participants had to be current, nonproblem drinkers (i.e., lifetime abstainers and anyone reporting a history of substance use disorder symptoms or treatment were excluded) reporting an average of between 2 and 24 drinks per week over the past year. Participants also had to indicate no major medical conditions that contraindicate inclusion in an alcohol challenge (e.g., pregnancy; taking prescription medication other than oral contraception) and no history of neurological disorder or trauma. Data collection was performed with informed consent, and all procedures were approved by the University of Missouri's Institutional Review Board. Participants received \$35 for their participation.

Measures

Alcohol sensitivity was measured with both the Self-Rating of the Effects of Alcohol (SRE) form (Schuckit et al., 1997) and the Alcohol Sensitivity Questionnaire (ASQ; Fleming et al., 2016a), both of which provide estimates of the intensity of participants' response to alcohol and have been validated by laboratory alcohol challenge. Although scores on these 2 measures are often highly correlated (e.g., $r = 0.70$; Fleming et al., 2016a), they are not wholly redundant, particularly in that only the ASQ queries effects often associated with smaller alcohol doses and ascending BAC. Thus, primary hypotheses for this study were tested using both measures.

Self-Rating of the Effects of Alcohol. The SRE (Schuckit et al., 1997) asks respondents to indicate the number of standard drinks required to experience up to 4 different effects of alcohol (recognition of "any effect"; dizziness or slurred speech; stumbling gait; passing out) over 3 different time periods (their first 5 drinking episodes; the period of heaviest drinking in their lives; the most recent consecutive 3 months in which they drank at least once a month). For current analyses, to approximate the time period queried by the ASQ, an SRE score was calculated as the average of the number of drinks required to feel each of the 4 effects across the "most recent consecutive 3 months in which you drank at least once a month" time period. To ensure that the relationship between higher item

means and greater item missingness did not downwardly bias scores, a standardized person-mean imputation procedure was used to derive SRE scores (Lee et al., 2015). In this sample, internal consistency of the SRE 3-month subscale was good ($\alpha = 0.84$). Higher scores on the SRE indicate lower sensitivity to alcohol.

Alcohol Sensitivity Questionnaire. The ASQ (Fleming et al., 2016a; O'Neill et al., 2002) comprises 15 items, the first 9 of which query effects of alcohol often associated with lighter drinking (e.g., feeling more talkative; feeling more relaxed). For each of these items, respondents are asked to indicate whether they have ever experienced the effect as a result of drinking alcohol, and if so, to estimate the *minimum* number of drinks they need to consume in order to feel the effect. The remaining items, assessing effects most associated with heavier drinking (e.g., feeling dizzy; passing out), are structured similarly, except that respondents are asked to estimate the *maximum* number of drinks they can consume without experiencing the effect. Here, ASQ responses were used to generate a total score. As with the SRE, standardized person-mean imputation was used to derive ASQ scores, with higher scores (i.e., needing more drinks to feel effects) representing lower sensitivity. Internal consistency of the ASQ items was very good ($\alpha = 0.88$), and similar to that reported in previous studies (Bartholow et al., 2007, 2010; Fleming and Bartholow, 2014; Shin et al., 2010).

Alcohol Use. Participants reported their alcohol involvement over the past 3 months with 1 item querying the number of drinking occasions they experienced, using a scale anchored at 0 (*I didn't drink in the past 3 months*) and 9 (*twice a day or more*) and scored to reflect occasions per week, and a second item querying the number of drinks they typically consumed per occasion, anchored at 1 (*I drink or less*) and 10 (*12 or more drinks*). A zero-drinks option, "I didn't drink in the past 3 months," also was available. A composite alcohol quantity/frequency variable (AlcQF) was created by multiplying the number of typical weekly drinking occasions by estimated number of drinks typically consumed per occasion. Frequency of alcohol use was scored in terms of per-week experiences: 0 = did not drink in the past 3 months; 0.083 = 1 time in the past 3 months; 0.167 = 2 times in the past 3 months; 0.25 = about once a month; 0.625 = 2 to 3 times a month; 1.5 = once or twice a week; 3.5 = 3 to 4 times a week; 5 = nearly every day; 7 = once a day; 14 = twice a day or more. Quantity of use was scored: 0 = did not drink in the past 3 months; 1 = 1 drink; 2 = 2 drinks; 3 = 3 drinks; 4 = 4 drinks; 5 = 5 drinks; 6 = 6 drinks; 7 = 7 drinks; 8 = 8 drinks; 10 = 9 to 11 drinks; 12 = 12 or more drinks.

Alcohol Consequences. Participants responded to 24 items adapted from the Young Adult Alcohol Problems Screening Test (YAAPST; Hurlburt and Sher, 1992). Representative items included, "Have you...gotten hurt or injured yourself because of drinking," "...felt that you had a problem with alcohol," "...been the victim of a crime because of your drinking," "...driven a car when you knew you had too much to drink to drive safely," and "...gotten into a sexual situation you later regretted because of your drinking." Responses were scored on a dichotomous scale (0 = *not within the past 3 months*; 1 = *at least once in the past 3 months*). For current purposes, all items other than alcohol-related regretted sex were combined to form a 23-item composite of negative consequences ($\alpha = 0.79$).

Procedure

After providing informed consent, participants completed a battery of self-report measures, including the alcohol-related measures described previously. They then completed a battery of computer-based cognitive tasks that are not of interest for the

current report (for descriptions, see Fleming et al., 2016b; Korucuoglu et al., 2016). Finally, participants were debriefed about the nature of the tasks and measures they completed during this session, paid, and dismissed.

Data Analysis Plan

Primary hypotheses were tested using a set of hierarchical logistic regression models, one for the SRE and one for the ASQ. (i) Step 1 of these models tested the basic prediction that lower alcohol sensitivity would be associated with increased risk for alcohol-related regretted sex by regressing regretted sex on alcohol sensitivity scores and participant sex. (ii) Step 2 in each model added control variables including age, weight, and recent alcohol use (AlcQF) as a way of testing whether the relationship between alcohol sensitivity and regretted sex changes when levels of these variables are held constant. (iii) The primary hypothesis for this study, that LS is protective for women’s (but not men’s) experience of alcohol-related regretted sex when levels of alcohol use are held constant, was tested by specifying interactions involving alcohol sensitivity scores and participant sex in Step 3 of these models. (iv) To test the extent to which this predicted effect is specific to regretted sex (as opposed to negative alcohol-related consequences more generally), Step 4 added the 23-item YAAPST composite (negative consequences) as a control variable to determine whether the unique effect of sensitivity persisted.

RESULTS

Participant Characteristics

Approximately half of the participants reported at least one prior regretted sexual experience. The number of drinks consumed per drinking occasion in the past 3 months varied from 1 to 10 in women (*M* = 3.42; *SD* = 1.53) and from 1 to 12 in men (*M* = 4.68; *SD* = 2.34).

Table 1 presents mean alcohol sensitivity levels, mean alcohol use, and their correlations in the current sample as a function of sex.

Table 1. Alcohol Sensitivity Levels, Alcohol Use, and Correlations as a Function of Sex

| | <i>N</i> | Min | Max | <i>M</i> | <i>SD</i> | Correlations | |
|--------------|----------|------|-------|----------|-----------|--------------|--------|
| | | | | | | SRE | ASQ |
| Women | | | | | | | |
| SRE | 378 | 1.00 | 13.00 | 4.74 | 1.85 | – | – |
| ASQ | 393 | 1.23 | 10.69 | 4.06 | 1.28 | 0.73** | – |
| AlcQF | 391 | 0.17 | 35.00 | 5.79 | 5.09 | 0.35** | 0.23** |
| Men | | | | | | | |
| SRE | 383 | 1.00 | 14.00 | 6.74** | 2.35 | – | – |
| ASQ | 407 | 1.00 | 13.92 | 5.81** | 2.03 | 0.70** | – |
| AlcQF | 406 | 0.33 | 84.00 | 9.75** | 8.81 | 0.24** | 0.25** |

SRE scores based on “most recent period of drinking at least once a month for 3 consecutive months” time frame. AlcQF = number of drinks per week during the past 3 months (number of drinking occasions per week × number of drinks per occasion; natural log was used for analyses because AlcQF was not normally distributed). ***p* < 0.001 for all correlations as well as mean differences in alcohol use and sensitivity variables as a function of sex.

Hypothesis Testing

(i) As indicated in Table 2, alcohol sensitivity scores derived from the SRE were positively associated with the experience of sex later regretted (OR = 1.66, 95% CI 1.21, 2.29, *p* = 0.002), as were alcohol sensitivity scores derived from the ASQ (OR = 1.53, 95% CI 1.04, 2.25, *p* = 0.03) in Step 1. Overall, lower self-reported alcohol sensitivity was modestly associated with increased risk of alcohol-related regretted sex. (ii) Adding control variables (age, weight, and recent AlcQF) in Step 2 showed that participants reporting more typical drinking also were more likely to report regretted sex (ORs 2.55 to 2.56, 95% CIs 1.71 to 3.80).

(3) Step 3 of these models specified interactions involving alcohol sensitivity scores and participant sex. In the model using SRE scores, the Sex × Sensitivity interaction was not significant (OR = 1.44, 95% CI 0.78, 2.66, *p* = 0.25). In the model using ASQ scores, the Sex × Sensitivity interaction was marginal (OR = 1.86, 95% CI 0.91, 3.80, *p* = 0.09). (4) Step 4 added the 23-item YAAPST composite (negative consequences) as a control variable. YAAPST composite scores (ORs 1.29 to 1.34, CIs 1.15 to 1.50) were a significant predictor in both models. In the model using SRE scores, the Sex × Sensitivity interaction (OR = 1.44, 95% CI 0.76, 2.73, *p* = 0.26) was not significant. In contrast, the model using ASQ scores produced a significant Sex × Sensitivity interaction (OR = 2.10, 95% CI 1.03, 4.27, *p* = 0.04). Follow-up tests showed that ASQ score was a significant predictor of women’s (OR = 0.37, 95% CI 0.14, 0.93, *p* = 0.03), but not men’s (OR = 1.57, 95% CI 0.91, 2.724, *p* = 0.11) risk for regretted sex. Specifically, among women, ASQ scores were negatively associated with risk for regretted sex, indicating that lower sensitivity was associated with reduced risk for regretted sex when effects of typical alcohol use and experience of alcohol consequences in general were held constant. Among men, however, no such association was evident.

DISCUSSION

Compared to women, men in the current sample reported typically drinking more and requiring more drinks to feel alcohol’s effects (i.e., lower sensitivity). These findings are consistent with numerous prior reports (e.g., Mumenthaler et al., 1999; Substance Abuse and Mental Health Services Administration, 2013). In addition, alcohol use and alcohol sensitivity scores were only modestly correlated, supporting the idea that these variables are both conceptually and empirically distinct (see Bartholow et al., 2007) and could have largely unique associations with other constructs, including alcohol-related regretted sex. Indeed, the current findings showed that although LS was associated with increased odds of experiencing sex later regretted, when controlling for typical alcohol consumption, LS was negatively associated with reports of alcohol-related regretted sex among women, extending findings from the hangover

Table 2. Logistic Regression Models Predicting Alcohol-Related Regretted Sex from Alcohol Sensitivity and Sex, Controlling for Alcohol Use

| | SRE | | | ASQ | | |
|-------------|------------------------------|-------|--------------|------------------------------|-------------------|--------------|
| | $\Delta\chi^2$ (df) | OR | 95% CI | $\Delta\chi^2$ (df) | OR | 95% CI |
| Step 1 | | | | | | |
| Sensitivity | 9.17 (2)* | 1.66* | 1.21 to 2.29 | 4.66 (2) ^p = 0.10 | 1.53* | 1.04 to 2.25 |
| Sex | | 0.61 | 0.33 to 1.13 | | 0.78 | 0.42 to 1.43 |
| Step 2 | | | | | | |
| Sensitivity | 29.09 (3)* | 1.22 | 0.84 to 1.76 | 34.18 (3)* | 1.06 | 0.68 to 1.64 |
| Sex | | 0.55 | 0.26 to 1.14 | | 0.68 | 0.33 to 1.41 |
| Age | | 0.91 | 0.77 to 1.07 | | 0.88 | 0.74 to 1.04 |
| Weight | | 1.00 | 0.98 to 1.01 | | 1.00 | 0.99 to 1.01 |
| AlcQF | | 2.55* | 1.71 to 3.80 | | 2.56* | 1.75 to 3.75 |
| Step 3 | | | | | | |
| Sensitivity | 1.35 (1) ^p = 0.25 | 0.945 | 0.53 to 1.69 | 3.08 (1) ^p = 0.08 | 0.57 | 0.24 to 1.35 |
| Sex | | 0.505 | 0.23 to 1.10 | | 0.71 | 0.33 to 1.56 |
| Age | | 0.908 | 0.77 to 1.07 | | 0.87 | 0.74 to 1.04 |
| Weight | | 0.996 | 0.98 to 1.01 | | 1.00 | 0.99 to 1.01 |
| AlcQF | | 2.59* | 1.73 to 3.87 | | 2.60* | 1.77 to 3.81 |
| Sex*Sens. | | 1.44 | 0.78 to 2.66 | | 1.86 [†] | 0.91 to 3.80 |
| Step 4 | | | | | | |
| Sensitivity | 19.77 (1)* | 0.88 | 0.48 to 1.61 | 27.69 (1)* | 0.46 | 0.20 to 1.07 |
| Sex | | 0.59 | 0.27 to 1.32 | | 0.85 | 0.37 to 1.92 |
| Age | | 0.95 | 0.80 to 1.12 | | 0.92 | 0.78 to 1.08 |
| Weight | | 0.99 | 0.98 to 1.01 | | 1.00 | 0.98 to 1.01 |
| AlcQF | | 1.85* | 1.20 to 2.83 | | 1.83* | 1.21 to 2.74 |
| Sex × Sens. | | 1.44 | 0.76 to 2.73 | | 2.10* | 1.03 to 4.27 |
| Conseq. | | 1.29* | 1.15 to 1.45 | | 1.34* | 1.20 to 1.50 |

Conseq. = composite of 23-item negative consequences scale; Sex × Sens. = cross-product term involving sex and the alcohol sensitivity measure in each model; AlcQF = natural log of the number of drinking occasions per week (past 3 months) × number of drinks per occasion. * $p < 0.05$; [†] $p = 0.09$. The measure names SRE and ASQ refer to the alcohol sensitivity variable used in the model.

literature (Piasecki et al., 2012). This finding is consistent with research showing that alcohol impairs women's perception of sexual risk (Parks et al., 2016), and the idea that, at a given dose of alcohol, LS is associated with relatively less impairment.

However, this finding was conditional upon controlling for experience of alcohol consequences generally and was specific to sensitivity as measured by the ASQ, which includes lighter-dose effects, several of which are related to sociability (e.g., feeling more talkative; more flirtatious; less inhibited; more socially at-ease). Sensitivity determined by SRE scores, reflecting effects of alcohol associated with larger doses and heavier drinking, was not predictive of regretted sex once typical consumption was statistically controlled. This suggests that variability in the number of drinks needed to experience lighter-dose effects potentially related to sociability is an important determinant of alcohol-related regretted sex. This could indicate that the protection apparently afforded to women by LS primarily emerges during interactions that take place or are initiated relatively early during a drinking episode, and that the influence of differential sensitivity diminishes as the number of drinks consumed increases. If this is the case, it would be interesting for future work to evaluate the relationship between alcohol sensitivity and other social–sexual consequences of alcohol.

From a public health standpoint, this finding highlights the importance of individuals being aware of their own sensitivity to alcohol's effects and the risks associated with it. In general, LS is associated with experiencing a greater number

of, and more frequent negative, consequences, and therefore, LS drinkers should be cautioned about their heightened risk overall. However, in some contexts HS drinkers are also at increased risk, particularly in situations when they drink more than they usually do, of experiencing certain consequences that likely emerge from impaired cognitive functioning and disrupted risk perception. Assessment of alcohol sensitivity in clinical settings using validated questionnaire measures could help providers determine fruitful avenues for intervention and prevention efforts aimed at reducing the experience of negative consequences of many kinds.

Adjusting for typical consumption arguably makes these findings relevant to typical young adult drinking scenarios, in which social pressures influence the amount women drink (Borsari and Carey, 2001). Under this assumption, HS women are at a relative disadvantage because they likely are more impaired—even at relatively moderate doses—in the heavy drinking contexts typical of young adult drinking. Indeed, Fleming and colleagues (2016b) confirmed that LS as measured by the ASQ is associated with diminished intoxication under challenge conditions in these very participants. This could make them less vulnerable to impaired risk-taking at lower alcohol doses than their HS peers. Although measuring risk perceptions was beyond the scope of this study, future research should directly test the claim that impaired risk perception is an important mechanism through which alcohol sensitivity is related to risk for regretted sex.

The findings reported here should be interpreted within the context of several limitations of this research. First, the

sample used here was relatively homogeneous in terms of age and other demographic factors, which has implications for the generalizability of the findings. For example, although LS is considered a risk factor for negative consequences of heavy drinking, research indicates that development of tolerance (i.e., needing larger doses than in the past to experience alcohol's effects) is valued among young adults (Haeny et al., 2017). Thus, it is possible that alcohol sensitivity is differently related to alcohol consequences among some young adults. This possibility should be examined in future research using a more age-heterogeneous sample. Second, data on the sexual activity of this sample were not obtained, and thus, it is unclear what proportion of subjects were sexually active at the time of the study. However, in a similar study of sexual regret among 348 participants aged 18 to 32 (Oswalt et al., 2005), a majority (270) reported engaging in sexual activity in their lifetime (of these, only 25.9% reported that they had never regretted their decision to engage in sexual activity), suggesting that the majority of this sample was sexually active. Future studies should consider limiting analyses to only participants who were sexually active during the period under investigation. In addition, the past-3-month time frame of the measures used in the present study limited the likelihood of participants reporting multiple regretted sexual experiences, requiring us to examine only the occurrence (yes/no) of such experiences in our analyses. Future studies should select participants at high risk for regretted sexual experiences and include measures of past year and lifetime regretted sexual experiences, which would allow for tests of whether LS is associated with the occurrence (yes/no) in addition to the frequency (number of occurrences) of alcohol-related regretted sex.

More importantly, the major limitation of this study is that the data were not "event based," and the self-report, retrospective data acquired for this study permit only a relatively coarse level of analysis for testing our hypotheses. Ideally, researchers would obtain data on specific drinking episodes (e.g., alcohol dose consumed over a specific period of time) in particular contexts (e.g., social situations involving members of the opposite sex) and determine which subjective effects of alcohol were experienced, as well as whether or not particular consequences occurred. In future studies, researchers should endeavor to obtain such event-level data, perhaps with EMA techniques (e.g., Moskowitz and Young, 2006), which would provide a much stronger test of the presumed mechanisms linking alcohol sensitivity with differential experience of regretted sex among young women.

The fact remains that consequences of heavy drinking are more severe for young women than for young men (Nolen-Hoeksema, 2004), especially in the domain of negative sexual consequences (Abbey, 2002). Given high rates of alcohol-related sexual consequences among young adults, especially among women with regard to alcohol-related sexual assault, it is important to know how risk factors, like alcohol sensitivity, are related to specific alcohol consequences like alcohol-related regretted sex. Findings detailed here suggest that LS

women's decision making might be less impaired at a given dose of alcohol, thereby helping them to avoid risky sexual encounters. This information may be especially relevant for informing emerging information tailored to LS and HS female drinkers at risk for alcohol-related negative sexual consequences in certain drinking contexts.

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CONFLICT OF INTERESTS

The authors have no conflict of interests to declare.

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