



Alcohol Use and Sexual Risk Behavior in Young Women: A Qualitative Study

Kate B. Carey^{1,2} · Kate M. Guthrie^{1,3,4} · Carla M. Rich³ · Naomi H. Krieger³ · Alyssa L. Norris³ · Clair Kaplan^{5,6} · Michael P. Carey^{1,3,4}

Published online: 12 October 2018
© Springer Science+Business Media, LLC, part of Springer Nature 2018

Abstract

Alcohol use and sexual behavior co-occur frequently in young women, increasing risk for HIV and other sexually transmitted infections. To inform preventive interventions, we used qualitative methods to better understand how women think about the contribution of alcohol use to sexual risk-taking. Young women ($N=25$; $M=22.8$ years; 64% White) were recruited from a community-based reproductive health clinic to attend focus groups; a semi-structured agenda was used to investigate both a priori explanatory mechanisms as well as participant-driven explanations for the alcohol-sex association. Women reported that alcohol reduced their social anxiety, helped them to feel outgoing and confident, and lowered inhibitions and other barriers to sexual encounters (consistent with *alcohol expectancies*). During drinking events, women described being less concerned with risks, less discriminating regarding sexual partners, and less likely to insist on safer sex practices (consistent with *alcohol myopia*). These empirical findings support previous theory-based guidance for tailoring preventive programs for alcohol use and sexual risk reduction for young women.

Keywords Alcohol · Sexual behavior · Women · Qualitative research · Theory

Sexual behavior peaks in young adulthood. Relative to older adults, young people have sex more frequently and with more partners (e.g., Chandra et al. [1]; D'Souza et al. [2]). Young adulthood is also the time when risk for HIV and other sexually transmitted infections (STIs) peaks; national data indicate that individuals between the ages of 15 and 24 account for 50% of STIs [3]. Unintended pregnancies are

also more prevalent among women aged 20–24 compared to women who are older or younger [4].

Alcohol misuse also peaks during the early adult years. Adults aged 18–34 report the highest prevalence of binge drinking [i.e., consuming ≥ 4 (women) or ≥ 5 (men) drinks on a single occasion in the past month] and the highest number of drinks consumed during binge episodes [5]. Young adults aged 18–25 have the highest rates of alcohol use disorders (11%) relative to younger (2%) or older (5%) individuals (Substance Abuse and Mental Health Services Administration [6]).

Sexual behavior and alcohol misuse frequently co-occur in young adults (Baliunas et al. [7, 8]). Alcohol use has been reliably associated with holding stronger intentions to engage in unprotected sex (Scott-Sheldon et al. [9]) as well as a range of sexual risk behaviors, including having multiple and/or concurrent sexual partners (Aicken et al. [10, 11]), having sex with less well-known partners [12], and engaging in riskier sexual behavior (i.e., anal intercourse) [13].

The association between alcohol use and risky sex is stronger for young women relative to young men. Multiple measures of alcohol consumption (e.g., drinks per week, frequency of heavy drinking) predict number of sexual partners

✉ Kate B. Carey
kate_carey@brown.edu

¹ Department of Behavioral and Social Sciences, Brown University School of Public Health, 121 South Main St., Box G-S121-5, Providence, RI, USA

² Center for Alcohol and Addiction Studies, Brown University, Providence, RI, USA

³ Centers for Behavioral and Preventive Medicine, The Miriam Hospital, Providence, RI, USA

⁴ Department of Psychiatry and Human Behavior, Alpert Medical School, Brown University, Providence, RI, USA

⁵ Department of Clinical Research, Planned Parenthood of Southern New England, New Haven, CT, USA

⁶ Center for Interdisciplinary Research on AIDS, Yale University, New Haven, CT, USA

for women but not for men (Carey et al. [14]; Hutton et al. [15]). Furthermore, alcohol use predicts condomless sex, such that condom use is less likely when drinking precedes sex with a non-primary partner; this association has been observed only for women [16].

Co-occurring alcohol use and sexual behavior is consequential for women's health. Relative to men, women are more likely to become infected with a STI [3], due to their enhanced biological vulnerability (e.g., the lining of the vagina is thinner than the skin on a penis, making it easier for bacteria and viruses to penetrate, and the vagina is especially conducive to bacterial growth (Oldson [17]). In addition, women are more vulnerable to health complications of STIs; specifically, women are more likely to miss or mistake symptoms, and untreated STIs can cause cervical cancer, pelvic inflammatory disease, and infertility [18].

Given that alcohol use can undermine the sexual health of young women, it is important to understand how alcohol use contributes to sexual risk taking. A well-regarded theoretical framework that seeks to explain the influence of alcohol on sexual behavior is the dual-process model [19, 20]. This framework explains how alcohol affects sexual behavior both before (pre-consumption) and after (post-consumption) drinking. Proponents of this model posit that some individuals drink in anticipation of, and sometimes to facilitate, sexual activity (e.g., "liquid courage"; Stoner et al. [21]). This idea is consistent with expectancy theory (Goldman et al. [22]), which predicts that drinking and sex are motivated by the anticipation of desirable outcomes. Once alcohol expectancies are activated, the anticipation of the desired effects of alcohol may motivate approach behaviors and increase the likelihood of drinking to achieve those effects.

In contrast, the pharmacological effects of alcohol dominate in the post-consumption phase such that alcohol intoxication reduces cognitive processing capacity and impairs executive function. Consistent with alcohol myopia theory [23], alcohol intoxication narrows attentional focus to the most salient and impelling cues (e.g. sexual arousal). Under conditions of inhibitory conflict (e.g., when the desire to engage in spontaneous pleasurable behavior is inhibited by concerns about long-term consequences such as STI), intoxication increases the probability of sexual behavior that would be characterized as unplanned or risky.

Alcohol use is reliably associated with young women's risky sexual behavior, with important implications for women's health. The dual process framework explains how alcohol affects risk behaviors, yet it is also important to understand, in greater detail and depth, how women view the role of alcohol use in sexual risk-taking to inform educational, preventive, and therapeutic interventions. Therefore, we used qualitative methods to elicit young women's narratives of the role that alcohol plays during sexual interactions in various relationship contexts, including perspectives not

anticipated by our research team. In particular, focus groups provide opportunities for interaction among group members that can lead to nuanced articulations of ideas.

To achieve our research goals, we recruited a sample of young women who met criteria for both at-risk drinking and risky sexual behavior from a community-based reproductive health care clinic. We developed a semi-structured focus group agenda that allowed flexibility to investigate both a priori theoretical mechanisms, such as alcohol expectancy theory (Goldman et al. [22] and alcohol myopia theory [23], as well as participant-driven emergent explanations. The long-term goal of this research is to gain insights that will benefit the development of a brief, clinic-based intervention for alcohol and sexual risk reduction that could be used with at-risk young women.

Methods

Recruitment

This research took place at an urban, community-based, reproductive health care clinic located in the northeastern United States. The clinic is the largest provider of reproductive health, family planning, and STI services in the state where the research was conducted. The Institutional Review Board approved all procedures prior to their implementation.

Study inclusion criteria were: (a) female, (b) age 18–29 years, (c) meeting NIAAA definition of "at-risk" drinking in the last 3 months (> 3 drinks on any day and/or > 7 drinks per week); (d) sexual risk behavior (i.e., last 3 months: vaginal/anal intercourse with > 1 partner, or vaginal/anal intercourse with a partner who has other partners, or inconsistent condom use, or new relationship lasting 3 months or less); (e) English speaking; and (f) absence of acute intoxication, depression, or suicidal ideation.

During routine visits, female patients aged 18–29 were called from the waiting room to a private room where a research assistant obtained verbal consent, confirmed their age, and invited them to answer a confidential screening survey on a tablet computer. This survey included study inclusion criteria as well as items assessing health behaviors (e.g., smoking, exercise, diet, sleep) in order to mask inclusion criteria.

Screening was conducted during regular clinic hours over 4 months. During the study period, 543 patients met the sex (female) and age (18–29 years) criteria and were candidates for screening; 77 did not complete the survey [12 were non-English speaking, 29 were discharged from medical care before they could be approached, 16 could not be approached in private (e.g., they had a family member/friend present), and 20 declined to be screened]. The remaining 466 patients completed the screening survey. Of the 466

respondents, 89 (19%) were eligible. Of these, 72 (81%) expressed interest in the study, and 25 (28%) were willing and able to attend one of the focus groups. [There were no differences between those eligible who enrolled and did not enroll on age, race, ethnicity, or history of STI (all $ps > .08$).]

Participants

Women ($N = 25$) ranged in age from 19 to 28 ($M = 22.8$ years). The majority ($n = 16$; 64%) identified as White, 3 (12%) as African-American, 5 (20%) as other or unknown. Eight of the 25 (32%) identified as Hispanic. Most participants were employed full time ($n = 17$; 68%) or part-time ($n = 6$; 24%); 36% were enrolled as students at 4-year ($n = 6$; 24%) or 2-year ($n = 2$; 8%) college, or in high school ($n = 1$; 4%). Ten (40%) reported a history of STI and median number of 12 lifetime partners. With regard to alcohol consumption in the past 3 months, 96% reported consuming 4 or more drinks in a day and 46% reported consuming more than 7 drinks per week. With regard to sexual risk behavior, 60% reported more than one male sexual partner and 84% reported inconsistent condom use. Most (64%) reported being “single not in a relationship,” but of those with partners, 44% had been in a relationship for no more than 3 months, and 78% believed that their partner had other (i.e., concurrent) partners.

Focus Group Procedures

Eligible women were enrolled between 6/13/16 and 10/8/16. Each woman participated in one of six focus groups (size ranged from 3 to 7 women). Following completion, each participant received \$40 compensation for her time.

Focus groups occurred at either the reproductive health clinic from which participants were recruited, or the investigators’ research suite, which was two blocks from the clinic. The focus groups occurred in a private conference room at a time convenient for all attendees. Participants arrived at the site and were offered food and refreshments. A written consent form was placed at each seat so that women could review it while waiting for everyone to arrive. Once all volunteers had arrived, the facilitator reviewed the consent form in detail and responded to questions from the group. Confidentiality and the limits of confidentiality were discussed so that participants could protect their personal information as they deemed appropriate. Following explanation of consent, a brief break was taken to allow for private questions regarding consent and to allow any who wished not to participate to leave discreetly. The focus group discussion began after written consent was obtained from all participants. Two of the authors (KG and KC) served as facilitators, and a third author took notes (CR). All were females with research experience on

topics related to women’s sexuality and/or alcohol use; the lead facilitator (KG) has more than 20 years of experience conducting qualitative research studies.

A focus group agenda provided a flexible guide for facilitation. An intent statement explaining the goals of a particular topic preceded elicitation questions. Probes were used to gain specificity and depth, or to inquire into comparisons between aspects of the concepts being explored. Facilitators used the agenda to ensure that all research questions were addressed; the agenda afforded the flexibility of narrative conversation to pursue a priori topics as indicated in the intent statements as well as emergent themes. Thus, topics could be discussed in a different order in each group and some topics were considered in greater detail by one group than another. The agenda was divided into five areas: (a) sexual partners and relationships, (b) sexual behaviors, (c) relationships and sexual risk, (d) alcohol and sexual risk-taking, and (e) intervention design and development. Because the topics of sexual risk and alcohol use can be sensitive or difficult to discuss, we began each group by developing an inventory of sexual relationship labels used within the group members’ communities, as well as their defining features. This process acknowledged the participants’ expertise in aspects of their life that they knew well. We then layered discussion of sexual risk behavior and alcohol use onto those discussions, using the list of relationship labels.

For this study, we focus on participants’ experiences with and perceptions of the interactions of alcohol use and sexual behavior. Elicitation questions included (a) asking participants to discuss how they use alcohol (allowing them to be experts in the narrative); (b) asking them to characterize how much they typically drink; (c) asking them to discuss how drinking alcohol relates to sex for them; (d) asking participants to describe times when they had sex under the influence of alcohol; as well as (e) describing times they had sex when they had not been drinking. Elicitation questions were followed by probes when necessary to elicit further depth or breadth in the data; probes in this section explored details with respect to partner choice, types of sex, condom use, and perceived intended and unintended consequences.

The time allotted for focus group discussions was 90–120 min. In keeping with strong qualitative methodology, the research team debriefed after each group was completed, and re-prioritized or revised inquiries in subsequent focus groups as dictated by collected data (e.g., data saturation on a topic; emergent topics/themes). Focus groups continued until the team agreed that data saturation had been obtained on all topics, as indicated by no new ideas emerging from the groups [24]. All focus groups were audio-recorded and transcribed verbatim. Each transcript was then compared to the original audio recording, and transcription errors were corrected, unintelligible utterances were clarified, and personal identifiers were redacted.

Data Analytic Plan

A coding structure consisting of themes and constructs (both a priori and emergent) was developed in an iterative process. The first version was based on the focus group facilitation agenda. Coders reviewed the first transcript without the coding structure and inductively identified concepts and themes raised in the discussion. Using these and subsequent concepts and themes, the coding structure evolved to include the identification of the specific topics outlined earlier as well as novel concepts or subtopics that allowed a greater appreciation of the depth and breadth of the data presented. Thus, the coding team (3 members) achieved consistency in use of the codes by independently coding transcripts, then meeting to review codes and their application to narratives until concordance reached $\geq 85\%$. Remaining transcripts were coded independently by two coders. The two coders then met to discuss any discrepancies; this process clarified descriptions of codes or new codes, which were then shared across the team for consistency. The final coded transcripts consisted of all coded passages agreed upon by the coders. Agreed upon (“master”) codes were entered into NVivo qualitative data management and analysis software as the master codes used for data reduction and analysis.

Applied thematic analysis [25]; Guest et al. [26] was used to identify relevant narrative passages as a function of research questions, reduce the data via summarization, and interpret both patterns and unique understandings within and between focus groups. During the data reduction process, we began noticing patterns emerging in women’s descriptions of their lived experiences that were consistent with the dual-process model [19, 20]. As noted earlier, this model incorporates concepts from both expectancy theory (Goldman et al., [22] and alcohol myopia theory [23], and describes alcohol’s influences on sexual risk-taking during two temporal phases, pre-consumption and consumption. We present the data using this framework, providing evidence for the dual process model of alcohol use and sexual behavior among young women.

Results

Pre-consumption Phase: Alcohol-Sex Expectancies

Without explicit prompting, women identified expectancies about the effect of drinking alcohol on sexual behavior. Women reported that alcohol consumption could be used to lower the barriers to social engagement (i.e., the expectancy that alcohol reduces their social anxiety); a common example was that alcohol’s effects made initiating a conversation with someone at a bar easier [28 year old (yo), mixed race]. Women discussed how drinking alcohol allowed them to

feel more outgoing [20 yo, mixed race], “confident, invincible, and even cocky,” [23 yo, White], and more comfortable being flirtatious [21 yo, White; 20 yo, White; 22 yo, White, 19 yo, Hispanic]. Women acknowledged, on the one hand, their concerns of being in unsafe situations when under the influence of alcohol [20 yo, Hispanic; 22 yo, White] but, on the other hand, their enjoyment of the experience of “*alcohol-induced courage*” [26 yo, White]. Importantly, this expectancy of alcohol to eliminate or minimize social anxiety was intentionally used by some women in situations where they were aware of their own desire to engage in sex but would otherwise not feel confident. In essence, they would decide to drink to facilitate opportunities to have sex. As one woman put it, “when I am drinking I’m more inclined to be more open and more confident and more comfortable with casual sexual situations.” [22 yo, White]

Similarly, drinking was identified as both a situational cue for, and a confidence booster in, “first date” scenarios [26 and 27 yos, both White]. As one woman explained: “I’m gonna do this [drink alcohol] to do this [go on a first date]” [27 yo, White]. The expectancy was clear: “When you do most first dates... you go to get drinks and then that’s when you make out after. Probably if we went for coffee, I probably wouldn’t make out with them after.” [26 yo, White] This quote, like several others capturing a similar expectation, illustrates the culturally sanctioned script of first dates as well as the expectancies embedded within them. The women were clear that, if they wanted the interaction to go differently (i.e., *not* end in sexual contact), they would not drink alcohol.

Further, for many of the women, they noted that alcohol use lowered their inhibitions [25 yo, White] not just for social engagement and first dates but also for expanding their sexual repertoire and increasing their sexual adventurousness. Several women discussed how alcohol makes them feel more “*flexible*” [25 yo, White], allows them to try new sexual positions, makes it easier for them to initiate a sexual hook-up or one-night stand [19 yo, Hispanic], or to have sex with someone who they normally would not have sex with were they not drinking [25 yo, White]. The expectancy was also clear as it pertained to condomless sex; women reported that, if drunk and horny with no condom nearby, she would take the risk and have condomless sex. [24 yo, White].

Women also explicitly acknowledged that the effects of alcohol influenced their estimation of the risks involved in a sexual encounter; this point was voiced by approximately half of the women across several focus groups, and is illustrated by this woman’s words:

“I’ve done a lot of different drugs, and alcohol by far is the most [risky]... I think alcohol is the perfect balance of lowering your inhibitions, making you feel confident, and negating future consequences, that I don’t know any other drug has quite that same combi-

nation.... No drug has made me want to have sex more than alcohol.” [24 yo, White]

Consumption Phase: Alcohol Myopia

Without explicit prompting, participants also identified the effects of alcohol intoxication on their subsequent thinking and behavior. Women described responding to salient situational and psychological cues, which increased the likelihood that they would have sex somewhat impulsively while discounting longer-term consequences. Several women characterized one of the consequences of using alcohol as making them “more careless” [20 yo, Hispanic; 19 yo, White, 27 yo, White, 24 yo, White; 26 yo, White]; that is, they would evaluate the situation as something they should not do but do it anyway because, in that moment, the consequences were less relevant [20 yo, Hispanic]. “... You’re drinking alcohol and you’re like, ‘Oh, I’m just gonna do it [have sex].’ Then the next morning you’re like, ‘Oh, shit, why did I do that?’” [19 yo, White].

Some noted that distinctions they would normally make no longer have the same impact on their decisions when under the influence of alcohol. One such distinction discussed frequently was partner choice; most participants agreed with the participant who observed that alcohol changes one’s judgment of potential sexual partners, even with respect to attractiveness, giving one “beer goggles” [26 yo, White]. They noted that, while they may think about the potential risk, they just don’t “overthink” it, that is, they let go of their self-consciousness and of their inhibitions as illustrated by this statement: “The confidence goes up and sometimes the standards also go down.” [24 yo, White] Another distinction normally made that was less likely in the context of alcohol use was safety, with group members agreeing with one woman who discussed how she is less likely to consider whether and where she will go with a potential partner, sometimes finding herself in unfamiliar and potentially unsafe surroundings [24 yo, White].

Other discussions within the focus groups illustrate what Moss and Albery [20] discuss as consumption of alcohol degrading effortful explicit cognitive processing, as in this example: “if I drink a lot then I’ll just think about it a little bit and I’ll make a decision real fast. If I’m not under the influence, I’ll think about it a lot.” [19 yo, Hispanic]. Women in the focus groups discussed situations where being under the influence of alcohol made it difficult to act on their intentions to practice safer sex, leading to fewer instances of condom use. According to these women: “your judgment is impaired;” [22 yo, White; 20 yo, Hispanic; 24 yo, White] and “someone might be less likely to enforce a condom.” [28 yo, mixed race] Also, sexual assertiveness degrades; when under the influence of alcohol some women describe being more easily

influenced: “it’s hard to have confidence when the guy pushes back about condoms.” [27 yo, White] The impairment of cognitive processing was described by these participants as worsening over time. As one woman said, “If I’ve gotten past a certain point, then it just becomes—I go with it.” [25 yo, White] Another participant [24 yo, White] described a downward spiral with each decision in a behavioral sequence; that is, as she drank more, she was less likely to think through her choices, including who she chooses, whether she chooses to go to a safe location, whether she and her partner use condoms, and whether she raises a discussion or inquiry about sexually transmitted disease history [24 yo, White].

Many women used causal language to describe alcohol’s effects; thus, for example, one woman noted that a one-night stand happened because she was drunk, adding that she did not think it would have happened had she not been drinking [25 yo, White]. “It [alcohol] creates the randos [i.e., a random sexual partner] ... when I’m to that point where I’m just—I’m drunk, it does create those ‘booty calls’ and the ‘fuck buddies’ ... you know it’s wrong but you just don’t care.” [24 yo, Hispanic] Women described the experience of texting or calling potential partners, once they are sufficiently drunk that their sole focus was the desire to have sex. To illustrate, one participant noted, “I probably call him [boyfriend] after two or three drinks. Then [say to him], ‘I had a couple drinks. What’re you doing?’ To get to a rando?...that [takes] a bottle.” [23 yo, White] She followed this with further description:

“...there’s a level [of drunkenness] that I leave the club, and I call every single person I’ve ever slept with until somebody answers... That’s [the level of drunkenness]. I haven’t gone out in a really long time, and I’m going to get shitfaced... you don’t plan to... get highly intoxicated, but at some point ... I think to myself... ‘All right. This is how the night’s gonna go.’” [23 yo, White]

For others, causation was less clear; these women described alcohol as a necessary *but not sufficient* part of the sexual encounter. When asked if the alcohol-sex relationship was correlated, several women in one group [23 yo, White; 24 yo, White; 22 yo, White; 24 yo, Hispanic] said that it is not inevitable, noting sometimes they just fall asleep, sometimes they are too drunk to do anything, and sometimes they just want to be alone. Thus, they noted that, while alcohol may not cause sexual risk behavior, alcohol plus something—a situation, an emotion, or a mood—potentiates such risk. In the words of one woman, “When you are in the mood, you’re dancing, you’re at a party, ... you could just have a couple of glasses of wine but you’re feeling that person and then they’re becoming attractive... you need the feeling and the alcohol together.” [19 yo, Hispanic]

Implicit in this variability is the notion that alcohol has its strongest disinhibiting effects under conditions of inhibition conflict. Some focus group participants articulated this clearly with regard to condom use. They wanted protection from STIs, yet when alcohol was involved, they may prioritize the enjoyment of condomless sex: “I don’t want to [use a condom], because it is gonna feel better without. You’re focusing on right now and you’re not thinking about the person you are with, that they’ve been with other people.” [22 yo, White]. Although intending to use condoms when sober, one woman stated that, in the moment, “my priorities are not that.” [26 yo, White] Some women engaged in condomless sex despite their intentions to protect themselves to avoid uncomfortable resistance from partners. In these cases, the desire to avoid awkward interpersonal discussion undermined plans to use condoms. Similarly, partner choice is another example of how alcohol intoxication can reveal conflicting desires:

“It’s like a diet... If you’re on a diet and you have food at home... You can cook nice meals. If you’re on the road, you don’t have any food, you go to McDonald’s... You don’t want McDonald’s but sometimes you’re just hungry... But if you have your kitchen and you shop and you have everything but your fridge goes (out), you’re screwed... Don’t eat fast food [26 yo, White].

Another [27 yo, White] clarifies that, in this example, “McDonald’s a fuck boy.”

Women clearly expressed the ways that alcohol use could lead to sexual risk-taking, and they wanted to avoid the negative outcomes of such risk-taking (e.g., STIs); however, for many, these considerations were secondary to their primary goal of having sex. Many women expressed the need for, and right to, sexual fulfillment; they were unwilling to forego sex despite the acknowledged risks. There was a theme throughout the narratives that alcohol was a tool they knew they could use to overcome perceived barriers to engaging in sex. They indicated that some of these barriers were personal (e.g., social anxiety) whereas others were cultural or socially imposed (e.g., the norm that women should not initiate sex). Thus, for many, the use of alcohol was a tactic to move away from social restrictions and toward liberation and empowerment.

Some women described attitudes and behaviors designed to protect their sexual health even when intoxicated. Most were clear that they should be responsible for contraception and for disease protection, including keeping “a stash of condoms” [20 yo, White]. One woman says that she keeps condoms “all over” and explains “Yea, because you know sometimes you’re a little drunk. You get home, and you’re getting hot and heavy. You have to have—for me, you have to have a condom somewhere, readily available.”

[22 yo, Hispanic] These quotes suggest that some women anticipated the potential for inhibition conflict; that is, they anticipated alcohol myopia, so their sober selves planned these actions to prepare for this possibility. By ‘stashing condoms everywhere,’ they protected their intoxicated selves in advance. Another protective behavior was illustrated by a woman who said [to her sexual partner]: “Put the condom [on]. If you don’t [use a condom], then you don’t want this [sex with me]!” [22 yo, Hispanic] She described taking control over condom use as “empowering.” These examples illustrate that some women were able to anticipate alcohol’s effects, to prepare for these effects, and to assert their wishes even when under the influence of alcohol.

Discussion

The goal of this study was to solicit young women’s perspectives regarding the co-occurrence of alcohol misuse and risky sexual behavior. Overall, thematic analyses provided evidence for both alcohol expectancy theory (Goldman et al. [22] and alcohol myopia theory [23], providing confirmatory evidence for a dual-process interpretation of the alcohol-sexual behavior link as posited by Moss and Albery [20]. Indeed, consistent with the dual-process model, women in all of the focus groups expressed the shared expectancy that drinking alcohol often “leads to” sex, whether intended or not. The women in all groups described a pattern that emerged when they use alcohol, namely, confidence increases, inhibitions go down, and the ability to pay attention to (or be concerned with) the consequences of their actions decreases.

These qualitative data confirm that the cognitive-motivational effects of alcohol on behavior start even before alcohol is consumed [19]. If alcohol expectancies are triggered by cognitive or environmental cues, they can activate attentional biases consistent with those expectancies. The focus group discussions revealed expectancies consistent with those identified in prior studies of alcohol-sex expectancies (e.g., intoxication is associated with greater interest in sex, enhancement of the sexual experience, increased disinhibition and risk taking; [27]. Specifically, young women in our sample emphasized that the reductions in social anxiety, as well as the increases in social confidence and sexual adventurousness were valued effects of alcohol. These expectations of positive outcomes motivated drinking in some cases, consistent with explicit and deliberative pathways. Thus, consistent with expectancy theory, some women view alcohol as part of the relationship script that is sometimes used as a means to an end (i.e., using alcohol to facilitate sexual intimacy).

Among the women in our focus groups, the alcohol-sex associations were also well-reinforced and sometimes

operated out of awareness (e.g., “you get to a point in the night and sex will just happen”). As discussed by Moss and Albery [20], expectancies operate at both the explicit and implicit levels. Experimental evidence supports the observation that the combination of alcohol intoxication and stronger alcohol expectancies predicts intention to engage in risky sexual behavior (Maisto et al. [28]. Furthermore, the dual process theory suggests that mobilized expectancies can lead to attentional biases that further enhance the likelihood of engaging in expectancy-consistent behavior (i.e., a focus on attractiveness of potential partners or sexual arousal cues).

Alcohol intoxication can reduce cognitive processing capacity via its pharmacological effects [20]. Because attentional focus is drawn to salient cues, such as sexual arousal or partner encouragement to engage in sex, behavior would otherwise be inhibited by concerns about long-term consequences may be disinhibited. Thus, for some people, intoxication can increase the likelihood of engaging in sexual behavior that may be described prior to (and retrospectively) as risky (and regrettable).

In our sample, women readily acknowledged effects of alcohol intoxication on their thinking and sexual behavior. For example, they were less likely to thoroughly consider decisions, less selective about partners, less assertive about using condoms, and more easily influenced by partner behavioral preferences. Consistent with alcohol myopia theory, when they were intoxicated they described responding to immediate and salient aspects of the interpersonal situation, such as their own arousal and interest in having sex with a particular partner. Such responses also activated alcohol-sex expectancies. Strong impelling cues become dominant because of impaired processing capacity [20]. Frequently we heard variations of “you know it is wrong but you just don’t care.” In the moment, under the influence of alcohol, the long-term risks (e.g., pregnancy, STIs) become less likely to influence decision-making.

Importantly, alcohol myopia theory holds that alcohol will have its strongest disinhibiting effect when the individual is conflicted. A woman may desire, and even intend to use, protection against HIV and other STIs, but the cognitively-mediated plan to suggest using condoms conflicts with emotionally-mediated pleasure or intimacy demands (e.g., a preference for condomless sex). As another example, she may want to insist that her partner gets tested for HIV and other STIs but the prospect of an awkward conversation conflicts with her fear of her partners’ reaction. When protective behaviors are subject to inhibition conflict, then alcohol intoxication will lead to less protective behavior. Research supports a negative relationship between alcohol use and condom use among individuals expressing high inhibition conflict regarding condom use [29]. In the presence of inhibition conflict, alcohol intoxication will lead to risk

behaviors that may be regretted, which is what many of our focus group participants told us. However, it is noteworthy that some women were able to anticipate, while sober, the likely effects of alcohol intoxication. These women stated that they planned for their drunk self. These examples suggest an important implication for prevention, namely, anticipating the alcohol myopia effects and planning for these effects in advance, rather than relying on the ability to cope in ‘the heat of the moment.’

Study Limitations

We acknowledge several limitations. Because the study was intended to be a formative, descriptive, and exploratory study of the interaction between alcohol use and sexual behavior among young women, the sample was recruited from a single clinic. Thus, it is possible that women with different sociodemographic characteristics may perceive the alcohol-risky sex association differently. Use of focus groups led by female facilitators successfully resulted in participants engaging with each other and responding to information offered by other participants; however, use of a group format may have limited the participation of some women. Some eligible women may have opted not to enroll in a group-based study, or some participants may have been reluctant to share their perspectives on sensitive topics. Also, some of our groups were smaller than the recommended 6-8 participants [30], due to cancellations unrelated to the study itself. The smaller groups might have produced different conversation dynamics than larger groups, although we observed high levels of participation in all groups.

Implications for Practice and/or Policy

The US Preventive Services Task Force recommends screening for alcohol misuse followed by brief intervention in primary care settings [31]. Because young adult women seek reproductive health care, and they are at risk for alcohol-related sexual health problems, these are ideal settings for implementing screening and brief intervention. Indeed, the American College of Obstetricians and Gynecologists [32] also recommend annual screenings for alcohol use for women seeking gynecological care. Insights from this study about women’s views of alcohol and sexual risk behavior suggest several implications for STI prevention interventions for young women who report at-risk drinking.

First, an STI prevention plan should address both alcohol use (e.g., avoiding intoxication before sex) and sexual behavior (e.g., using condoms correctly and consistently with all partners). Despite the fact that all participants were patients at a reproductive health clinic,

many expressed appreciation for the opportunity to have an expanded discussion about alcohol, relationships, and sexual risk behaviors. Many articulated awareness of inconsistencies in their behavior, indicating the need for additional personalized education.

Second, many of our participants seek to optimize sex/pleasure while minimizing health risks. From a learning (contingency) perspective, they win (e.g., enjoy intimacy, sexual pleasure) more often than they lose (e.g., acquire a STI, become pregnant, experience sexual assault). It is important to acknowledge this reality while also highlighting that the long-term consequences of ‘losing’ in this context can be more severe.

Third, the accuracy of alcohol-sex expectancies should be addressed in sexual risk reduction interventions. Cooper and colleagues (Cooper et al. [33] have demonstrated that expectancies that alcohol enhances sexual experience are not justified, that is, more positive experiences are reported after sober (versus drinking) sexual events. Therefore, education and intervention efforts can be informed by the alcohol expectancy challenge literature that shows that expectancies can be modified (Scott-Sheldon et al. [34]; for example, Lau-Barraco and Dunn [35] reported that a single intervention session reduced positive expectancies (including social assertiveness) and heavy episodic drinking. Given that alcohol-sex expectancies contribute to risky sexual behavior, a promising approach for prevention research is to tailor expectancy challenge interventions to young women.

Finally, because young women sometimes drink to achieve desired outcomes (e.g., to reduce anxiety about sexual expression) and because sexual intimacy is a fundamental need, educators and therapists should consider ways to facilitate these goals in ways that do not require alcohol. In addition, mindful of the decrease in effortful processing under the influence of alcohol, educational and preventive programs might help young women to plan ahead and engage in anticipatory protective behaviors (e.g., having condoms readily available). Further, because cognitive-behavioral skills training has been shown to enhance assertiveness and self-efficacy (Sikkema et al. [36]; Weinhardt et al. [37], educational and preventive programs should include assertiveness and communication skills. Practicing such interpersonal skills in advance will require less effortful processing and will be more readily available when drinking. Because deliberate processing is most critical under new demands (cf. [20], by practicing these skills, women will have them in their repertoire. Finally, assertiveness training programs will have an added benefit; that is, because sexual assertiveness is positively associated with sexual satisfaction (e.g., [38]), it is likely that such skills enhancement will also boost sexual satisfaction.

Conclusion

This qualitative inquiry provides evidence for a dual-process interpretation [20] of the alcohol—sex association among young women. This model invokes two explanatory mechanisms. The first mechanism involves alcohol expectancies during the pre-consumption phase; here, the anticipation of alcohol’s desired effects (e.g., disinhibition, reduced social anxiety, ‘liquid courage’) motivates alcohol use and increases the likelihood of drinking. The second mechanism occurs during the consumption phase when the pharmacological effects of alcohol impair cognition, narrowing attentional focus to the most salient cues (e.g., sexual arousal), which increases the likelihood of engaging in risky sexual behavior. These two mechanisms operate together to explain the persistent association between alcohol use and risky sex. Each, and the interplay between them, should be targeted in educational and preventive interventions designed to improve the health of young women.

Acknowledgements We gratefully acknowledge the contributions of the study participants as well as the staff at the Providence Health Center. The findings and conclusions in this article are those of the authors and do not necessarily reflect the views of Planned Parenthood Federation of America, or the National Institutes of Health.

Funding This research was funded by Grant R34-AA023158 from the National Institute on Alcohol Abuse and Alcoholism to Michael P. Carey.

Compliance with Ethical Standards

Conflicts of interest The authors declare that they have no conflicts of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

References

1. Chandra A, Mosher WD, Copen C, Sionean C. Sexual behavior, sexual attraction, and sexual identity in the United States: Data from the 2006–2008 National Survey of Family Growth. National health statistics reports. Hyattsville: National Center for Health Statistics; 2011.
2. D’Souza G, Cullen K, Bowie J, Thorpe R, Fakhry C. Differences in oral sexual behaviors by gender, age, and race explain observed differences in prevalence of oral human papillomavirus infection. *PLoS ONE*. 2014;9(1):e86023. <https://doi.org/10.1371/journal.pone.0086023>.

3. Satterwhite CL, Torrone E, Meites E, Dunne EF, Mahajan R, Ocfemia MC, Weinstock H. Sexually transmitted infections among US women and men: prevalence and incidence estimates, 2008. *Sex Transm Dis.* 2013;40(3):187–93. <https://doi.org/10.1097/OLQ.0b013e318286bb53>.
4. Finer LB, Zolna MR. Declines in unintended pregnancy in the United States, 2008–2011. *N Engl J Med.* 2016;374(9):843–52. <https://doi.org/10.1056/NEJMs1506575>.
5. Centers for Disease Control and Prevention. Vital signs: binge drinking prevalence, frequency, and intensity among adults—United States, 2010. *MMWR Morb Mortal Wkly Rep.* 2012;61(1):14–9.
6. Substance Abuse and Mental Health Services Administration. Key substance use and mental health indicators in the United States: Results from the 2016 National Survey on Drug Use and Health (HHS Publication No. SMA 17-5044, NSDUH Series H-52). Rockville, MD. 2017. <https://www.samhsa.gov/data/>.
7. Baliunas D, Rehm J, Irving H, Shuper P. Alcohol consumption and risk of incident human immunodeficiency virus infection: a meta-analysis. *Int J Public Health.* 2010;55(3):159–66. <https://doi.org/10.1007/s00038-009-0095-x>.
8. Cook RL, Clark DB. Is there an association between alcohol consumption and sexually transmitted diseases? A systematic review. *Sex Transm Dis.* 2005;32(3):156–64.
9. Scott-Sheldon LAJ, Carey KB, Cunningham K, Johnson BT, Carey MP. Alcohol use predicts sexual decision-making: a systematic review and meta-analysis of the experimental literature. *AIDS Behav.* 2016;20(Suppl 1):S19–39. <https://doi.org/10.1007/s10461-015-1108-9>.
10. Aicken CR, Nardone A, Mercer CH. Alcohol misuse, sexual risk behaviour and adverse sexual health outcomes: evidence from Britain's national probability sexual behaviour surveys. *J Public Health.* 2011;33(2):262–71. <https://doi.org/10.1093/pubmed/fdq056>.
11. Cook RL, Comer DM, Wiesenfeld HC, Chang CC, Tarter R, Lave JR, Clark DB. Alcohol and drug use and related disorders: An underrecognized health issue among adolescents and young adults attending sexually transmitted disease clinics. *Sex Transm Dis.* 2006;33(9):565–70. <https://doi.org/10.1097/01.olq.0000206422.40319.54>.
12. Cooper ML. Alcohol use and risky sexual behavior among college students and youth: evaluating the evidence. *J Stud Alcohol Drugs.* 2002;14:101–17.
13. Hutton HE, McCaul ME, Chander G, Jenckes MW, Nollen C, Sharp VL, Erbeling EJ. Alcohol use, anal sex, and other risky sexual behaviors among HIV-infected women and men. *AIDS Behav.* 2013;17(5):1694–704. <https://doi.org/10.1007/s10461-012-0191-4>.
14. Carey KB, Senn TE, Walsh JL, Scott-Sheldon LA, Carey MP. Alcohol use predicts number of sexual partners for female but not male STI clinic patients. *AIDS Behav.* 2016;20(Suppl 1):S52–9. <https://doi.org/10.1007/s10461-015-1177-9>.
15. Hutton HE, McCaul ME, Santora PB, Erbeling EJ. The relationship between recent alcohol use and sexual behaviors: gender differences among sexually transmitted disease clinic patients. *Alcohol Clin Exp Res.* 2008;32(11):2008–15. <https://doi.org/10.1111/j.1530-0277.2008.00788.x>.
16. Scott-Sheldon LAJ, Carey MP, Venable PA, Senn TE, Coultry-Doniger P, Urban MA. Alcohol consumption, drug use, and condom use among STD clinic patients. *J Stud Alcohol Drugs.* 2009;70(5):762–70.
17. Oldson L. Why women are more at-risk for STDs than men. 2013. https://www.sexualhealth.com/why-women-are-more-at-risk-for-stds-than-men_n_1592/.
18. Centers for Disease Control and Prevention. Sexually transmitted disease surveillance 2016. GA: Atlanta; 2017.
19. Morris AB, Albery IP. Alcohol consumption and HIV risk behaviours: integrating the theories of alcohol myopia and outcome-expectancies. *Addict Res Theory.* 2001;9(1):73–86.
20. Moss AC, Albery IP. A dual-process model of the alcohol-behavior link for social drinking. *Psychol Bull.* 2009;135(4):516–30. <https://doi.org/10.1037/a0015991>.
21. Stoner SA, George WH, Peters LM, Norris J. Liquid courage: alcohol fosters risky sexual decision-making in individuals with sexual fears. *AIDS Behav.* 2007;11(2):227–37. <https://doi.org/10.1007/s10461-006-9137-z>.
22. Goldman MS, Reich RR, Darkes J. Expectancy as a unifying construct in alcohol-related cognition. *Handbook of implicit cognition and addiction*;2006. P 105–119.
23. Steele CM, Josephs RA. Alcohol myopia. Its prized and dangerous effects. *Am Psychol.* 1990;45(8):921–33.
24. Fusch PI, Ness LR. Are we there yet? Data saturation in qualitative research. *Qual Rep.* 2015;20(9):1408–16.
25. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol.* 2006;3(2):77–101.
26. Guest G, MacQueen KM, Namey EE. *Applied thematic analysis.* Thousand Oaks: Sage; 2011.
27. Dermen KH, Cooper ML. Sex-related alcohol expectancies among adolescents: I. Scale development. *Psychol Addict Behav.* 1994;8(3):152–60.
28. Maisto SA, Carey MP, Carey KB, Gordon CM, Schum JL. Effects of alcohol and expectancies on HIV-related risk perception and behavioral skills in heterosexual women. *Exp Clin Psychopharmacol.* 2004;12(4):288–97. <https://doi.org/10.1037/1064-1297.12.4.288>.
29. Dermen KH, Cooper ML. Inhibition conflict and alcohol expectancy as moderators of alcohol's relationship to condom use. *Exp Clin Psychopharmacol.* 2000;8(2):198–206.
30. Krueger RA, Casey MA. *Focus groups: a practical guide for applied research.* 5th ed. Thousand Oaks, CA: Sage Publications; 2014.
31. Moyer VA. Screening and behavioral counseling interventions in primary care to reduce alcohol misuse: US preventive services task force recommendation statement. *Ann Intern Med.* 2013;159(3):210–8.
32. American College of Obstetricians and Gynecologists. At-risk drinking and alcohol dependence: obstetric and gynecologic implications. ACOG Committee Opinion No. 496. American College of Obstetricians and Gynecologists. 2011.
33. Cooper ML, O'Hara RE, Martins J. Does drinking improve the quality of sexual experience?: sex-specific alcohol expectancies and subjective experience on drinking versus sober sexual occasions. *AIDS Behav.* 2016;20(Suppl 1):S40–51. <https://doi.org/10.1007/s10461-015-1136-5>.
34. Scott-Sheldon LAJ, Terry DL, Carey KB, Garey L, Carey MP. Efficacy of expectancy challenge interventions to reduce college student drinking: a meta-analytic review. *Psychol Addict Behav.* 2012;26(3):393–405. <https://doi.org/10.1037/a0027565>.
35. Lau-Barraco C, Dunn ME. Evaluation of a single-session expectancy challenge intervention to reduce alcohol use among college students. *Psychol Addict Behav.* 2008;22(2):168–75. <https://doi.org/10.1037/0893-164X.22.2.168>.
36. Sikkema KJ, Winett RA, Lombard DN. Development and evaluation of an HIV-risk reduction program for female college students. *AIDS Educ Prev.* 1995;7(2):145–59.
37. Weinhardt LS, Carey MP, Carey KB, Verdecias RN. Increasing assertiveness skills to reduce HIV risk among women living with a severe and persistent mental illness. *J Consult Clin Psychol.* 1998;66(4):680–4.
38. Hurlbert DF. The role of assertiveness in female sexuality: a comparative study between sexually assertive and sexually nonassertive women. *J Sex Marital Ther.* 1991;17(3):183–90. <https://doi.org/10.1080/00926239108404342>.