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Cognitions and behaviors related to risk for alcohol-exposed pregnancies among young adult women

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Abstract

Objective: This study assessed alcohol and sex-related cognitions and behaviors, including alcohol-related sexual expectancies, descriptive norms, and protective behavioral strategies, associated with women's risk for an alcohol-exposed pregnancy.

Methods: A national sample of young adults ages 18–20 years was subset to women who were capable of pregnancy and sexually active (n=422). The outcome was risk of alcohol-exposed pregnancy as determined by contraceptive status and heavy-episodic drinking. SAS version 9.4 was used to estimate logistic regression models.

Results: Alcohol-related sexual expectancies related to enhancement were significantly associated with increased odds of alcohol-exposed pregnancy risk. In contrast, women who reported the use of more safe sex (non-condom related) protective behavioral strategies (e.g., talk to partner about birth control use) were at decreased odds of alcohol-exposed pregnancy risk.

Conclusions: Future interventions to reduce the risk of alcohol-exposed pregnancies should consider alcohol-related sexual expectancies and safer sex protective behavioral strategies as leverage points.

Keywords

alcohol-exposed pregnancy; condom; heavy-episodic drinking; contraception; young adults; women

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

Introduction

Alcohol-exposed pregnancies are a significant public health issue due to the risk of fetal alcohol spectrum disorder and neurobehavioral changes (Mattson, Schoenfeld, & Riley, 2001; Streissguth & O'Malley, 2000). According to a cross-sectional study of four communities in the US, approximately 1.1% to 5.0% of first graders presented with fetal alcohol spectrum disorder (May et al., 2018). Yet, these outcomes are largely preventable.

Prevention of alcohol-exposed pregnancies relies on two behaviors – alcohol use and consistent use of effective contraception among women capable of pregnancy. Examination of each of these behaviors among reproductive age women reveal potentially elevated risk for alcohol-exposed pregnancies if these behaviors exist concurrently. According to data from the Behavioral Risk Factor Surveillance System, the prevalence of any alcohol use was 53.6% and the prevalence of heavy-episodic drinking (HED; defined in those data as 4 or more drinks) was 18.2% among non-pregnant reproductive-age women in the US. These rates are lower among young adult women ages 18–20; prevalence of alcohol use was 32.5% and prevalence of HED was 15.0% (Tan, Denny, Cheal, Snizek, & Kanny, 2015). Of more concern, 11.5% of pregnant women in the US reported drinking while pregnant, and 3.9% reported HED (Denny, Acero, Naimi, & Kim, 2019).

Moreover, approximately 45% of pregnancies in the US were unintended; this rate was highest among 18–19 year olds with 76% of pregnancies reported as unintended (Finer & Zolna, 2016). The primary contributor to an unintended pregnancy is contraceptive non-use or ineffective use (Sonfield, Hasstedt, & Gold, 2014), and consideration that not all contraceptive methods have the same level of effectiveness. Long-acting reversible contraceptive (LARC) methods, including intrauterine devices and implants, have the highest effectiveness due to limited user-error (>99%); whereas short-acting reversible contraceptive (SARC) methods, including oral contraceptives, patches, shot, and contraceptive ring, have lower effectiveness levels (91–94%) (Trussell, 2011). Ingersoll, Hettema, Cropsey, and Jackson (2011) reported that among women ages 18–44 at risk for a smoking and alcohol-exposed pregnancy used lower efficacy contraceptive methods (e.g., withdrawal) compared to women not at risk for exposed pregnancies.

Current evidence-based programs to prevent alcohol-exposed pregnancies include motivational interviewing to reduce either alcohol or to promote contraceptive use and are targeted toward 18–44 year old women (Floyd et al., 2007). Parrish, von Sternberg, Castro, and Velasquez (2016) examined experiential and behavioral processes of change, which is used in motivational interviewing, as potential mediators for behavior change in the CHOICES program. This analysis found that the process of change mediated the effect of CHOICES for contraceptive use, but not risky drinking (Parrish et al., 2016). Other research looking specifically at interventions to reduce college student drinking indicates that descriptive norms (i.e., perceived behaviors of peers; (Cialdini, Kallgren, & Reno, 1991; Reno, Cialdini, & Kallgren, 1993)) are supported mediators, and protective behavioral strategies (i.e., cognitive-behavioral strategies used, before, during, or after a behavior; (Martens et al., 2004; Sugarman & Carey, 2007)) and outcome expectancies (i.e., beliefs regarding negative or positive effects of a behavior; (Goldman, Del Boca, & Darkes, 1999)

Goldman et al., 1999) showed promising support as mediators (Reid & Carey, 2015). Prevention of alcohol-exposed pregnancies also require interaction with men for contraception negotiation, but are often omitted from these types of interventions (Floyd et al., 2007). Given that prevention of alcohol-exposed pregnancies relies heavily on both types of behavior change (i.e. alcohol use and effective contraceptive use), there is a need to examine predictors of risk, especially among young adults. Identifying salient cognitive and behavioral factors associated with alcohol-exposed pregnancy risk can inform the development or adaptation of future interventions for this high-risk group (Fabbri, Farrell, Penberthy, Ceperich, & Ingersoll, 2009).

To explore options for potential future intervention components for alcohol and effective contraceptive use among young adult women, this paper will explore predictors of alcohol and related risky sex that are supported in the literature and may be particularly important when examining prevention of alcohol-exposed pregnancies. First, research has indicated that drinking expectancies, or drinking as a function of one's expectations of reinforcement, is related to drinking among young adults (e.g., Collins, Koutsky, Morsheimer, and MacLean (2001)). Research further indicates that individuals with stronger expectancies about alcohol's effects on risky sexual behavior report greater risky sex intentions than individuals with weaker expectancies (Abbey, Saenz, & Buck, 2005). Another important predictor of alcohol-related risky sexual behaviors are descriptive norms, or the perceived behavior of peers (Cialdini et al., 1991; Reno et al., 1993). Perceived descriptive norms are frequently implicated as important cognitions related to alcohol-related risky sexual behavior as young adults overestimate peer alcohol use (Lewis & Neighbors, 2004) and risky sexual behavior (Lewis, Lee, Patrick, & Fossos, 2007) and these normative perceptions are associated with individual behavior (Borsari & Carey, 2001; Lewis & Neighbors, 2007; Simons-Morton, Haynie, Bible, & Liu, 2018). In addition to expectancies and perceived descriptive norms, protective behavioral strategies (PBS) are cognitive-behavioral strategies used before, during, or after drinking to minimize alcohol consumption and alcohol-related consequences including risky sexual behavior (Martens et al., 2004; Sugarman & Carey, 2007). PBS have consistently been implicated as important factors related to reducing both drinking and risky sexual behavior consequences (Lewis, Kaysen, Rees, & Woods, 2010; Lewis, Rees, Logan, Kaysen, & Kilmer, 2010). However, most of the work related to PBS has focused on college students (Miller et al., 2013; Scott-Sheldon, Carey, Elliott, Garey, & Carey, 2014) and does not address these strategies among non-college young adults nor their relation to risk for alcohol-exposed pregnancies more specifically.

The purpose of this paper is to assess alcohol and sex-related cognitions and behaviors, including alcohol-related sexual expectancies, perceived descriptive norms, and protective behavioral strategies, associated with women's risk for an alcohol-exposed pregnancy. Understanding underlying differences in alcohol and sex-related cognitions for risk of alcohol-exposed pregnancy can inform the specific theoretical components for future interventions.

Methods

Participants and Procedures

Participants for the present study included 1,065 18–20-year-old young adults who were participating in a larger study evaluating an intervention for alcohol-related risky sexual behavior. Data for the present analyses come from the baseline assessment of the longitudinal intervention study. Demographics for the baseline sample include mean age of 19.17 years old ($SD = .79$) and 54.5% female. Ethnic and racial representation of the baseline sample was as follows: 15.1% Hispanic/Latino, 70.5% White, 3.9% Other/More than one race, 7.9% African American, 9.7% Asian, 1.2% American Indian/Alaska Native, and 0.4% Native Hawaiian/Pacific Islander.

Participants for this study were recruited nationally through various methods and asked to complete a brief, five-minute web-based screening survey to determine if they met inclusion criteria for the longitudinal study. Recruitment methods included online recruiting (e.g., Facebook, Craigslist, Amazon Mechanical Turk), in-print advertisements, flyers, participant referrals, and in-person recruiting. The most commonly endorsed recruitment sources were Craigslist (47.9%), Instagram (11.8%), Participant referral (9.0%), Facebook (7.9%), while each of the other sources of recruitment (e.g., [Researchmatch.org](https://www.researchmatch.org), Twitter, Radio, Flyer) were endorsed by less than 5% of the sample. All advertisements and recruitment efforts included a URL to a study website that included a brief information statement describing the study and access to a short three-minute online eligibility survey. Initial eligibility criteria included: residing in the US; age 18–20; provide a birthdate consistent with their age; provide a phone number, first and last name, birth sex, gender, sexual desire, and valid email address; correctly answer check questions (i.e., select 2 for what is 4 minus 2, select the color blue from a list of colors); not be in a monogamous relationship, or be in a monogamous relationship for less than three months and be open to having a sexual relationship with someone other than a monogamous partner; have had sex in the past three months; and, have had an alcoholic drink at least twice a month on average over the past 3 months. Potential participants ($N=17,899$) who completed the eligibility survey were then moved to the next part of the screening process ($N=2,690$; 15.0%).

Participants who met minimum eligibility criteria after completing the screening survey were placed into a database for study staff to review. Study staff screened participants in the database dependent on the demographic needs of the study and if appropriate, moved them to a telephone contact list. Those in the contact list were then called by study staff to verify eligibility and provide more details about study procedures. Out of the 1,480 participants who met all inclusion criteria, 1,144 (77.3%) were invited to complete the baseline survey and longitudinal study participation. Participants who verified their information with study staff and wished to continue were sent the invitation to complete the baseline survey. Upon receiving the invitation to the survey, participants were presented with a full information statement. Those who agreed to participate and indicated their consent were immediately routed to the online baseline assessment.

Of the 1,144 participants invited to the baseline survey, 1,065 (93.1%) completed the survey. The sample was subset to women ($n=624$) who have not had a tubal ligation or a partner

with a vasectomy (n=621), had vaginal sex in the last 3 months (n=522) and were not married (n=500). A complete case analysis was conducted based on responses to the outcome and response variables leaving an analytic sample of 422. Among the sample of 422 participants, 8% were not enrolled in school, 1.7% in high school or obtaining a GED, 8% in community college, 77% enrolled in a 4-year college, and the remaining in other groups (i.e., graduate school, vocational school, or not reported).

Participants who completed the baseline survey received a \$25 gift certificate. A Federal Certificate of Confidentiality was obtained to help ensure privacy of research participants. All study procedures were approved by the University's Institutional Review Board, and no adverse events were reported.

Measures

Risk of Alcohol-Exposed Pregnancy.—The outcome for this study was risk for an alcohol-exposed pregnancy based on two behaviors: HED and contraceptive use. Three levels of risk were derived based on the combination of these behaviors: (1) report of HED in the past year and contraceptive non-use in the past three months; (2) report of HED in the past year and non-use of a SARC (i.e., pill, patch, ring, injection) or LARC (i.e., intrauterine device or implant) method in the past three months; and (3) report of HED the past year and non-use of a LARC method in the past three months. Varying levels of contraception use were included in the outcome variable since risk of pregnancy changes with methods of different levels of effectiveness.

Alcohol-Related Sexual Expectancies.—Participants were asked to respond to 13 items with the stem: “After having a few drinks of alcohol...” (Dermen & Cooper, 1994). Sub-scales for these items include: sexual enhancement (e.g., sexually responsive, enjoy sex more) (5 items, Cronbach's $\alpha=0.85$), risk-taking (e.g., less likely to take precautions before having sex) (4 items, Cronbach's $\alpha=0.85$), and disinhibition (e.g., more likely to have sex on a first date) (5 items, Cronbach's $\alpha=0.85$).

Protective Behavioral Strategies.—Three scales measured protective behavioral strategies: condom-related strategies for safe-sex ($\alpha=0.91$ in Lewis, Logan, and Neighbors (2009)), non-condom-related strategies for safer-sex and alcohol-related strategies for drinking (Lewis, Rees, & Lee, 2009; Martens et al., 2005) ($\alpha=0.78$, 0.68, and 0.60 for subscales in Lewis, Rees, et al. (2009)). Participants responded if they engaged in these behaviors in the past three months. Condom-related protective behavioral strategies comprised 6 items, such as “bought condoms”, “carried a condom and kept it handy”, and “talked about condom use with partner prior to sex” (Cronbach's $\alpha=0.87$). Safer sex protective behavioral strategies, that were not related to condom use, comprised 8 items (Cronbach's $\alpha=0.78$). Example items of safer sex protective behavioral strategies are “had a mental plan to talk about birth control, other than condom use, with partner prior to sex”, “talked about partner's history of safe sex behaviors prior to sex”, and “used/carried a method of birth control, other than a condom”. Drinking protective behavioral strategies comprised 14 items (Cronbach's $\alpha=0.80$), such as “used a designated driver”, “drank slowly, rather than gulp or chug”, and “stopped drinking at a predetermined time”.

Perceived Descriptive Norms.—Participants were presented with the following stem for descriptive norms, “Over 3 months, you said you think the typical female your age has vaginal sex _____ times.” Participants then listed the number of times they thought the typical female their age used a condom, used any method of birth control, and consumed alcohol before or during the sexual encounter (Lewis et al., 2007). Participants who had a one-to-one ratio (i.e., the number of times for vaginal sex and the corresponding behavior were equivalent) for these norms were rated as “always” due to the bimodal distribution of these variables.

Alcohol Use for Past Week.—The Daily Drinking Questionnaire (DDQ ($\alpha=0.73$); (Collins, Parks, & Marlatt, 1985)) was used to measure the typical number of drinks consumed per week during the last three months. Participants were provided a definition of standard drinks and responded to, “Consider a typical week during the last 3 months. How much alcohol, on average (measured in number of drinks), do you drink on each day of a typical week?”. The typical number of drinks consumed per week was the sum of number of drinks per day.

Relationship Status.—Participants reported their current relationship status as: Single, Dating (Not Serious), and Dating (Serious).

Data Analysis

Univariate and bivariate frequencies and measures of central tendency were estimated in SAS version 9.4. Three separate, adjusted logistic regression models were estimated for the three outcome variables related to risk of an alcohol-exposed pregnancy. Adjusted odds ratios and 95% confidence intervals were reported for all outcome variables.

Results

The analytic sample included 422 18–20-year-old young adult women. Most women reported HED in the past year (94%) (Table 1). Type of contraception used varied, with most women using a short-acting reversible method. Less than 5% of the sample were considered at risk for an alcohol-exposed pregnancy based on the most conservative definition of HED in the past year and contraceptive non-use. The proportion at risk increased for non-use of a SARC/LARC method (35%) and non-use of a LARC method (80%).

On average, participants reported three alcohol-related sexual expectancies and use of three protective behavioral strategies. With regard to normative comparisons, participants reported that women their age always used a condom (32%) or used birth control (57%), respectively, during vaginal sex. In contrast, only 12% of the sample reported that women their age always consumed alcohol during sex. On average, participants consumed 11 drinks in the past week. And, most participants reported their relationship status as single (63%).

Contraceptive Non-Use & Heavy-Episodic Drinking

Women were more likely to be at increased odds of an alcohol-exposed pregnancy risk if they reported more alcohol-related sexual expectancies related to sexual enhancement ($OR=1.79$, 95% CI 1.11, 2.89). In contrast, women were less likely to be at risk if they

reported utilizing safer sex (non-condom related) protective behavioral strategies. All other cognitions were not statistically significant.

Short-Acting and Long-Acting Reversible Contraception Non-Use & Heavy-Episodic Drinking

Similarly, women were more likely to be at risk for an alcohol-exposed pregnancy, using a broader risk indicator, if they reported more alcohol-related sexual expectancies for sexual enhancement, but also if women reported more condom-related protective behavioral strategies (OR=1.67, 95% CI 1.29, 2.15) and the norms that women always use a condom during vaginal sex (OR=1.85, 95% CI 1.08, 3.15). Similar to the last outcome, women who reported more safer sex (non-condom related) protective behavioral strategies had lower odds of alcohol-exposed pregnancy risk.

Long-Acting Reversible Contraception Non-Use & Heavy-Episodic Drinking

Finally, the broadest definition of alcohol-exposed pregnancy risk were women not using a LARC method, as these are the only methods without user error. Alcohol-related sexual expectancies for sexual enhancement continued to be statistically significantly related, as were safer sex (non-condom related) protective behavioral strategies. However, no other cognitions were significantly related. Instead, for each increase in number of drinks consumed per week, the odds of an alcohol-exposed pregnancy risk also increased (OR=1.07, 95% CI 1.03, 1.12).

Discussion

This study sought to evaluate the alcohol-related sexual cognitions and protective behaviors related to risk of alcohol-exposed pregnancy among young adult women. Based on these analyses, alcohol-related sexual cognitions and behaviors varied based on severity of risk for alcohol-exposed pregnancy, specifically for protective behavioral strategies and descriptive norms.

Across all outcomes, alcohol-related sexual expectancies related to enhancement were significantly associated with increased odds of alcohol-exposed pregnancy risk. This suggests that young women may prioritize the perceived sexual enhancement associated with alcohol use, including feeling closer to a partner, becoming more sexually responsive, less nervous during sex, and enjoying sex more than usual, over condom and contraception use. Previous studies have noted that those endorsing these expectancies use significantly more alcohol prior to sexual activity than those who do not endorse these expectancies (Cooper, O'Hara, & Martins, 2016). Other studies have reported on the prioritization of sexual enhancement during alcohol use and the association with condomless sex among young women (Carey et al., 2019). Women reported that alcohol use made them feel more adventurous during sex, and while they wanted to avoid the risks and negative outcomes associated, the desire came secondary to the desire of sexual fulfillment (Carey et al., 2019). However, many of the previous studies focus on condom use rather than the more distal behavior of contraception use, which suggests a need to further explore the relationship between alcohol-related sexual expectancies and alcohol-exposed pregnancies via

contraceptive use, separate from condoms. It is important to note that a similar relationship was not found between the two other alcohol-related sexual expectancies measured in this study, risk-taking or disinhibition, and alcohol-exposed pregnancy risk.

Safer sex protective behavioral strategies, not related to condom use, were associated with lower odds across all levels of alcohol-exposed pregnancy risk. Specifically, the safer sex (non-condom) protective behavioral strategies focused on behaviors that may have taken place prior to the drinking episode, such as using a method of contraception other than a condom or having a mental plan to talk about contraception prior to sex, which may reduce the impact decision-making under the influence of alcohol. Additionally, one safer sex protective behavioral strategy, using methods of contraception other than condoms, may not protect against STIs but these methods are more effective at preventing pregnancy and reducing alcohol-exposed pregnancy risk. Conversely, condom-related protective behavioral strategies were associated with increased odds of alcohol-exposed pregnancy risk in the category of non-SARC/LARC use. This finding may be related to the outcome measure of risk. In this risk category, women who were using condoms as their method of contraception were not included and may have been the group prioritizing condom-related protective behavioral strategies. Previous studies have linked the use of condom-related protective behavioral strategies to discussion of HIV and STI status prior to sexual activity, discussion of STI history, and condom use (Lewis, Kaysen, et al., 2010). This finding may be indicative of an unmet need for contraception among these populations. Given these inverse findings, there may be a need to further explore programming targeting those at risk for alcohol-exposed pregnancies and improving their use of and access to effective methods of contraception (Floyd et al., 2007).

Unlike prior research that has demonstrated the norms-behavior link for alcohol and sexual decision making, the current findings indicated that perceived descriptive norms were mostly unassociated with past year HED in conjunction with contraception non-use, no SARC, or no LARC. The exception was descriptive normative perceptions for always using a condom during vaginal sex was associated with past year HED in conjunction with no use of SARC or LARC. The lack of findings could be due to descriptive normative perceptions being more influential during situationally-based decision making (Gerrard, Gibbons, Houlihan, Stock, & Pomery, 2008), such as deciding to have sex rather than for longer-term, planned decisions such as SARC or LARC decisions. Similarly, alcohol use in the past week was only significantly associated with past year heavy-episodic drinking in conjunction with no use of LARC. It may also be the case that alcohol is associated with more in-the-moment decision making rather than decision making related to longer-term contraception choices.

The findings from this study should be considered in context of the study limitations. First, the time period for HED and contraceptive use recall were not the same. Ultimately, we utilized past year use for HED and past three months use for contraceptive; however, we also ran models using past month HED and found similar results (data not shown). Moreover, the measure of contraceptive use in the past three months does not guarantee consistent use of the contraceptive method for the three-month period. As such, women may be at higher risk for an unintended pregnancy or alcohol-exposed pregnancy due to inconsistent use of contraception. Additionally, the cognitions and behaviors were measured as the same time

point; thus, temporality cannot be assessed. Finally, we were unable to examine differences effects for women in college and women not in college in this analysis due to a smaller sample size when stratified; however, this should be an area of future research in larger studies.

While there are efficacious interventions aimed at lowering alcohol-exposed pregnancies (i.e., CHOICES) by reducing drinking or by using contraception effectively. The current findings indicate that interventions could consider focusing on reducing alcohol-related sex expectancies specific to enhancement and increasing non-condom related PBS as these are associated with past year heavy-episodic drinking in conjunction with contraception non-use, no SARC, or no LARC. These constructs would fit well in a personal normative feedback brief intervention that could be delivered on platforms easily accessible by the young adult population and would not require extensive resources for community-based implementation. In addition to alcohol-exposed pregnancies, research is needed to examine these cognitions and behaviors are associated with risk for STIs.

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Table 1.

Descriptive characteristics of sample, (N=422)

Heavy-Episodic Drinking Past Year, N(%)	397 (94.08%)
Contraceptive Use, N(%)	
Non-Use	4 (0.95%)
Non-SARC/LARC Use	156 (36.97%)
SARC Use	199 (47.16%)
LARC Use	63 (14.93%)
Alcohol-Exposed Pregnancy Risk, N(%)	
Heavy-Episodic Drinking Past Year & Contraception Non-Use	21 (4.98%)
Heavy-Episodic Drinking Past Year & No Use of SARC/LARC	147 (34.83%)
Heavy-Episodic Drinking Past Year & No Use of LARC	338 (80.09%)
Alcohol-Related Sexual Expectancies, Mean (St Dev)	
Enhancement	3.57 (1.20)
Risk-Taking	2.94 (1.37)
Disinhibition	3.31 (1.37)
Protective Behavioral Strategies, Mean (St Dev)	
Non-Condom-Related	3.11 (0.90)
Condom-Related	3.08 (1.12)
Drinking	3.06 (0.62)
Descriptive Normative Comparisons, N (%)	
Always Use a Condom during Vaginal Sex	133 (31.52%)
Always Use Birth Control during Vaginal Sex	242 (57.35%)
Always Drink Alcohol during Vaginal Sex	52 (12.32%)
Alcohol Use Past Week, Mean (St Dev)	11.28 (7.43)
Relationship Status, N (%)	
Single	265 (62.80%)
Dating (Not serious)	144 (34.12%)
Dating (Serious)	13 (3.08%)

Table 2.

Adjusted odds of alcohol-exposed pregnancy risk for three levels of outcome

	Outcome = HED Past Year & Contraception Non-Use	Outcome = HED Past Year & No Use of SARC/LARC	Outcome = HED Past Year & No Use of LARC
Alcohol-Related Sexual Expectancies			
Enhancement	1.79 (1.11, 2.89)	1.47 (1.17, 1.84)	1.39 (1.11, 1.75)
Risk-Taking	1.23 (0.80, 1.88)	0.96 (0.78, 1.18)	1.03 (0.82, 1.29)
Disinhibition	0.94 (0.62, 1.42)	0.90 (0.72, 1.12)	0.88 (0.70, 1.11)
Protective Behavioral Strategies			
Non-Condom-Related	0.46 (0.23, 0.91)	0.25 (0.17, 0.36)	0.56 (0.41, 0.78)
Condom-Related	0.80 (0.49, 1.28)	1.67 (1.29, 2.15)	1.16 (0.91, 1.48)
Drinking	0.85 (0.34, 2.13)	1.37 (0.88, 2.12)	1.28 (0.80, 2.04)
Descriptive Normative Comparisons			
Always Use a Condom during Vaginal Sex	1.42 (0.48, 4.17)	1.85 (1.08, 3.15)	1.44 (0.79, 2.65)
Always Use Birth Control during Vaginal Sex	0.63 (0.23, 1.71)	0.43 (0.26, 0.70)	0.87 (0.50, 1.50)
Always Drink Alcohol during Vaginal Sex	0.28 (0.04, 2.29)	0.61 (0.29, 1.27)	0.74 (0.33, 1.67)
Alcohol Use Past Week Relationship Status	0.99 (0.93, 1.06)	1.02 (0.99, 1.06)	1.07 (1.03, 1.12)
Single			
Dating (Not Serious)	1.01 (0.36, 2.87)	1.47 (0.89, 2.45)	1.25 (0.72, 2.18)
Dating (Serious)	6.13 (0.92, 40.92)	1.36 (0.31, 6.03)	0.41 (0.12, 1.48)

* Bold values indicate statistical significance $p < 0.05$

HED = heavy-episodic drinking