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WHEN WOMEN IMBIBE

Alcohol and the Illusory Control of HIV Risk

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The present research examines how alcohol, or even the illusion of imbibing alcohol, affects women's perceived self-efficacy for avoiding HIV. Women ($N = 82$) were randomly assigned to one of four conditions in a 2 (alcohol or no alcohol) × 2 (expect alcohol or not) balanced placebo design. After consuming alcoholic or nonalcoholic beverages, participants assessed their self-efficacy for HIV risk prevention. Both alcohol consumption and alcohol expectancy increased women's confidence that they could detect whether a potential partner was HIV positive simply by interacting with the potential partner.

Sexual behavior is one of the most common ways of contracting HIV. Accordingly, social scientists have focused on isolating and understanding the factors that may contribute to risky sexual behaviors. One such factor is the consumption of alcohol. Miller, Bettencourt, DeBro, and Hoffman (1993), for example, found over half of their sample mentioned alcohol as an essential component of sexual encounters. Not only do individuals perceive that they are more likely to engage in sex when drinking alcohol, they also report that they are more likely to engage in unsafe or risky sexual behaviors (e.g., McEwan, McCallum, Bhopal & Madhok, 1992). One study found alcohol use and condom use were negatively related even for HIV-infected women (Kline & Van Landingham, 1994).

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Precisely how alcohol consumption may lead to an increase in sexually risky activities remains unclear. Alcohol is a pharmacological substance that impairs judgment and increases sexual disinhibition, which may, in turn, result in an increase in risky sexual behaviors. Alcohol has also been shown to have a psychological component such that simply knowing that one is drinking may serve to disinhibit behavior. Thus, individuals can use alcohol as an excuse to engage in pleasurable but risky activities (Cooper, 1992). Although women are currently the fastest growing subgroup with regard to HIV infection (Centers for Disease Control and Prevention, 1997), they remain underrepresented in most laboratory studies of alcohol and sexual behavior (Norris, 1994). The focus on men is problematic because women both psychologically and physiologically respond to alcohol differently than do men (see Crowe & George, 1989 for a review). Thus, attempting to explain women's behaviors under the influence of alcohol by extrapolating from studies of men is likely to result in inaccurate assumptions. The present study examines both the pharmacological and psychological effects of alcohol on women's assessments of their own self-efficacy in preventing exposure to HIV.

One consistent finding in the alcohol literature is that women who drink are viewed as more sexually disinhibited and sexually available by both men and women than are sober women (George, Gournic & McAffee, 1988; Norris & Cubbins, 1992). In addition, Norris and Kerr (1993) suggest that inebriated women may be more likely to make erroneous judgments of men's sexual intent. They examined how alcohol affects women's perceptions of a scenario involving violent heterosexual intercourse and found that drinking women had more positive views of the man's behavior than did sober women. Abbey, Ross, McDuffie, and McAuslan (1996) found that almost half of sexual assaults of female college students involved alcohol consumption by either the man, the woman, or both. Their respondents suggested they were more vulnerable to an assault when drinking because they were less likely to perceive the man's intentions as sexual.

Alcohol consumption may lead to misperceptions by impairing cognitive processing and giving individuals a feeling of overconfidence in their judgments. Research has demonstrated alcohol's ability to impair cognitive functioning by restricting the range of cues an individual perceives (for a review, see Steele & Josephs, 1990). In addition, people tend to overestimate their knowledge and abilities and alcohol exacerbates this propensity (Sayette, 1993). We hypothesize that when drinking, women may feel an unwarranted confidence or self-efficacy in their capability to perform certain actions. Self-efficacy is the ability to "organize and execute courses of action required to attain designated types of performance" (Bandura, 1986, p. 391).

Self-efficacy influences behavior through its effects on the decisions people make, the effort they choose to expend when enacting a behavioral sequence, and their persistence in the face of difficulty. Women who believe that they are skilled at condom negotiation, for example, may be more likely to ask a man to use a condom, persist in the face of a refusal, and have multiple strategies for dealing with refusals (Brafford & Beck, 1991). Perceptions of self-efficacy are specific to particular behavioral domains. Thus, an individual can feel efficacious at negotiating when and where to have sex yet feel helpless at negotiating condom use with a partner. In sexual negotiation, Maibach and Flora (1993) identified at least three self-efficacy domains that are germane to avoiding HIV—ability to: (a) detect potential-

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ly risky situations and persons, (b) negotiate condom use, and (c) avoid risky situations.

Feelings of self-efficacy arise from a variety of sources including: successful past performance of a specific behavior, observing the successful performance of others, being told we can do it, and internal cues suggesting that we are relaxed and in control (Bandura, 1986). Alcohol provides just such internal cues. Several studies have found that alcohol reduces anxiety in female drinkers (e.g., Wilson, Perold, & Abrams, 1981). Monahan and Lannutti (1997) found that inebriated women were less anxious and more confident than sober women in their abilities to predict a male conversational partner's attitudes. If women are less anxious yet more confident when drinking alcohol, imbibing alcohol may cause women to feel more efficacious and confident in their decision making about a potential partner's sexual risk. This elevation of confidence, combined with alcohol's known sexual disinhibitory effects, may lead women to conclude that a desired sexual partner is "safe" and that they need not take precautions. Thus, although self-efficacy is often seen as a positive factor in avoiding risk, when combined with alcohol, it may result in a dangerous outcome:

H1: Women drinking alcohol will be more confident in their HIV prevention self-efficacy skills than women who are not drinking alcohol.

Although several studies find women *believe* they engage in more risky sexual behavior when drinking alcohol, a number of cross-sectional survey and diary studies find that women do not actually engage in more risky sexual behavior when they are drinking than when they are sober (e.g., Bolton, Vincke, Mak, & Dennehy, 1992). Klassen and Wilsnack (1986) argue that women may use alcohol as a way of reducing their sense of responsibility for sexual encounters and as a mechanism for alleviating guilt that may result from engaging in risky sexual behaviors. In support of this, studies that compare actual alcohol consumption with the expectancy that alcohol has been consumed find that the mere belief that a woman has consumed alcohol lowers her sexual inhibitions and enhances sexual arousal (Malatesta, Pollock, Crotty, & Peacock, 1982). Thus, it may be that the belief or expectancy of the effects of alcohol contributes more to risky sexual behavior than do the physiological effects.

H2: Women who believe they are drinking alcohol will be more confident in their HIV prevention self-efficacy skills than women who believe they are not drinking alcohol.

METHOD

Design and Participants

A 2 (alcohol consumption) × 2 (alcohol expectancy) balanced placebo design was employed. Participants were randomly assigned. A total of 82 White female social drinkers between the ages of 21–30 were recruited through advertisements in a university newspaper and two local community newspapers and were offered $20 to participate. Participants were informed the research was to investigate how people select dating partners. The Michigan Alcohol Screening Test (MAST; Selzer, 1971) excluded nondrinkers and those with a history of alcohol abuse. Screening

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also excluded women who were not yet 21, not yet sexually active, or who were in a serious romantic relationship (i.e., not currently seeking a dating partner).

Independent Variables

Alcohol Manipulation

A dose of .06 grams of ethanol per kilogram of body weight was prepared for participants in the received alcohol conditions. Although this dose is less than 0.10/g dl, which defines legal intoxication in most states, it is sufficient to induce behavioral impairment and perceived intoxication in most participants (Abrams & Wilson, 1979).

Expectancy Manipulation

Participants in the alcohol expectancy conditions were told that their drinks would contain alcohol and those in the no-alcohol expectancy conditions were told that their drinks would consist of nonalcoholic mixers. Marlatt, Demming, and Reid (1973) previously demonstrated that a 1 : 5 mixture of vodka and tonic water cannot be reliably distinguished from tonic water alone. Pilot testing revealed that young women disliked the tonic water/vodka and a second pilot test found women (N = 12) could not reliably distinguish the 1 : 5 mixture of lemon-lime/vodka from the lemon-lime soda when three squirts of lime juice were added. In the no-alcohol conditions, women received the lemon-lime soda/lime juice mixture. To provide the illusion that the drinks contained alcohol, those in the expect alcohol/receive-no-alcohol condition drank the lemon-lime soda mixture with 7 ml of vodka floated on the surface of each drink, and the rim of each cup was rubbed with vodka.

Dependent Measures

Self-Efficacy

Participants completed eleven items from Maibach and Flora's (1993) HIV Prevention Self-Efficacy Questionnaire. Four items assess condom negotiation self-efficacy (e.g., I can talk to my next new partner about condoms before we undress, I can use a condom every time I have sex), four items assess risk-avoidance self-efficacy (e.g., I can avoid situations that can lead to unsafe sex when I don't have a condom), and three items assess risk-detection self-efficacy (I can tell if a person may have been exposed to HIV, the AIDS virus, just by talking to them). Maibach and Flora used this scale to demonstrate that increases in self-efficacy produce concomitant increases in preventive risk behaviors such as buying condoms and safer sex talk. Each item uses a 0 (*not at all confident*) to 100 (*extremely confident*) scale. Items for each self-efficacy subscale were summed and divided by the number of items in the subscale.

Procedure

The data used in the present study were collected as part of a study examining the effects of alcohol on women's perceptions of men as potential dating partners (Murphy, Monahan, & Miller, 1998). Participants were offered $20 to participate and were scheduled for a 4-hour appointment. Appointments were scheduled in

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the week following a participant's menstrual period because of hormonal variations that influence susceptibility to alcohol and as a further safeguard against the inclusion of pregnant subjects. Participants signed a consent form indicating that they had not consumed any drugs for 12 hours prior and had not consumed food or beverages for 4 hours prior to their appointment in the early afternoon.

Participants were weighed and informed by a female assistant that they were assigned to the alcohol or no-alcohol condition. Each participant gargled for 30 seconds with 1 ounce of nonalcoholic mouthwash. They were told this was necessary to obtain consistent estimates from the Breathalyser, however, the mouthwash also reduces the ability to discriminate the presence of alcohol. Next, a baseline Blood Alcohol Level (BAL) was assessed by a second female assistant (who served as bartender) using an Alco-Sensor IV Breath Alcohol. The bartender randomly assigned participants to experimental conditions and then prepared the appropriate beverage.

The bartender then administered the alcoholic or placebo beverages. To distract attention away from the alcohol manipulation during the absorption period, each participant watched the same videotaped television comedy show. After the absorption period, a second BAL reading (out of the participant's view) was assessed by the bartender. Participants then viewed and evaluated the physical attractiveness, sexual risk, and relationship potential of four men who were presented on videodating tapes. BAL was checked again and participants completed the self-efficacy judgments, which are the dependent measures reported in this article. Data were then collected to use for a manipulation check of expectancy. After their BAL returned to 0.020 g/dl participants were thanked and paid for their efforts and debriefed.

RESULTS

Manipulation Checks

Alcohol Consumption

The third BAL reading, which was not significantly different than the second or fourth reading, is reported. Data for two participants with average BAL readings significantly lower than the other participants (BAL readings less than .03) were eliminated. Women who received alcohol had significantly higher BAL ($M = .054$) than women who had not received alcohol ($M = 0.00$), $F\ (1, 78) = 904.86$, $p < .001$. Within the receive-alcohol condition, BAL for women who did not expect to get alcohol ($M = .052$) did not differ significantly from women who expected alcohol ($M = .056$), $F\ (1, 38) = 2.66$, $p = .17$.

Alcohol Expectancy

Women who expected alcohol ($M = 2.19$) reported receiving significantly more shots of alcohol than those who did not ($M = .33$), $F\ (1, 78) = 47.77$, $p < .001$, alcohol consumption and expectancy did not interact. Also, women who thought they received alcohol ($M = 2.22$) felt the drinks had a significantly stronger effect then those who did not think they drank alcohol ($M = 1.6$), ($t\ (80) = 2.05$, $p = .04$, on a 4-point scale). For those women ($n = 40$) who did not receive alcohol, those who

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Table 1

HIV Risk Detection Scores As a Function of Alcohol Consumption and Alcohol Expectancy

Alcohol expectancy	*Alcohol consumption*	
	Do not receive	*Receive*
Do not expect	15.25_{a} (18.24)	20.75_{b} (19.69)
Expect	24.50_{c} (20.45)	$38.41_{a,b,c}$ (27.88)

Note: $N = 82$. Standard deviations are presented in parentheses. Shared subscripts denote means significantly different ($p < .05$, Student's t-tests).

thought they drank alcohol estimated that their drinks had significantly more shots of vodka [t (38) = 13.08, $p < .0001$] and had a stronger effect on them [t (38) = 2.40, $p = .021$] than did those who thought they did not drink alcohol.

Hypotheses

The 11 items for self-efficacy formed the three factors found in previous research (Risk Detection a = .83, Condom Negotiation a = .84, Risk Avoidance a = .85). Interfactor correlations were low (RD /CN $r = -.05$, RD/RA $r = .02$, CN/RA $r = .21$, n.s.). Women felt significantly more confident at condom negotiation [$M = 83.57$, t (81) = 18.34, $p < .001$] and risk avoidance [$M = 74.86$, t (81) = 13.59, $p < .001$] than at risk detection ($M = 25.06$). They also felt more self-efficacious at condom negotiation than at risk avoidance [t (80) = 3.29, $p = .001$].

The scores for the three self-efficacy factors were analyzed in a 2 (Alcohol) × 2 (Alcohol Expectancy) multivariate analysis of variance. The multivariate effect for alcohol consumption was not significant; however, the multivariate effect for alcohol expectancy was significant [Wilks L = .87, F (3, 74) = 2.89, $p < .05$]. Examining the univariate effects, there were no significant main or interaction effects for the Condom-Negotiation and Risk-Avoidance self-efficacy factors. There was a significant effect of alcohol [F (1, 78) = 4.00, $p = .05$, $\eta^2 = .05$] for the HIV Risk-Detection factor such that those who drank alcohol were more confident in their abilities to detect people who had been exposed to HIV than did women who did not drink alcohol (Ms = 30.00 and 19.88, respectively). An effect of alcohol expectancy for the HIV Risk-Detection Factor [F (1, 78) = 8.17, $p = .005$, $\eta^2 = .10$] was also obtained such that women who thought they received alcohol were more confident than those who thought they did not receive alcohol (Ms = 31.79 and 18.00, respectively). As shown in Table 1, women were *least* confident in their ability to detect HIV-positive people when they did not expect and did not receive alcohol and were *most* confident in their ability when they both expected and received alcohol.

DISCUSSION

Women who were drinking or thought they were drinking were significantly more confident in their abilities to detect a person infected with HIV. Why would alcohol and alcohol expectancy influence only one of the three sets of self-efficacy

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perceptions—the ability to detect a person with HIV? As Bandura (1986) points out, one way to gain self-efficacy is through successful performance of a behavior. Most sexually active women have had opportunities to practice condom negotiation and avoid risky situations. Their appraisal of their performance in those contexts is apt to provide them with a fairly accurate assessment of their abilities. Consequently, the women in our study may have a well-developed sense of self-efficacy regarding how to deal with sexual pressure. In support of this interpretation, women's confidence in their self-efficacy at condom negotiation and avoiding risky situations was significantly higher than their confidence in their risk-detection self-efficacy.

Self-efficacy that is rooted in feedback regarding past performances is resistant to change (Bandura, 1989). Thus, alcohol may not alter women's perceived self-efficacy regarding familiar behaviors, such as condom negotiation, that have been performed in the past. Instead, it is in domains of limited feedback that people tend to overestimate the adequacy of their knowledge and abilities. Most women have little or no knowledge of whether they can accurately detect a potential partner's HIV status. Furthermore, despite popular misconceptions, there are no reliable verbal or nonverbal cues that are diagnostic of a person's HIV status, short of his or her divulging that information and thus no amount of practice can enhance detection ability. Because women are less familiar with the behavioral domain, and receive delayed feedback that is not diagnostic, HIV risk-detection self-efficacy may be particularly susceptible to change and situational fluctuation, as our findings suggest. This finding is especially troubling, as data from the larger study (Murphy et al., 1998) suggest that when these women were drinking alcohol, they viewed an attractive but sexually risky man as having greater long-term relationship potential than did sober women.

Limitations and Conclusions

The present study used a relatively low blood-alcohol level, which may limit the generalizability of these findings. Alcohol and women's sexual arousal are related in a curvilinear fashion: Sexual arousal initially increases but then decreases with increasing consumption (Crowe & George, 1989). As consumption increases, women may become more cautious, realizing that they are drinking and not in the best shape to make risky decisions. A second limitation is that all women in this study were White and these findings may not apply similarly to women of color. A third limitation is that we have only self-report measures of self-efficacy. Extrapolations from self-reported perceptions of what a woman feels confident doing to what she might actually do when drinking at a bar or social event should be viewed with caution.

Finally, although our data add to the limited extant data on alcohol and women, caution should be used in extrapolating these findings to men's behavior. Our results suggest that alcohol consumption and expectancy only elevated women's perceptions of their ability to detect whether a man is HIV positive, whereas Gordon and Carey (1996) found that men who drank alcohol had more negative attitudes toward condom use and lower self-efficacy at initiating condom use. More

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research comparing women and men's sexual behaviors under the influence of alcohol is necessary to make sense of these and other conflicting findings in the literature.

Because the notion that alcohol and sex "go together" is so common, women need to be aware of the potential dangers, specifically when making judgments about a partner's potential HIV risk. As Baumeister (1989) argues, there may be an "optimal margin of illusion" or self-efficacy with regard to health care risks, such as HIV. This optimal level would have the beneficial effects necessary for behavior change without promoting unrealistically optimistic self-delusions. Alcohol apparently promotes confidence in women's ability to "detect" a person who is infected with the HIV virus, a dangerous illusion indeed.

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