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Alcohol Involvement in First Sexual Intercourse Experiences of Adolescent Girls

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Abstract

This study examines whether use of alcohol at first coitus is associated with increased sexual risk for young women. First coitus is the focus of the investigation because it is a memorable, formative experience that has implications for subsequent sexual health. A community sample of young women ages 18 – 19 years (N = 227) completed retrospective interviews. Characteristics and perceptions of the first coital event were examined using chi squares and one-way multivariate analysis of variance (MANOVA) to determine if there were differences based on alcohol-involvement. Alcohol-involved first coitus events occurred in social settings with risky partners, were rated less positively, and were non-consensual relative to those that did not involve alcohol. Alcohol use was not related to condom use. Alcohol-involvement was associated with subsequent pairing of alcohol with sex and incapacitated rape. Adolescent alcohol use occurs in contexts that increases young women's sexual risk through exposure to risky partners.

Keywords

Adolescent females; first sex; underage drinking; adolescent sexual risk; victimization; first coitus; drinking context

Nearly half of adolescents in the United States initiate heterosexual intercourse before the end of high school (Eaton et al., 2012). Adolescent sexual activity is a normal and healthy aspect of human development (Welsh, Rostosky, & Kawaguchi, 2000), yet it can pose significant health risks, particularly for girls, including unintended pregnancy, sexually transmitted infections (STIs) and sexual assault (Eaton et al., 2012; Centers for Disease Control and Prevention, 2011). A key objective for researchers is to identify the factors and conditions that convert sexual behavior from normative and healthy to risky. This

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knowledge can then inform policy and practice that both prevents negative outcomes and promotes sexual well-being among adolescent females.

Alcohol Use and Sexual Risk

Alcohol use has been associated with sexual risk among women, including increased risk of STI and sexual assault (Abbey, 2002; Kahn, Rosenthal, Succop, Ho, Burk, 2002; Puja, Wingood, DiClemente, & Robinson, 2011; Testa & Livingston, 2009; Young, Grey, Abbey, Boyd, & McCabe, 2008). Adolescents who drink alcohol are more likely than those who do not to behave in sexually risky ways (Cooper, 2002; Windle et al., 2008). Most critically, among adolescent females alcohol use has been associated with indiscriminant partner choice, that is, partners who are significantly older or poorly known, or having multiple partners (Cooper, 2002; Oudekerk, Guarnera, & Reppucci, 2014). Having a significantly older partner (i.e., greater than 2 years) has been associated with less discussion of birth control and greater incidence of STIs, sexual assault and unintended pregnancy (Morrison-Beedy, Xia, & Passmore, 2013; Oudekerk, Guarnera, & Reppucci, 2014). Sex with poorly known partners increases the likelihood that a young woman will be exposed to an infected or sexually aggressive male; the more partners, the greater this risk of exposure (Abbey, Ross, McDuffie, & McAuslan, 1996; Testa, VanZile-Tamsen, & Livingston, 2007).

In addition to alcohol's pharmacological effects on cognition and behavioral disinhibition (e.g., Steele & Josephs, 1990), the setting in which alcohol use occurs can also contribute to sexual risk (Testa & Livingston, 2009). This is likely especially true for adolescents who drink in social settings and are highly sensitive to peer influence and approval. According to lifestyles and routine activities theory (Lauritsen, Laub & Sampson, 1992), risk for negative outcomes such as sexual victimization and STI, increases as a result of engaging in activities where there is a lack of guardianship or social protection, coupled with exposure to high-risk partners. Because alcohol use is illegal for adolescents, young women who drink tend to do so in risky social settings, such as at unsupervised parties that may include older and delinquent males who are not well known (Small & Kearns, 1993). Within these contexts, there is a common perception that drinking promotes sexual disinhibition and promiscuity, and expectations of engaging in casual sexual activity (e.g., hooking up) are pervasive in mixed-sex social settings (Flack et al., 2007; Heldman & Wade, 2010; Lindgren, Pantalone, Lewis, & George, 2009). Young women in these settings may feel internal (or external) pressure to engage in sexual activity, regardless of whether or not they are prepared to do so (Livingston, Bay-Cheng, Hequembourg, Testa, & Downs, 2013). In these situations, young women may use alcohol to facilitate or excuse sexual experimentation, particularly with casual partners (Cooper & Orcutt, 1997; Livingston, et al., 2013; Traeen & Kvaalem, 1996).

Sexual encounters involving alcohol tend not be planned (Poulin & Graham, 2001) and there is less discussion of risk (Cooper, 2002). Although there is evidence that condoms are used in encounters with casual partners regardless of alcohol use (see Cooper, 2002 for a review), condoms do not prevent all STIs (Centers for Disease Control, 2013). By failing to discuss sexual risk, young women may unwittingly be exposing themselves to infection, regardless of condom use. Beyond these risks of consensual activity, alcohol often accompanies sexual victimization. Research with adult women indicates that sexually aggressive men target

women who are drinking and may encourage alcohol consumption as a tactic of coercion and assault (Abbey, 2011; Abbey, Wegner, Pierce, & Jacques-Tiura, 2012; Lindgren, Parkhill, George, & Hendershot, 2008). Being intoxicated may depress not only a woman's own perception and response to exploitative and threatening behavior (Testa & Livingston, 2009), but also reduce the willingness of those around her to intervene on her behalf (Burn, 2009).

The Significance of Sexual Initiation

In contemporary US culture, one's first coital experience is commonly regarded as a pivotal life event that carries significant personal and social symbolic value and as such, is highly salient and emotionally-charged (Laumann, Gagnon, Michael, & Michaels, 1994). It occurs against a backdrop of other developmental, social and cultural factors that define the experience and shape personal sex-related expectancies and scripts that direct the trajectory of future sexual behavior (Armour & Haynie, 2007; Else-Quest, Hyde, & DeLamater, 2005; Laumann et al., 1994; Reissing, Andruff, & Wentland, 2012). The characteristics of the first coitus event (e.g., timing, consent, affective reaction) can impact subsequent sexual functioning and behavior (Reissing et al., 2012; Sandfort, Orr, Hirsch, & Santelli, 2008). Thus, the study of early sexual behavior, including first coitus, may shed light on the factors that contribute to both sexual risk and well-being among adolescent females.

Much of the research on sexual initiation has focused on age at first coitus. Research on the sexual health impact of age at first coitus is mixed (see Harden, Mendle, Hill, Turkheimer, & Emery, 2008); however, some studies have linked initiating sex earlier than peers (i.e., prior to age 16) to sexual health risks. For example, adolescent females who initiated at an earlier age relative to peers were more likely to report that the encounter was unplanned and that they felt pressured by their partner to have sex (Walsh, Ward, Caruthers, & Merriwether, 2011). Among females, early first coitus has been linked to precocious puberty, delinquency, and risky sexual behavior, including having more sexual partners and having sex while under the influence of alcohol or drugs (Armour & Haynie, 2007; Sandfort et al., 2008). This is likely to occur when early maturing girls affiliate with older adolescents, exposing them to developmentally advanced behaviors (e.g., drinking and sex; Armour & Haynie, 2007).

Others have argued that the context in which coitus is initiated is of greater significance to future sexual health than the age of initiation. When first coitus occurred under conditions of coercion, child sexual abuse (CSA), or under the influence of alcohol or drugs, individuals experienced worse psychological and physical health outcomes over time than those whose first experiences occurred under consensual conditions, regardless of age of initiation (Else-Quest et al., 2005; Traeen & Kvale, 1996). These situations are characterized by a lack of control or violation of one's wishes. Having such an experience at a developmentally critical time point may result in the formation of maladaptive sexual scripts through mechanisms such as traumatic sexualization, perceived powerlessness, and depressed sexual assertiveness and self-efficacy (Browne & Finkelhor, 1986; Greene & Navarro, 1998; Livingston, Testa, & VanZile-Tamsen, 2007; Matorin & Lynn, 1998).

Alcohol Use and Sexual Risk at First Coitus

This study examines whether use of alcohol at first coitus is associated with increased sexual risk resulting from the context in which drinking occurs. First coitus is the focus of the investigation because it is a memorable, formative experience that has implications for subsequent health and functioning (Armour & Haynie, 2007; Else-Quest, et al, 2005; Laumann et al., 1994; Reissing, et al, 2012). The goal of this exploratory study is to provide descriptive data on the circumstances, contexts and perceptions of first coitus and to determine whether alcohol use on this occasion is associated with greater sexual risk behavior and negative outcomes within that event. Based in part on lifestyles and routine activities theory (Lauritsen et al., 1992) and in part on our knowledge of adolescent alcohol use, we hypothesized that alcohol involvement at first coitus would be associated with being younger, initiating within the context of a non-romantic relationship with an older and less familiar partner and after spending time in a social setting. We also predicted that there would be less discussion of protection against pregnancy and STI in the alcohol-involved encounters. Finally, we expected that alcohol-involved incidents would be perceived less positively (e.g., more regretted, less wanted) than those that were alcohol-free.

An additional, exploratory goal of the study was to examine whether use of alcohol at first intercourse is associated with subsequent alcohol-related sexual risk behavior. If initial experience sets the standard for future sexual behavior, we would expect that those individuals who engaged in greater sexual risk behavior at first coitus would continue to engage in alcohol-related sexual risk behavior over time. This will be evidenced by having more sexual partners, particularly casual partners, using alcohol in conjunction with sex, and experiencing adverse lifetime sexual outcomes, including pregnancy, STIs and sexual assault.

Methods

Participants

Participants were 228 women 18 – 20¹ years of age ($M = 18.59$, $SD = .51$) residing in a medium-sized metropolitan area in Buffalo, New York. Advertisements seeking “young women ages 18-19 to volunteer for a study of teen alcohol use and social behavior,” were placed in local and college newspapers, on public transportation, and on flyers posted in settings where young women were likely to see them (e.g., coffee shops, nail salons). To be eligible, participants had to be female, 18 -19 years of age, consume alcohol at least once a month, and have had sexual intercourse with a male at least once in her lifetime. We focused on young women to minimize retrospective bias. The sample was 69% White, 16% Black, 6% Hispanic, 3% Asian, and 3% multi-racial. Most participants were enrolled in school (86%): 88% were in college, 10% in high school, and 2% in trade school. Of those who were no longer in school ($n = 31$), 29% had completed some college and 42% were high school graduates. The majority of the sample was employed at least part-time (57%) and all but one were unmarried.

¹All participants were between the ages of 18-19 years at screening; however due to lags in response time, two women reached their 20th birthday after completing the mail survey but prior to completing the in-person interview.

Procedures

All procedures were approved by the university-affiliated Institutional Review Board prior to study initiation. Written informed consent was obtained and approved protocol was followed throughout all aspects of the study. The study consisted of a self-administered paper-and-pencil mail survey and an in-person interview.

Mail survey—Mail surveys were sent to eligible participants with a postage-paid return envelope. The survey contained self-administered measures of demographics, sexual health history, current alcohol use, alcohol problems, lifetime sexual victimization, and attitudes and expectancies about alcohol use and sex. Of the 365 eligible women, 318 completed and returned the booklets. Of these, 17 were ineligible because the respondent passed her 20th birthday prior to returning the booklet ($n = 5$) or due to inconsistencies with the screener data that altered eligibility status. This resulted in a sample of 301 (83%) participants who returned booklets and were eligible to complete the in-person interview. Surveys took approximately one hour to complete and participants were compensated with a \$20 check upon completion.

In-person Interview—Participants who returned the mail survey were contacted to schedule an appointment for an in-person event interview. Of the 301 women who completed the mail survey, 228 also completed the in-person interview (76%). Interviews were conducted by trained female interviewers at an urban university-based research facility, accessible via public transportation. The interview focused on the participants' experiences occurring from 6th through 12th grades, so as to capture initiation of alcohol use and first coitus. A life-history calendar protocol was used to enhance recall of autobiographical data (see Belli, 1998), followed by event-based interviews to obtain details about first alcohol use and sexual intercourse. The interviewer read the calendar questions aloud and entered the answers into the computer using the SPSS-MR computer interviewing program. Participants were prompted to recall details about their school, friends, living situation, and any significant life events (e.g. parental divorce) occurring during each year. After completing the calendar, participants answered questions regarding their first experience using alcohol and their first coitus (respectively). The first coitus event interview questions were self-administered, with participants privately reading and typing their answers into the computer. The interviewer remained in the room to assist as needed, but was seated away from the computer to allow privacy. Participants received a \$30 check for completing the 1 ½ hour interview.

Measures

In-person Interview Measures

Alcohol initiation: As part of the interview, participants described their first drinking experience (specifying, “your own drink, not sips of someone else’s”) including their age, how many drinks they had and how intoxicated they felt and the context in which it occurred.

Early drinking experiences: Early experiences with alcohol, defined as the time period when they first started to drink on a regular basis (i.e., at least monthly), were assessed.

Participants reported on the number of drinks typically consumed on a given drinking occasion during this period (1 'less than one drink', 2 '1 drink', 3 '2 drinks', 4 '3-4 drinks'; 5 '5-7 drinks', 6 '8 or more drinks') and how often they drank to intoxication (1 'never drank to intoxication', 2 'occasionally', 3 'sometimes', 4 'often', 5 'always drank to intoxication').

First coitus event: Details about the first heterosexual intercourse experience were assessed, including the participant's and partner's ages, relationship to the partner, participant's and partner's alcohol use, number of drinks consumed, perceived level of intoxication, whether or not the experience was consensual, and use of condoms or other birth control. Information about the context in which first coitus occurred was also collected, including where it occurred and activities preceding the sexual encounter. The question for determining use of alcohol at first coitus was: "Did you have any alcohol or drugs just before or during this occasion?" Responses included, 1 'alcohol only', 2 'drugs only', 3 'alcohol and drugs', and 4 'no alcohol or drugs.' Participants rated the extent (1 'not at all', 7 'completely') to which this first coital event was planned, desired, regretted, and pressured. If alcohol use was reported, participants rated their perceived level of intoxication at the time (1 'not at all', 7 'very intoxicated').

Survey Measures

Current alcohol use: Past 90 day alcohol use, including the average number of drinks consumed per occasion and frequency of heavy episodic drinking (HED) were assessed. The number of drinks consumed was measured using a 7-point scale: 0 'None', 1 'Less than 1 drink', 2 '1-2 drinks', 3 '3-4 drinks', 4 '5-7 drinks', 5 '8-10 drinks' and 6 'More than 10 drinks'. Two questions were used to assess frequency of heavy episodic drinking (HED): frequencies of drinking 4 or more drinks on an occasion and drinking to intoxication. Responses were on a 6-point Likert scale: 0 'never', 1 'less than once a month', 2 '1-3 times a month', 3 '1-2 days a week', 4 '3-4 days a week', and 5 '5 or more days per week'. The two items were highly correlated ($r = .88, p. < .01$) and were averaged to form a single index of frequency of HED.

Alcohol problems: Current alcohol problems were measured using the 27-item Young Adult Alcohol Problem Screening Test (YAAPST; Hurlbut & Sher, 1992). Sample items include "Has drinking ever gotten you into sexual situations that you later regretted?" and "Have you ever been arrested, even for a few hours, because of drunken behavior?" Positive responses are summed to provide a total consequences score (0 – 27, $\alpha = .83$).

Sexual history: Participants reported on their age of menarche, total number of sexual intercourse partners they had in their lifetime, and whether or not their first coitus experience occurred with their consent or against their will.

Alcohol and sexual risk behaviors: Participants reported on lifetime frequency of having sex with someone they just met and engaging in "hook-ups" that involved sexual intercourse (1-7; 1 'I have never done this', 7 'I have done this more than 20 times') as well as alcohol-involved sexual behaviors including frequency of using alcohol in conjunction with sex

(1-6; 1 'I have never done this', 6 'all the time') and how often they had sex after passing out from drinking alcohol (1-5; 1 'this never happens', 5 'this happens frequently'). Chronbach alpha for these four items was .74. Typical level of intoxication when having sex (1 – 7; 1 'not at all, 7 'very intoxicated') was also assessed.

Antisocial behavior: Antisocial behavior was measured with the 27-item youth version of the Antisocial Behavior Checklist (Zucker, 2005). Participants indicated the frequency of engaging in behaviors such as skipping school, shoplifting, and being arrested for a felony. Responses were on a four-item scale ranging from 1 'never' to 4 'often' ($\alpha = .89$).

Sexual consequences: Participants indicated whether they had ever been pregnant or had been diagnosed with gonorrhea, syphilis, genital warts (HPV), trichomoniasis, chlamydia, or any other sexually transmitted infection.

Sexual assault: A modified version of the Sexual Experiences Scale (SES; Testa, VanZile-Tamsen, Livingston, & Koss, 2004) was used to assess unwanted sexual experiences of contact, attempted verbal coercion, verbal coercion, attempted rape, and forcible and incapacitated rape occurring since age 14 years. Only verbal coercion and forcible and incapacitated rape were included in the current analysis.

Data Analysis

To permit comparison of first coitus experiences that involved alcohol to those that did not, women were classified according to whether they reported any alcohol use proximal to first coitus (Alcohol Involved, AI) or not (Alcohol Free, AF). Four individuals reported using drugs but not alcohol prior to first coitus; these cases were dropped from the analyses.² Possible covariates including race/ethnicity, parental education, participant education and source of income were examined to determine if they were differentially associated with use of alcohol at first coitus. None were related to use of alcohol at first coitus. The two groups were compared on the context, risk behaviors, and perceptions of the first coitus event. Chi square analyses were used to compare categorical variables (e.g., relationship to partner). Because multiple related outcomes were being considered (e.g., ratings of the experience on different dimensions) one-way between groups multivariate analysis of variance (MANOVA) was performed to investigate differences related to alcohol use at first coitus. To determine whether use of alcohol at first coitus was associated with current alcohol use or subsequent sexual risk behavior, one-way between groups multivariate analysis of covariance (MANCOVAs), controlling for early intoxication, were used. Significant multivariate tests were followed up with univariate analyses. Bonferroni adjusted alpha levels were used to minimize alpha inflation (Tabachnick & Fidell, 2007). Logistic regression analyses were used to determine whether use of alcohol at first intercourse predicted lifetime sexual consequences including pregnancy, STIs, and forcible and incapacitated rape.

²Response patterns for the drug only group were examined and they did not appear to be significantly different from either group.

Results

Data were examined for normality, multicollinearity and univariate and multivariate outliers. Variables with non-normal distributions were winsorized to improve normality and interpretability (Reifman & Keyton, 2010). The mean ages of alcohol initiation and first coitus were 14.25 ($SD = 1.83$) and 15.70 ($SD = 1.94$) years, respectively. Average age of alcohol initiation in this sample was comparable to that of national samples (Masten, Faden, Zucker, & Spear, 2008); however, age of first coitus was lower than the national average of 17 years for females (Alan Guttmacher Institute, 2012). Alcohol use proximal to first coitus was reported by 25% of participants ($n = 56$). On average, they consumed five drinks prior to having sex. As expected, those in the AI group initiated drinking at an earlier age than those in the AF group ($M = 13.75$, $SD = 1.64$ vs. $M = 14.38$, $SD = 1.86$, $F(1, 218) = 5.16$, $p < .03$); however, they were significantly older at first coitus ($M = 16.20$, $SD = 1.80$ vs. $M = 15.52$, $SD = 1.71$, $F(1, 218) = 6.38$, $p < .02$).

At the bivariate level, use of alcohol at first coitus was positively associated with age at first coitus, partner age, and feeling pressured at first coitus. It was also positively associated with subsequent sexual risk behaviors including having sex with someone just met, hook-ups that involved intercourse, using alcohol before sex and having sex when passed out from drinking. At the first coital event, use of alcohol was negatively associated with length of time she had known partner, and the extent to which the sex was planned and desired. Correlations among the study variables are presented in Table 1.

Does Context of First Coitus Differ According to Alcohol-Involvement?

Context of first coitus—Chi square analyses were used to compare the characteristics of the first coitus event to determine whether the context of initiation differed by alcohol involvement (see Table 2). As hypothesized, AI first coitus events were more likely to occur within the context of a nonromantic relationship (e.g., hook-up, friend), after spending time at a party or social gathering and with a partner who was also using substances. In contrast, AF coitus events were significantly more likely to occur in the context of a romantic relationship, when the couple was spending time alone together. Of note, 18% of participants in the AI group also were significantly more likely to report that their first coitus experience took place against their will or without their consent.

Birth control and condom use—As hypothesized, there was less discussion of birth control and protection against STIs in the AI group than in the AF group. However, there were no differences in use of condoms or other birth control (Table 2).

Partner characteristics and ratings of first coital experience—The two groups were compared on partner characteristics and ratings of the first coital experience using one-way between-subjects MANOVA. Ratings included the extent to which the first coitus encounter was planned, desired, and pressured, as well as their overall feelings about the experience. The results of the multivariate test were significant (see Table 3). Using a Bonferroni adjusted level of .01 (Tabachnick & Fidell, 2007), the groups differed from one another on partner characteristics, with partners of those in the AI group being significantly older and less well known than those in the AF group. As predicted, relative to the AF group,

participants in the AI group reported that their first coitus was less planned, less desired, and more regretted. There was a trend for the alcohol-involved experience to be rated as more pressured ($p < .04$) as well.

Alcohol Use at First Coitus and Subsequent Sexual Risk

Overall, first coitus experiences of those in the AI group occurred with riskier partners and were rated less positively than AF experiences, with a sizeable portion indicating that the experience occurred without their consent. Whether or not alcohol use at first coitus was also related to subsequent alcohol and sexual risk behavior was investigated next.

Factors associated with using alcohol at first coitus—We hypothesized that the AI group would continue to engage in riskier sexual behavior over time. In order to identify and control for other factors that might account for any relationship between alcohol use at first coitus and subsequent sexual risk, potential predictors of alcohol use at first coitus were examined. Based on associations found in previous studies we examined correlations between use of alcohol at first coitus and age of menarche (marker of early pubertal development), antisocial behavior, time lag between first drink and first intoxication, average number of drinks consumed, and frequency of drinking to intoxication during initial period of regular (monthly) drinking. Of these, only frequency of drinking to intoxication during initial period of regular drinking (early intoxication) was significantly related to use of alcohol at first coitus ($r = .14, p < .05$). Those in the AI group were more likely than those in the AF group to drink to intoxication more frequently during their initial period of regular drinking ($M = 3.43$ vs. $M = 3.01$), $F(1, 218) = 4.09, p < .05$, thus, frequency of early intoxication was controlled for in all subsequent analyses.

Current alcohol use—Because alcohol-involved sexual risk behavior is associated with heavier alcohol use in general, we hypothesized that those whose first coitus included alcohol would currently report more frequent heavy episodic drinking (HED) and alcohol-related problems than those in the AF group, even after controlling for frequency of early intoxication. This hypothesis was supported. Women in the AI group reported more frequent HED in the past 90 days and more lifetime alcohol problems than those in the AF group (see Table 4).

Sexual risk—We hypothesized that the AI group would continue to have riskier partners and use alcohol in conjunction with sex more often than those in the AF group. One-way MANCOVA, controlling for early intoxication was used to compare the two groups on: frequency of having sex with someone just met that day, lifetime number of sexual intercourse partners, number of hook-ups involving intercourse, frequency of consuming alcohol prior to sex, perceived intoxication when using alcohol prior to sex, and frequency of having sex after passing out from drinking. These hypotheses were partially supported. Compared with women in the AF group, women in the AI group were more likely to use alcohol prior to having sex and were more likely to have sex when passed out from drinking. There was a trend for the AI group to have more hook-up (i.e., casual) partners and to be more intoxicated when drinking before sex as compared with the AF group ($p < .05$); however, these findings did not reach significance using the adjusted Bonferroni

significance level of .01. There were no differences in number of lifetime sexual partners or having sex with someone just met that day (see Table 5).

Sex-related outcomes—Logistic regression analyses were used to determine whether use of alcohol at first coitus predicted lifetime sex-related outcomes including pregnancy, STIs, verbal sexual coercion and forcible and incapacitated rape. The two types of rape were considered separately because they have different correlates, with alcohol consumption being more strongly related to incapacitated than forcible rape (Testa, Livingston, VanZile-Tamsen, & Frone, 2003). The groups did not differ on lifetime reports of pregnancy, STIs, verbal sexual coercion or forcible rape. However, those in the AI group were three times more likely than those in the AF group to have had experienced incapacitated rape in their lifetime (36% vs. 15%), $OR = 3.07$ ($df = 1$) and a 95% CI [1.53, 6.13].

Discussion

Results indicated that alcohol-involved first coitus experiences of adolescent females were qualitatively different from those that did not involve alcohol. As expected, alcohol-involved first coital events were more likely to occur within the context of a party or social gathering with a casual partner, in contrast to alcohol-free events, which tended to occur within the context of a romantic relationship. Alcohol-free first coital events were more wanted, planned and satisfying in contrast to alcohol-involved encounters that were rated less positively. Most notably, alcohol consumption was associated with high-risk partners, who were significantly older and less well-known. Physical, sexual and emotional victimization is more likely to occur in adolescent partnerships with a significant age gap, due to psychosocial immaturity (e.g., vulnerability to peer pressure) or perceived power differentials that can compromise even highly competent adolescent females' sexual agency in situations with older partners (Oudekerk, et al., 2014). Underscoring the sexual risk conferred by partner, nearly 20% of alcohol-involved first coital encounters occurred without consent. Despite the lack of discussion about protective behaviors, alcohol involvement did not appear to affect use of condoms or other birth control. This finding is not entirely surprising given that the prevailing research literature indicates that the relationship between alcohol and condom use is inconsistent (Cooper, 2002) and context dependent, with condom use more likely to occur with a casual than a known partner (Parks, Hsieh, Collins, & Levonyan-Radloff, 2011).

These findings provide further evidence that the context in which first coitus occurs is more relevant to immediate and long-term sexual health outcomes than is age of initiation (Else-Quest et al., 2005). Despite the fact that those in the AI group were significantly older at first coitus than those in the AF group, they were more likely to initiate coitus with a risky partner and to be coerced into having sex on this occasion. According to lifestyles and routine activities theory, the type of partner that a young woman encounters is largely a function of the social context in which she spends time (Lauritsen, et al., 1992; Vezina, Hebert, Poulin, Lavoie, Vitaro, Tremblay, 2011). The young women who used alcohol at first coitus were heavier drinkers than those in the AF group, as evidenced by their younger age of alcohol initiation and frequency of early intoxication. Thus, it is likely that these young women spent more time in drinking contexts where they were likely to encounter

older, delinquent and predatory males (Vezina et al., 2011). This, coupled with the cultural belief that alcohol promotes sexual behavior, increases the likelihood of sex occurring within this context (Flack et al., 2007; Heldman & Wade, 2010; Lindgren et al., 2009).

Relationship context (i.e., casual vs. romantic partner) also may be a critical moderator of alcohol involvement at first coitus. The paths to sexual initiation, and their accompanying scripts, may differ for those in relationships versus those who are not. Initiating sex within the context of a romantic relationship would be seen as normative and consistent with traditional sexual and dating scripts, making it unlikely that alcohol would play a significant role (Manlove, Wildsmith, Ikramullah, Terry-Humen, & Schelar, 2012; Sprecher, Barbee, & Schwartz, 1995). Adolescents who are less prepared for intimate relationships nonetheless may feel age-normative pressure to be sexually active (Tolman & McClelland, 2011) and may use alcohol to facilitate sexual activity outside of an intimate relationship (Livingston, et al., 2013). Lack of preparedness for intimacy or sex may also explain why individuals in the AI group were older at first coitus since these factors are associated with later coital initiation (Pinquart, 2010). An underlying mechanism, such as psychosocial maturity or social competence, may account for both of these contextual effects. Teens who are less mature or socially competent and who have difficulty establishing emotionally intimate relationships may gravitate towards deviant (e.g., heavy drinking) peer groups (e.g., Davies & Windle, 2000; Scheier, Botvin, Diaz & Griffin, 1999), where they become involved with casual or hook-up partners. More prospective research is needed to explore this hypothesis.

Implications for Subsequent Sexual Risk

Results of the current study are cross-sectional and as such, we cannot state definitively that alcohol use at time of first coitus has a causal effect on subsequent sexual risk behavior. However, we did observe that the pattern of combining alcohol and sex extended beyond first coitus. Over time, these young women continued to use alcohol in conjunction with sex and to experience incapacitated rape. We failed to find a lasting effect of alcohol use at first coitus on STI or pregnancy; however, this may reflect the relative rarity of these events, the young age of the sample and small sample size.

These results may simply reflect continued engagement in a drinking culture. Heavy and frequent drinking in early adolescence can progress to problematic drinking in late adolescence and young adulthood (Chartier, Hesselbrock, & Hesselbrock, 2010; Windle et al., 2008). As compared with those in the AF group, young women in the AI group started drinking at an earlier age, drank to intoxication more frequently during their early drinking experiences and currently have more alcohol problems. Nonetheless, even after controlling for the effects of early drinking, there was a relationship between using alcohol at first coitus and subsequent sexual behavior. The first coitus experience shapes expectations and perceptions of sexual self-efficacy that influence subsequent sexual behavior. Having sex under the condition of intoxication may diminish a young women's sexual agency. The occurrence of such a disempowering experience at a developmentally critical time point may contribute to the development of sexual schemas that normalize high-risk behaviors and a lack of personal control over sexual situations that can contribute to sexual victimization. Unfortunately, the retrospective nature of the current study precluded the assessment of how

sexual expectations and cognitions were influenced by first coitus; this should be explored prospectively.

Implications and Directions for Future Research

The findings of this study indicate that early involvement with alcohol, particularly early intoxication, places adolescent females at increased sexual risk through exposure to high-risk sexual partners found in drinking contexts. Interventions aimed at delaying the initiation of alcohol use or reducing heavy drinking may have the added benefit of reducing risky sexual behavior. Traditionally, substance use prevention efforts and sexuality education aimed at middle and high school students have been approached separately. Results of this study suggest that it would be beneficial to combine the two. Alcohol-related risks should be addressed in sexuality education and sexual risks included in substance use prevention. In addition, health care providers (e.g., gynecologists and pediatricians) who work with adolescents should screen for alcohol use and discuss the risks associated with combining alcohol and sex. Adolescents are especially likely to benefit from approaches that provide them with the information, skills, and guidance to promote social competence, sexual agency, and sexual health (Bay-Cheng, Livingston, & Fava, 2013). Interventions like the Life Skills training approach (Griffin, Botvin, & Nichols, 2006) that empower adolescent females to make decisions about when, with whom and under what conditions they will engage in sexual intercourse are particularly promising. It is critical that intervention efforts occur prior to first coitus, since debut experiences may shape future sexual interactions.

Limitations

Limitations of the study include use of a predominantly White sample of female drinkers. Cultural expectations surrounding alcohol and sexual behavior may be different for members of other racial or ethnic groups. Similar research needs to be conducted with males to examine gender differences in perceptions of first intercourse experiences (Walsh et al., 2011). Results were also limited by use of a convenience sample; findings may not generalize to representative samples. Use of a retrospective design precluded an examination of the acute psychological consequences of initiating under the influence of alcohol. Given that a sizeable proportion of women in the AI group indicated that they were at best ambivalent about and at worst coerced into first coitus, there is the potential for adverse psychological outcomes including trauma and/or emotional distress that may inhibit healthy sexual functioning and increase future sexual vulnerability (Raghaven, Bogart, Elliott, Vestal, & Schuster, 2004).

The study had several strengths, including the use of a life-history calendar to facilitate the recall of the first coitus event. Life-history calendars are designed to elicit a rich network of memory cues related to personal life events. Such methods are optimal for eliciting recall of autobiographical events (Belli, 1998). Further, experiences occurring early in adulthood, particularly transitional and emotionally charged experiences are remembered better than events occurring either during childhood or later adulthood (Berntsen & Rubin, 2002; Rubin, Rahhal, & Poon, 1998). Nonetheless, we recognize that such data are subject to recall failures or biases and that the results need to be replicated prospectively.

Conclusions

Alcohol use at first coitus can adversely impact young women's sexual health and well-being through exposing them to contexts where they are likely to encounter risky sexual partners. These findings contribute to a growing body of literature that indicates that context of first coitus is more important than timing when considering adverse outcomes. The study also establishes use of alcohol at first coitus as a marker for high-risk behavior in adolescence, albeit but one element in a complex constellation of factors that contribute to adolescent sexual risk. More research is needed to identify the predictors of alcohol use at first coitus and the mechanisms responsible for sustaining risky drinking and sexual behavior over time. Understanding these risk factors will have important implications for interventions to promote sexual health and safety.

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Table 1

Correlations of Alcohol Use at Frist Coitus with Other Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Use of alcohol at 1 st coitus	--	.03	.15*	.22**	-.20**	-.29**	-.19**	.15*	-.09	.13*	.19**	.24**	.28**
2. Age at 1 st drink	--	--	.02	-.11	.06	-.03	.10	-.07	.07	-.07	-.13*	.18**	-.02
3. Age at 1 st coitus	--	--	--	.47**	.03	.08	.16*	-.13*	.19**	-.26**	-.29**	-.25**	-.17*
4. Age of partner	--	--	--	--	.38**	-.12	-.04	.03	-.02	.09	.06	-.03	-.03
5. How long partner known	--	--	--	--	--	.18**	.26**	-.22**	.23**	-.19**	-.18**	-.01	.01
6. 1 st coitus planned	--	--	--	--	--	--	.47**	-.15*	.05	-.14*	-.16	-.09	-.09
7. 1 st coitus desired	--	--	--	--	--	--	--	-.53**	.06	-.10	-.18**	-.11	-.03
8. 1 st coitus pressured	--	--	--	--	--	--	--	--	-.17**	.08	.20**	.20**	.18**
9. Time to sex w/ new partner	--	--	--	--	--	--	--	--	--	-.42	-.45**	-.28**	-.20**
10. Sex w/ person just met	--	--	--	--	--	--	--	--	--	--	.69**	.32**	.34**
11. Hookups w/ intercourse	--	--	--	--	--	--	--	--	--	--	--	.43**	.40**
12. Use of alc with sex	--	--	--	--	--	--	--	--	--	--	--	--	.43**
13. Sex when passed out	--	--	--	--	--	--	--	--	--	--	--	--	--

Note.

* $p < .05$;** $p < .01$.

Table 2

Chi Square Comparisons of Alcohol-involved and Alcohol-free Sexual Initiation Contexts and Sexual Risk

	Alcohol-involved n = 56		Alcohol-free n = 164		df	X ²
	n	%	n	%		
Relationship to Partner					4	42.60***
Hook-up	14	25	8	5		
Friend	18	32	19	12		
Date/boyfriend	20	36	133	81		
Other	4	7	4	2		
Activities just prior to intercourse					3	108.62***
Hanging out at home	15	27	139	85		
Party/social gathering	35	63	04	2		
On a date	1	2	13	8		
Other	5	9	8	5		
Where intercourse took place					6	39.58***
His house	19	34	75	46		
Her house	2	4	50	31		
Someone else's house	17	30	12	7		
In a car	4	7	11	7		
Outside	6	11	4	2		
Other	8	14	12	7		
Partner used Alcohol/drugs	49	96	3	2	3	182.83***
Discussed using birth control	9	16	94	57	1	28.52***
Used condom on this occasion	39	70	128	78	1	1.63
Used other birth control	10	18	43	26	1	1.60
The next time you had sex, was it with the same person? (Yes)	27	52	129	80	1	15.30***
Was your first intercourse consensual? (No)	10	18	7	4	1	10.73**

Note. Percentages reflect percent within alcohol group.

Bold type indicates cells with standardized residuals with an absolute value ≥ 2.0 , indicating that the observed values were significantly greater or less than the expected value for that cell (Argresti, 2007).

 $p < .001$,

**
 $p < .01$.

Table 3
Comparison of the Characteristics of First Coital Experience by Alcohol Involvement Status

	All		Alcohol-involved		Alcohol-free		<i>F</i>	<i>η</i> ²
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)		
MANOVA (7, 211)							6.99***	.17
ANOVAs								
(1, 217)								
Age of partner	17.23 (2.81)	17.95 (2.04)	16.73 (2.10)	13.96***	.06			
How long partner known	5.33 (1.61)	4.73 (1.96)	5.52 (1.43)	10.36***	.05			
First coitus planned	3.49 (2.15)	2.33 (1.90)	3.85 (2.09)	22.77***	.10			
First coitus wanted/desired	5.20 (1.84)	4.64 (2.30)	5.38 (1.63)	6.99**	.03			
First coitus pressured	2.78 (1.97)	3.25 (2.13)	2.63 (1.89)	4.17	.02			
Feelings about first coitus	4.79 (1.96)	4.09 (2.15)	4.99 (1.85)	9.03**	.04			

Note: MANOVA = multivariate analysis of variance; Multivariate *F* ratio is Wilks lambda approximation of *F*; ANOVA = univariate analysis of variance.

**
p < .01,

p < .001.

Table 4

Comparison of Current Heavy Episodic Drinking (HED) and Alcohol Problems by Alcohol-Involvement Status

	All	Alcohol-involved	Alcohol-free		
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>F</i>	η^2
MANOVA					
(2, 218)				15.02***	.15
ANOVA					
(1, 219)					
90-Day HED	2.30 (1.04)	2.70 (0.90)	2.20 (1.05)	6.36*	.03
Alcohol Problems	11.50 (5.24)	15.05 (4.89)	10.62 (5.58)	23.62***	.10

Note: MANOVA = multivariate analysis of variance; Multivariate *F* ratio is Wilks lambda approximation of *F*; ANOVA = univariate analysis of variance.

$p < .01$,

* $p < .025$,

*** $p < .001$.

Table 5

Comparison of Lifetime Sexual Risk Behavior by Alcohol-Involvement Status

	All	Alcohol-involved	Alcohol-free		
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>F</i>	η^2
MANOVA					
(6, 131)				3.75**	.15
ANOVA					
(1, 135)					
Sexual partners	5.46 (4.75)	6.33 (4.21)	6.95 (5.25)	0.50	.00
Sex w/ someone just met	1.61 (1.17)	1.95 (1.54)	1.62 (1.05)	1.73	.01
Hook-ups	1.98 (1.28)	2.59 (1.39)	2.06 (1.25)	4.27	.03
Freq. of alcohol before sex	2.05 (1.18)	3.18 (1.28)	2.43 (0.90)	14.10***	.10
Perceived intoxication	4.50 (1.33)	4.90 (1.21)	4.31 (1.35)	5.07	.04
Sex when passed out	0.53 (1.62)	1.72 (0.76)	1.29 (0.65)	11.00***	.08

Note:

MANOVA = multivariate analysis of variance; Multivariate F ratio is Wilks lambda approximation of F; ANOVA = univariate analysis of variance.

* $p < .025$,** $p < .01$,*** $p < .001$.