Running head: associations between alcohol use with sex and sexual risk-taking

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A drink or two: Associations between alcohol use with sex and sexual risk-taking among young adults in New South Wales

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Abstract

Sexual risk-taking among young heterosexual adults is a significant source of STIs and risk of HIV. Therefore, efforts to understand the determinants of sexual risk-taking remain critical, and factors that contribute to sexual risk-taking have continued to receive research attention. In this context, alcohol use with sex is frequently identified as a potential factor that contributes to sexual risk-taking, and several studies have revealed that alcohol use with sex and sexual risk-taking often co-occur. This study aimed to assess how alcohol-use related sexual enhancement expectancies, sexual fears, and sexual health goal importance affect the association between alcohol use with sex and sexual risk-taking. Data for this study were obtained from an online survey designed to examine sexual behaviours and experiences among young heterosexual adults aged between 18-29 years, who currently lived in Australia (N = 180). Multiple logistic regression analyse showed that participants who reported consuming alcohol with sex were nearly two times more likely to engage in sexual risk-taking than participants who reported not to drink with sex. Contrary to what was predicted, alcohol use with sex did not increase sexual risk-taking more in individuals with high alcohol-use related sexual enhancement expectancies. However, results showed that individuals who believed that alcohol could enhance their sexual behaviour were more likely to engage in sexual risk-taking as a result of consuming more alcohol with sex. Furthermore, our results suggested that alcohol use with sex did not increase sexual risk-taking in individuals with more sexual fears or with stronger sexual health goals. Moreover, alcohol use with sex did not mediate the association between sexual fears, sexual health goals and sexual risk-taking. Several limitations of the study are discussed, as are implications for future research.

Keywords: alcohol use with sex, alcohol-use related sexual enhancement expectancies, sexual fears, sexual health goal importance, sexual risk-taking, young adults

1. Introduction

Although risk for HIV infection has, in the past, been generally associated with injection drug use and sexual activity among men who have sex with men, sexual risk-taking among heterosexuals is an increasingly significant source of HIV infection (Dermen & Cooper, 2000). Closer examination of incidence figures shows that in 2009, 27% of new HIV infections in the United States, and 23% of new HIV infections in Australia occur among heterosexual individuals (Prejean, Song, Hernandez, Ziebell, Green, Walker et al., 2011; Kirby Institute, 2011). Moreover, in 2008, 272 out of 995 new HIV infections in Australia occurred among individuals between 13-29 years (Kang, Skinner, & Usherwood, 2010). In addition, many young adults continue to engage in sexual activities that put them at risk (e.g. having sexual intercourse without the use of condoms). In particular, the number of new episodes of sexually transmitted infections (STIs) has shown a dramatic increase, with the biggest increase in reported cases of *Chlamydia trachomatis* infections (Kirby Institute, 2011). In Australia, the population rate of reported Chlamydia diagnoses more than tripled among both men and women between 2001 and 2010, from 84.5 to 278.8 per 100.000 men, and 124.4 to 384.5 per 100.000 women. Chlamydia infections occurred predominantly among young adults aged between 15 and 29 years, which accounted for 80% of the annual number of 74.305 newly diagnosed cases in 2010 (Kirby Institute, 2011). With these rates concerning HIV and STIs in mind, efforts to understand the determinants of sexual risk-taking remain critical, and factors that contribute to sexual risk-taking have continued to receive much attention in recent years (Cho & Span, 2010). The present study in particular considers whether alcohol use with sex might be associated with sexual risk-taking.

Having unprotected sex with casual partners

Sexual risk-taking is a term that researchers have had trouble measuring due a substantial array of behaviours and consequences associated with the construct (Turchik, 2007). According to Cooper (2002), sexual risk-taking includes "any behaviour that increases the probability of negative consequences associated with sexual contact, including HIV or STIs, and unplanned pregnancy" (Cooper, 2002, pp. 101-102). These behaviours comprise: having multiple, casual or unknown partners, irregular or non-use of condoms, and not discussing risk subjects prior to sexual intercourse. For the purposes of the present study, sexual risk-taking is defined as any sexual behaviour that increases the probability of contracting HIV or other STIs. This behaviour includes 1) having sexual intercourse with one or more casual partners and 2) irregular or non-use of condoms (Cooper, Agocha, & Albino, 1999; Dermen, Cooper & Agocha, 1998; Miller, Lynam, Zimmerman, Logan, Leukefeld, & Clayton, 2004).

Research findings on having a regular partner indicated that familiarity with a sexual partner is related with more unprotected sexual intercourse (Mehrotra, Noar, Zimmerman, & Palmgreen, 2009). However, with regular partners there is presumably a greater likelihood of knowing the partner's HIV and STI status, and sexual or drug history, thus reducing the risk of HIV and STI infection. Furthermore, if regular partners are defined as monogamous, than restricting sexual relations should also reduce the risk of infection (Comer, & Nemeroff, 2000). This study therefore included solely casual partner type and irregular or non-use of condoms as indicators of sexual risk-taking. The question remains as to what factors decreases the likelihood of such sexual risk behaviour. In this context, alcohol use with sex is frequently identified as a potential factor that contributes to sexual risk-taking, and several studies have revealed that alcohol use with sex and sexual risk-taking often co-occur (Baskin-Sommers, & Sommers, 2006; Dermen, et al., 1998; Kalichman, Cain, Zweben, & Swain, 2003; Thompson, Kao, & Thomas, 2005). However, research on the association between

alcohol use with sex and sexual risk-taking has been marked by conflicting findings.

Alcohol use with sex and sexual risk-taking

As alcohol consumption can influence judgment and decision-making, its use in conjunction with sexual activity has been shown to increase the probability that sexual risk-taking will occur (Halpern-Felsher, Millstein, & Ellen, 1996; Leigh, 1990; Thompson et al., 2005). Besides obvious effects of alcohol consumption (e.g. decreased inhibitions, difficulty maintaining attention to specific tasks, lack of control, sensory impairment), most individuals also believe that alcohol enhances sexual experiences, that alcohol increases the likelihood of sexual activity, and promotes riskier sexual behaviour (Cooper, 2006). Individuals aged between 18-29 years are more likely than any other age group to consume alcohol in a way that puts them at risk of alcohol-related harm, including sexual risk-taking (Australian Institute of Health and Welfare, 2011). If alcohol consumption does indeed lead to risk-taking in sexual situations, interpreting the dynamics of this association can inform research, educational and preventive efforts to control the spread of HIV and STIs infection among young adults (Leigh, Temple, & Trocki, 1994).

In the past two decades, a substantial amount of research has been conducted on the association between alcohol use and sexual risk-taking, and alcohol use with sex has become a target of intervention efforts aimed at reducing sexual risk-taking (Cooper, 2006). However, due to inconsistent empirical evidence regarding the effects of alcohol on sexual behaviour (Patrick & Maggs, 2009), effective intervention strategies are yet to be developed. An association between alcohol use and increased participation in promiscuous sexual behaviours, particularly having casual sex, has often been reported but findings are less consistent regarding the association between alcohol use and protective behaviors against health risk (i.e., condom use) (Cooper, 2002). These inconsistent findings indicate that

possible moderating or mediating effects of other variables may, in part, substantially affect the association between alcohol use with sex and sexual risk taking among young adults (Rehm, Shield, Joharchi, & Shuper, 2011). Only once we achieve insight in which variables are associated with alcohol use and sexual risk-taking, will we be able to begin effective development of health education and prevention programs for young adults.

Alcohol-use related sexual enhancement expectancies

A recent study considered psychological variables as possible factors that are associated with alcohol use with sex and sexual risk-taking, especially those psychological variables that are likely to interact with alcohol intoxication, because alcohol can affect individuals in different ways (Stoner, George, Peters, and Norris, 2007). However, to date only limited research has been conducted on these psychological variables. One psychological variable which received most consistent attention in research is alcohol expectancies. The alcohol-use sexual enhancement expectancies model postulates the likelihood that individuals engage in sexual risk behaviour when they consume alcohol prior or during sex is increased, when individuals believe that alcohol use enhances their sexual behaviour, in the manner of a self-fulfilling prophecy (Dermen & Cooper, 1994; White, Fleming, Catalano, & Bailey, 2009). For example, individuals who believe that drinking encourages risky sex should be more likely to engage in sexual risk-taking when they consume alcohol, than individuals who do not hold this expectation (Dermen & Cooper, 1994). Alcohol use-related sexual enhancement expectancies have been found to influence alcohol consumption in sexual situations (Dermen & Cooper, 1994), and to be associated with increased sexual risk-taking (White et al., 2009). Intoxicated individuals with high alcohol-use related sexual enhancement expectancies were more likely to initiate sexual activity than intoxicated individuals with weaker expectancies (White et al., 2009). In addition, Hendershot, Stoner, George, and Norris (2007) found that

alcohol use-related sexual expectancies increased the frequency of how often individuals consumed alcohol with sex, which in turn predicted the number of casual sex partners. Among their sample of 611 young adults, no direct effects of alcohol use-related sexual enhancement expectancies were found on the number of casual sex partners (Hendershot et al., 2007).

Dermen and colleagues (1998) examined if sex-specific alcohol expectancies might moderate the relationship between alcohol use and sexual risk-taking by conducting face-to-face interviews among 656 adolescents. They argued that if expectancies indeed moderated the association between alcohol use with sex and sexual risk-taking, this would be consistent with the theory that alcohol expectancy activation is accountable for enhanced sexual risk-taking when individuals consumed alcohol prior or during sex. Consistent with their hypothesis, alcohol-use related sexual expectancies moderated the relationship between alcohol use and sexual-risk taking. Thus, alcohol use with sex was related to sexual risk-taking primarily among participants who held strong expectancies that alcohol consumption would lead to increased sexual risk-taking. A more recent study aimed to replicate findings reported by Dermen and colleagues (1998), suggesting that alcohol-use related sexual enhancement expectancies may influence drinking decisions and subsequent sexual risk-taking (Brown & Vanable, 2007). However, they found no evidence to support this assumption. Due to these inconsistent findings, the present study therefore aimed to replicate and test the generality of the expectancy moderation effect.

Sexual fears and alcohol use with sex

Cooper, Shapiro and Powers (1998) argued that focusing on the reasons why people have sex (e.g. the functions served by sex), could be a critical first step toward understanding and changing problematic sexual-risk taking. In particular, reasons that are seemingly interacting

with alcohol intoxication (Stoner et al., 2007). One such reason that is examined in the present study is the variable dispositional sexual fear, aversion or anxiety, which is broadly labelled as "sexual fears". In our western culture it is commonly thought that alcohol can reduce fear, and that alcohol-induced fear reduction can foster actions that would be otherwise inhibited by anxiety or fear (Stoner et al., 2007). Research has largely supported this common thought by substantiating that alcohol can indeed reduce anxiety by making individuals believe it does (for a review see Greeley & Oei, 1999). Moreover, when individuals believe that alcohol consumption can help them exceed their sexual fears, this in turn could lead to increased sexual risk-taking. Sexual fears refer to an avoidant or anxious approach to sexual situations for a variety of reasons, including perceptions of sexual inadequacy, self-consciousness, or fears of contracting an STI (Katz, Frazer & Wilson, 1993; Stoner et al., 2007). The present study distinguished "sexual fears" from erotophobia, the latter being more about negative attitudes and aversion towards sexual love or desire, and lack of sexual adventurousness (Fisher, Byrne, White, & Kelley, 1988).

The tension reduction theory (TRT) predicts that tension reduction is an important component in the motivation of alcohol consumption, particularly among anxious individuals (Cappell & Herman, 1972). More generally, the tension reduction theory proposes that, because alcohol relieves aversive symptoms of anxiety and negative affective states, drinking behaviour is negatively reinforced. Thus, the experience of an aversive level of tension will increase the likelihood that one will consume alcohol (Kalodner, Delucia, and Ursprung, 1989). Consistent with this theory, it is possible that sexual fears cause an aversive level of tension, which in turn promotes drinking in anticipation of sexual situations (Stoner et al., 2007). This possibility makes it significant to know if there is an association between sexually fearful individuals and alcohol use in sexual situations.

Moreover, Stoner and colleagues (2007) found that due to the anxiety reducing properties of alcohol, the inhibition force of sexual fears would not operate when individuals are intoxicated. They found that individuals presenting higher levels of sexual fears are *more* likely than individuals with lower levels of sexual fears to engage in sexual risk-taking when intoxicated. Thus, alcohol may foster sexual risk-taking by providing sexually fearful individuals with a "liquid courage" that offsets fear associated with engagement in sexual risk behavior (Orchowski, Mastroleo, & Borsari, 2012). This novel finding, although preliminary, may indicate that a high degree of sexual fear predisposes individuals to consume alcohol prior or during sex, and thus foster sexual risk behaviour.

Alcohol myopia and sexual health goal importance

According to the alcohol myopia theory (Steele, & Josephs, 1990), alcohol intoxication causes a reduction in cognitive processing ability resulting in a narrowed attentional focus, and therefore intoxicated individuals no longer have the requisite processing skills to attend to all of the information in their environment. Instead, they are likely to focus on the aspects of their environment that are most salient (Davis, Hendershot, George, Norris, & Heiman, 2007; MacDonald, Fong, Zanna, & Martineau, 2000). Moreover, alcohol myopia theory speculates that due to "myopia", intoxicated individuals tend to increase their attention towards impelling and positive cues and lose the ability to process the more abstract negative cues (Davis et al., 2007). Impelling cues in sexual situations (e.g. sexual arousal) tend to be immediate and positive, whereas the risk for getting infected with an STI is seen as more abstract and negative.

However, whether or not intoxicated individuals engage in sexual risk-taking is also dependent on certain goals individuals may pursue. When goals are important to an individual this will be more likely to lead to behavior than less valued goals (Förster,

Liberman, & Higgins, 2005). Thus, when sexual health goals are relatively important to an individual (e.g. using a condom when having sex to prevent from contracting an STI), this may guide behavior more and could result in less sexual risk-taking. Consistent with this line of reasoning, MacDonald and colleagues (2000) found a counterintuitive possibility that when inhibiting goals are salient, intoxicated individuals will focus on these goals, which in turn could lead to an inhibition effect. That is, if a sexual health goal is salient to an individual, alcohol myopia theory suggests that the intoxicated individual may actually have *stronger* intentions to refrain from engaging in sexual risk-taking. This indicates that these individuals will attempt to refrain from engaging in sexual risk-taking even if they have used alcohol prior or during sex. Research by Grattan-Miscio and Vogel-Sprott (2005) supported this by showing that even when individuals had consumed alcohol it was still possible for them to activate goals to counteract the regulatory deficits that may have led to sexual risk-taking.

The present study

In the present study we aim to assess how alcohol-use related sexual enhancement expectancies, sexual fears, and sexual health goal importance affect the association between alcohol use with sex and sexual risk-taking among young adults. To the best of our knowledge, only limited research has been conducted on the possible moderating or mediating effects of these psychological variables that may, in part, substantially affect the association between alcohol use with sex and sexual risk-taking. Based on the existing literature, we propose and test several hypotheses.

First, this study aimed to replicate Dermen et al., (1998) findings and proposes that alcohol use with sex increases sexual risk-taking more in individuals with high alcohol-use related sexual enhancement. In addition, as higher alcohol-use related sexual enhancement

expectancies might increase the probability that individuals will use alcohol prior or during sex, individuals may be more likely to engage in sexual risk-taking after consuming alcohol in sexual situations than when not drinking (White et al., 2009). Therefore, we expect an alternative hypothesis that alcohol use with sex mediates the association between alcohol-use related sexual expectancies and sexual risk-taking.

Next, a high degree of sexual fear predisposes individuals to consume alcohol prior or during sex. Furthermore, in line with the reasoning that alcohol use with sex could in turn increase sexual risk-taking, we extend previous research by hypothesizing that alcohol use with sex mediates the association between sexual fears and sexual risk-taking. According to Stoner and colleagues (2007), individuals with more sexual fears could be particularly susceptible to engaging in sexual risk-taking when drinking alcohol prior or during sex. Thus, an alternative hypothesis considers whether sexual fears moderate the association between alcohol use with sex and sexual risk-taking.

Furthermore, whether or not intoxicated individuals engage in sexual risk-taking is dependent on certain salient goals individuals may pursue (MacDonald et al., 2000). That is, when sexual health goals are relatively important to an individual, this may guide behavior more and could result in less sexual risk-taking. Therefore, individuals with stronger sexual health goals should be less likely to engage in sexual risk-taking when they consume alcohol prior or during sex, than individuals with weaker sexual health goals. Thus, it is expected that sexual health goal importance moderates the effect of alcohol use with sex on sexual risk-taking. If health goals are important to individuals, we speculate that this would result in less alcohol use with sex, thus decreasing the change for individuals to engage in sexual risk-taking. Therefore, our alternative hypothesis expects that alcohol use with sex would mediate the association between sexual health goal importance and sexual risk-taking.

2. Method

2.1 Design and procedure

Data for this study were obtained from an online survey designed to examine sexual behaviours and experiences with a focus on the influence of alcohol use prior or during sex among young adults. The survey website called "A drink or two", invited young adults to have their say on alcohol and sex. Participants were recruited at the University of New South Wales in Sydney, Australia, to participate in a survey described as focusing on "the influence of alcohol on young adults' sex lives". A convenience sample of participants was recruited over a one month period in April 2012 and entailed several strategies of recruitment. First, potential participants were approached by trained research staff on the UNSW Kensington campus. Participants who expressed interest in participating were informed that the study was voluntary and that all information collected in the study would remain confidential. Then, participants received a printed copy of the Participant Information Statement and could consent to receive an email from research staff that included the survey website (www.adrinkortwo.nchsr.org). Second, recruitment posters with the survey website and a brief explanation of the study were posted on advertisement boards at the UNSW Kensington campus. Lastly, recruitment comprised online advertisements on the social networking website Facebook, which directly routed participants to the survey website.

When participants visited the survey website they were informed with background information about the survey, and advised to read and print the Participant Information Statement for their own records. Participants were also provided with contact details of the research staff with whom they could get in touch with should they have any questions or concerns due to their research participation. Lastly, participants were provided with free helplines and websites about sexual health and alcohol consumption. All participants

provided online informed consent prior to starting the questionnaire. No monetary reimbursement was provided for participation. The study protocol was approved by the University of New South Wales Human Research Ethics committee.

The questionnaire first assessed participants' socio-demographic characteristics, including gender, age, place of residence, ethnic background and sexual orientation, as well as questions about sexual relations and risk behaviours, and alcohol consumption prior or during sex. This was followed by questions about sexual health goal importance, alcohol-use related sexual enhancement expectancies and sexual fears. The questionnaire finished with a set of questions regarding how participants had found out about the survey and whether they had provided honest answers.

2.2. Participants

Participants were eligible for this study when they were 1) between 18 and 29 years old, 2) currently lived in New South Wales, Australia, 3) ever had sexual intercourse, 4) ever had been intoxicated from alcohol, and 5) did not identify as being exclusively gay. After also eliminating participants who provided incomplete surveys, analyses presented in this study were conducted on a sample of 180 (110 women, 70 men) eligible participants. The majority of these participants (54.5%) were recruited through poster advertisements on campus. The remainder were approached by one of the trained research staff members (18.3%), had heard about the study from a friend (17.2%), or became aware of the study through Facebook (10%).

The final sample of participants had a mean age of 22.52 years (SD = 2.88). Of these participants, 77.2% reported currently living in metropolitan Sydney. Most participants reported being born in Australia (78.0%), and the majority identified as Anglo-Australians (48.0%). Other reported ethnicities included European (26.7%), Asian (19.4%), Indian

(3.3%), North American (2.2%), and South American (1.7%) participants. In addition, 1.1% identified as Aboriginal or Torres Strait Islander, and 1.8% indicated another ethnicity. The majority of the participants (67.8%) did not consider religion of personal importance. With regard to sexual orientation, 74% identified as exclusively heterosexual, 25.6% identified as more heterosexual than homosexual, and one participants (0.4%) reported being equally heterosexual as homosexual.

2.3. Measures

2.3.1 Socio-demographic and behavioural characteristics

Gender indicated whether participants identified as male (1) or female (2).

Age was assessed in whole years.

Place of residence was assessed by asking participants what best described where they lived (1= capital city, 2= major regional centre city, 3= smaller city or town, 4= rural or remote area). Participants were divided into two subgroups: those who lived in a capital city (1) and those who did not (0).

Ethnic background was assessed by asking participants whether they had an Anglo-Australian only background or not. If not, participants were asked what best described which other ethnic background they had, with responses varying on specific ethnicities. Responses were then recoded into a dichotomous variable indicating whether the participant was Anglo-Australian only (1) or not (0).

Importance of religion was assessed by asking what religion currently meant to participants them, with responses given on a three-point scale (1= not important; 3= very important). Participants were divided into two subgroups: those for whom religion somewhat or very important (1) or unimportant (0).

Alcohol consumption was measured by two items that assessed the number of drinks participants typically consumed when going out and when on a date (2= I do not drink when I go out/date; 5= 11 or more drinks), with one "not applicable option" to avoid measurement error in the data (1 = I do not go out/date). To increase internal consistency, "I do not go out/date" and "I do not drink alcohol when I go out/date" were recoded into one answer option; the internal consistency of the remaining five scores was sufficient (Cronbach's alpha = .63). A mean score was calculated with higher scores indicating more alcohol consumption.

Alcohol use with sex was assessed by two items regarding the frequency with which the participants had consumed alcohol prior or during sex. The specific items were: "During the past 12 months, how often did you consume alcohol before or during sex?", and "In the past 12 months, have you consumed alcohol before or during sexual intercourse?" with responses on both items given on a five-point scale (1= never; 5= always). A Pearson correlation coefficient was computed to assess the association between the two items (r = .77, p < .01), which indicated sufficient internal consistency. A mean score was hence computed across items; a higher score indicates more alcohol use with sex.

2.3.2 Dependent variable

Sexual risk-taking was assessed by asking participants to report if they had had sexual intercourse with one or more casual partners in the past twelve months, and if so, how often they had used a condom when they had sexual intercourse with a casual partner in the past 12 months, with responses given on a five-point scale (1=always; 5= never). Participants were divided into two subgroups: participants who reported inconsistent condom use, which indicated risk (1), and those who always used a condom, which indicated no risk (0). Participants who reported not having sexual intercourse with a casual partner in the past 12 months were also coded as no risk (0).

2.3.3 Independent variables

Alcohol-use related sexual enhancement expectancies were measured by the questionnaire developed by Dermen and Cooper (1994). The item "I am less likely to use birth control" was excluded in this study as it was more related to pregnancy than to STIs or HIV risk. The twelve remaining items covered two general domains: 1) believing that alcohol can promote sexual risk taking (six items; e.g. "After a few drinks of alcohol, I am less likely to use condoms during sex"), and 2) believing that alcohol disinhibits sexual behaviour (six items; e.g. "After a few drinks of alcohol, I am less nervous about sex"). Each item was rated on a five-point scale (1= totally disagree; 5= totally agree). In the present study, the internal consistency for the scale was good (Cronbach's alpha = .84). A mean score was computed across all items, with a higher score indicating more positive alcohol-use related sexual enhancement expectancies.

Sexual fears were measured by the Sexual Aversion Scale (SAS; Katz, Gipson, Kearl, & Kriskovich, 1989). Twenty-eight items were derived from the 30-item original, removing the items "I was sexually molested when I was a child" and "When I was a child I was punished because of my sexual behavior", which were not relevant for this study as they were more related to sexual abuse or trauma than to sexual fears. In addition, some items were reworded to better reflect contemporary experience and practices. For instance "The AIDS scare has increased my fear about sex" was amended into "Knowing about HIV has increased my fear about having sexual intercourse". Examples of specific items include: "My sex life has always been a source of dissatisfaction," "The thought of having sex makes me nervous," and "I feel sexually inadequate," with responses given on a five-point scale (1= totally disagree; 5= totally agree). The internal consistency of items in the current study was high (Cronbach's alpha= .91). A mean score was computed across items; higher scores indicate more sexual fears.

Sexual health goal importance was assessed by seven items regarding how important sexual health goals were to participants (e.g. “It is important to me to avoid getting an STI”), with responses given on a five-point scale (1 = totally disagree; 5 = totally agree). To increase internal consistency, one item was deleted; the internal consistency of the remaining items was sufficient (Cronbach’s alpha = .62). A mean score was computed across the remaining six items; higher scores indicate that sexual health goals were more important to participants.

2.4. Statistical analysis

Data were checked for fake entries by screening for response tendencies across survey items (e.g. consistently choosing the extreme options) and illogical combinations of responses; no fake entries were identified. Descriptive analyses were conducted to examine central tendencies and dispersions on the independent variables, the predictor (alcohol use with sex) and sexual risk-taking. Correlations were used to assess the associations between the independent variables. Differences in sexual risk-taking between socio-demographic or (sexual) behaviour subgroups were explored using univariate logistic regression analyses.

To assess whether alcohol-use related sexual enhancement expectancies, sexual fears or sexual health goal importance moderated the association between alcohol use with sex and sexual risk-taking, multiple logistic regression analyses were conducted, using an interaction term to establish moderation effects. To establish whether alcohol use with sex significantly mediated the relationship between sexual risk-taking and the independent variables, multivariate logistic and linear regression analyses were conducted. A significance level of $p = .05$ was used for all analyses. Data analyses were conducted with SPSS (version 20).

3. Results

3.1. Socio-demographic and behavioural characteristics

Of the 180 eligible participants, 119 (66.1%) reported to have had one or more regular partners in the past 12 months. Almost all (96.6%) of these participants had sexual intercourse with their regular partners, and most of these participants (78.3%) reported no or inconsistent condom use. Almost two-third (*N* =112; 62.2%) of the participants indicated having had one or more casual partners in the past 12 months, and almost all (93.8%) of these participants had sexual intercourse with their casual partners; 21.9% of these participants reported consistent condom use, which indicated no risk. As sexual risk-taking was defined as having had unprotected (no or inconsistent condom use) sexual intercourse with casual partners in the past 12 months, by this definition, 78.1% of these participants engaged in sexual risk-taking. Regarding alcohol consumption, 85.6% of the participants reported consuming at least one drink when going out or on a date. Of those reporting some alcohol consumption, the average amount consumed was 2.7 drinks per occasion (*SD* = .78).

3.2 Identification of potential confounders

Data were controlled for potential confounders by checking if sexual risk-taking was associated with socio-demographic and behavioural variables. Univariate logistic regression analyses were conducted for all socio-demographic, behavioural and independent variables to check which third variables could affect sexual risk-taking. These variables were then entered as a single block in a multivariate logistic regression model to identify which variables should be retained as control variables in subsequent analyses.

As can be seen in Table 1, the multivariate logistic regression analysis revealed that age (OR = 1.25, $p < .01$), place of residence (OR = 3.29, $p < .05$), alcohol consumption (OR

= 3.20, $p < .01$), and having a regular partner (OR = .11, $p < .01$) significantly correlated with sexual risk-taking, suggesting potential confounding of associations between sexual risk-taking and socio-demographic and behavioural variables. The multivariate logistic regression analysis for gender (OR = .68, *ns*), ethnic background (OR = 1.02, *ns*), sexual orientation (OR =.87, *ns*), and importance of religion (OR = .47, *ns*) obtained no significant results. The main analyses were hence controlled for differences in age, place of residence, general alcohol consumption, and having a regular partner.

Table 1 Multivariate logistic regression analysis of potential confounders on sexual risk-taking (N = 180)

		95% C.I for Odds Ratio		
Variables	**B (SE)**	**Lower**	**Odds Ratio**	**Upper**
Gender	-.39 (.44)	.29	.68	1.60
Age	.25 (.08)**	1.08	1.25	1.45
Ethnic background	.02 (.42)	.45	1.02	2.30
Sexual orientation	-.15 (.47)	.34	.87	2.19
Place of residence	1.19 (.54)*	1.14	3.29	9.51
Importance of religion	-.75 (.46)	.19	.47	1.17
Regular partner	-2.17 (.45)**	.05	.11	.27
Alcohol consumption	1.16 (.32)**	1.72	3.20	5.99

Note. *P<.05. **P=<.01.
Nagelkerke R^2 = .52

3.3. Associations between alcohol use with sex and sexual risk-taking

With regard to alcohol use with sex, the vast majority (91.7%) of participants reported to ever had consumed alcohol prior or during sex, and 79.5% of these participants reported no or inconsistent condom use. To determine the degree to which alcohol use with sex was associated with sexual risk-taking, a multiple logistic regression analysis was conducted, controlling for previous mentioned control variables. Alcohol use with sex was significantly related to sexual risk-taking (ORa = 1.87, $p < .01$). As expected, participants who consumed

alcohol prior or during sex were also more likely to engage in sexual risk-taking than participants who did not consume alcohol prior or during sex.

3.4 Alcohol-use related sexual enhancement expectancies

Participants reported neutral responses regarding alcohol-use related sexual enhancement expectancies (M = 3.09, SD = .70). To assess whether alcohol use with sex was associated with sexual risk-taking, a multivariate logistic regression analysis was conducted, and obtained significant results (OR = 1.87, p < .01). In addition, alcohol-use related sexual enhancement expectancies were significantly associated with sexual risk-taking (OR = 1.66, p = <.05). To assess whether alcohol use with sex on sexual risk-taking was moderated by alcohol-use related sexual enhancement expectancies, an interaction term between alcohol-use related sexual enhancement expectancies and alcohol use with sex was added. In contrast with our expectations, the moderation effect failed to achieve conventional levels of statistical significance (OR = 1.02, *ns*). Thus, alcohol-use related sexual enhancement expectancies did not moderate the association between alcohol with sex and sexual risk-taking.

As there was no significant moderation effect, an alternative meditational hypothesis was considered whether alcohol-use related sexual enhancement expectancies were indirectly related to sexual risk-taking via alcohol use with sex, an approach that conforms to the procedures outlined by Baron and Kenny (1986). An essential condition for mediation is that the main independent variable (i.e., alcohol-use related sexual enhancement expectancies) must be associated with the mediating variable (i.e., alcohol use with sex) and the outcome variable (i.e., sexual risk-taking) (Baron & Kenny, 1986). Therefore, controlling for potential socio-demographic and behavioural confounders, a multivariate logistic regression analysis was first conducted to assess the association between alcohol-use related sexual enhancement

expectancies (independent variable) and sexual risk-taking (dependent variable). A significant effect was observed (OR = 2.07, $p < .05$). Second, a multivariate linear regression analysis was conducted of the proposed mediator (alcohol use with sex) on alcohol-use related sexual enhancement expectancies, and a significant effect was obtained ($\beta = .21$, $p < .01$). Third, in accordance with previous results, the effect of alcohol use with sex on sexual risk-taking proved again significant (OR = 2.13, $p < .01$). Lastly, a multivariate logistic regression analysis was conducted to simultaneously regress sexual risk-taking on alcohol-use related sexual enhancement expectancies and alcohol with sex. In this analysis, the previously significant effect of alcohol-use related sexual enhancement expectancies altered in a marginal significant effect (OR = 1.56, $p < .07$), while the effect of alcohol with sex retained its significance (OR = 1.71 $p < .05$). A subsequent Sobel-test of mediation (Arioan version, $z = a*b/SQRT(b^2*s^2_a + {}_a^2*s^2_b$; Baron & Kenny, 1986) proved (marginal) significant ($p < .06$). Thus as expected, these results reveal that the association between alcohol-use related sexual enhancement expectancies and sexual risk-taking was indeed partially mediated by alcohol use with sex.

3.5 Sexual fears

On average, participants reported to somewhat disagree with statements regarding sexual fears ($M = 2.18$, $SD = .59$). To assess a possible mediation effect of alcohol use with sex on the association between sexual fears and sexual risk-taking, logistic regression analyses were conducted. First, a multivariate logistic regression analyses was conducted to assess the association between sexual fears (independent variable) and sexual risk-taking (dependent variable), but failed to achieve conventional levels of statistical significance (OR = 1.38, *ns*). Since the primary condition for mediation was violated, no mediation effect was possible. This indicated that alcohol with sex could not mediate sexual fears on sexual risk-taking.

Since there was no mediation effect possible, an alternative hypothesis that used sexual fears as a moderator was considered. Although no significant main effect of sexual fears on sexual risk-taking was observed (OR = 1.38, *ns*), in accordance with previous results, a multivariate logistic regression analysis showed again a significant effect of alcohol use with sex on sexual risk-taking (OR = 1.87, $p < .01$), which indicated that a moderation effect was still plausible. Thus, to assess whether alcohol use with sex on sexual risk-taking was moderated by sexual fears, an interaction term was added between the predictor (alcohol use with sex) and the moderator (sexual fears) on sexual risk-taking. Contrary to what was expected, this finding reported as not significant (OR =.96, *ns*). Thus, this indicates that sexual fears did not moderate the association between alcohol use with sex and sexual risk-taking.

3.6 Sexual health goal importance

On average, participants reported to somewhat agree with statements regarding sexual health goal importance (M = 4.08, SD = .54). To assess whether sexual health goal importance, alcohol use with sex and sexual risk-taking were associated, multivariate logistic regression analyses were conducted. As previously mentioned, alcohol use with sex was significantly associated with sexual risk-taking (OR = 1.87, $p < .01$). However, the association between sexual health goal importance and sexual risk-taking failed to achieve conventional levels of statistical significance (OR = .89, *ns*). To test whether sexual health goal importance moderated the relationship between alcohol use with sex and sexual risk-taking, an interaction term was added between the predictor (alcohol use with sex) and the moderator (sexual health goal importance) on sexual risk-taking. In contrast to our expectations, the moderation effect reported as not significant (OR =.92, *ns*). Thus, sexual health goal

importance did not moderate the association between alcohol use with sex and sexual risk-taking.

As there was no significant moderation effect, an alternative hypothesis was tested that used alcohol use with sex as a mediator on the association between sexual health goal importance and sexual risk-taking. However, as previously mentioned, the association between sexual health goal importance and sexual risk-taking was not significant (OR = .89, *ns*). Thus, as health goal importance did not affect sexual risk-taking, the primary condition for mediation was violated, thus excluding a mediation effect. This indicated that alcohol use with sex could not mediate sexual health goal importance on sexual risk-taking.

4. Discussion

This study aimed to assess whether alcohol-use related sexual enhancement expectancies, sexual fears and sexual health goal importance influenced the association between alcohol use with sex and sexual risk-taking among heterosexual young adults. Consistent with other cross-sectional studies (Baskin-Sommers, & Sommers, 2006; Dermen, et al., 1998; Kalichman et al., 2003), we found a main effect for alcohol use with sex on sexual risk-taking. Participants who reported consuming alcohol prior or during sex were nearly two times more likely to engage in sexual risk-taking than participants who reported not to drink prior or during sex. Contrary to what we predicted, alcohol use with sex did not increase sexual risk-taking in individuals with more alcohol-use related sexual enhancement expectancies. However, our results further showed that individuals who believed that alcohol could enhance their sexual behaviour were more likely to indirectly engage in sexual risk-taking as a result of consuming more alcohol prior or during sex. This supported our

hypothesis that the association between alcohol-use related sexual enhancement expectancies and sexual risk-taking was mediated by alcohol use with sex.

In contrast with our expectations, sexual fears were not significantly associated with alcohol use with sex or with sexual risk-taking. Therefore, alcohol use with sex could not mediate the association between sexual fears and sexual risk-taking. Similarly, our results showed that the association between alcohol use with sex and sexual risk-taking was not dependent on individuals' sexual fears. Thus, sexual fears did not moderate the association between alcohol use with sex and sexual risk-taking. With regard to sexual health goal importance, alcohol use with sex did not increase sexual risk-taking in individuals with stronger sexual health goals. Thus, sexual health goal importance did not moderate the association between alcohol use with sex and sexual risk-taking. In contrast with what we expected, the association between sexual health goal importance and alcohol use with sex was not significant. Alcohol use with sex would hence not mediate the association between sexual health goal importance and sexual risk-taking.

4.1 Limitations

Before considering the implications of these findings, we note that our study has several limitations that should be considered. The main limitations are related to the study design, sample, and measures used in the questionnaire. Firstly, the cross-sectional design of this study did not allow for the establishment of a cause-effect relationship between alcohol use with sex and sexual risk-taking. However, research has shown that it is conceptually probable that alcohol consumption prior or during sex preceded sexual risk-taking, especially among young adults (Gálvez-Buccollini, Paz-Soldán, Herrera, DeLea, & Gilman, 2009). Furthermore, this study did not recruit a random sample of young adults. Instead, the study sampled participants with a higher educational background. Therefore, the sample may be

unrepresentative of the broader population of young adults in New South Wales and elsewhere who are at high risk for contracting HIV or STIs.

Furthermore, as with most research of young adults' sexual behaviour, self-report measures of sexual risk-taking were used. Despite limitations in terms of accuracy, honesty of recall, and willingness to report socially disapproved behaviour (Rosenthal, Moore, & Flynn, 1991) there is no feasible alternative in the area of sexual risk behaviours (Hamilton, & Morris, 2010). Moreover, self-administered questionnaires are widely thought to elicit better data (e.g. Gribble, Miller, Roger, & Turner, 1999; Jones, 2003). Although there remains the possibility that sexual risk-taking was misreported in this study, research suggests that the levels of error in self-report sexual risk behaviour may be the same range as many other survey measures (Hamilton, & Morris, 2010).

Besides alcohol consumption, our questionnaire did not assess the use of substances. In the last two decades, several studies have shown associations between illicit drug use and sexual risk-taking (Benotsch, Kalichman, & Kelly, 1999). For example, Morrison-Beedy and colleagues (2008) found that ecstasy use was predictive of unprotected vaginal sex in a sample of college aged women in a prospective diary study (Morrison-Beedy, Carey, Feng, & Tu, 2008). Also, cocaine use has been associated with multiple high-risk sexual behaviors in adolescents and young adults (Howard, & Wang, 2004). A recent study showed that young adults who use prescription medication recreationally (e.g. painkillers, stimulants, tranquilizers, and sedatives) are at increased risk of adverse consequences of sexual activity, including a greater risk for contracting STIs (Benotsch, Koester, Luckman, Martin & Cejka, 2011). It is likely that some of the alcohol effects we observed were due to alcohol intoxication and a combination of other substance use, thus possibly influencing our study results. Future studies should assess both alcohol consumption and other substance use.

4.2 Integration of findings and future directions

In contrast to our and others' predictions (e.g. Brown & Vanable, 2007; Dermen et al., 1998), alcohol use with sex did not lead to sexual risk-taking among individuals who strongly believed that alcohol consumption encouraged sexual enhancement. However, in line with our hypothesis, the association between alcohol-use related sexual enhancement expectancies and sexual risk-taking was partially mediated by alcohol use with sex. This finding is consistent with previous research showing that individuals who believed that alcohol consumption enhanced their sexual-taking were more likely to engage in sexual risk-taking as a result of consuming more alcohol prior or during sex (White et al., 2009). A program that may be applied to change alcohol-use related expectancies is the expectancy challenge alcohol literacy curriculum (ECALC) (Fried, & Dunn, 2012). The program has been found to be effective in reducing alcohol consumption, and challenging alcohol-use related sexual enhancement expectancies among young adults (Fried, & Dunn, 2012). However, as this program focused solely on reducing alcohol consumption and changing alcohol expectancies, future investigations should include whether this program could reduce sexual risk-taking in young adults as well.

A possible reason why alcohol-use related sexual enhancement expectancies did not moderate the association between alcohol use with sex and sexual risk-taking was considered. As a moderator effect is established with an interaction effect (Frazier, Tix, & Barron, 2004), our moderation effect assumed that individuals with high alcohol-use related sexual enhancement had already consumed alcohol prior or during sex. Whereas the moderator addressed "for whom", mediation established "how" the association between alcohol-use related sexual enhancement expectancies and sexual risk-taking was explained, without assuming that alcohol was already consumed.

Furthermore, other factors such as individual's self-efficacy for refusing alcohol in sexual situations, or the sexual context in which alcohol consumption occurs are known to interact with alcohol expectancies, and predict volume and frequency of alcohol consumption in alcohol dependent and non-dependent samples (Hasking & Oei, 2002, 2004, 2007). However, besides increased alcohol consumption, these studies did not take into account whether the interaction between individuals' self-efficacy and alcohol expectancies influenced sexual risk-taking. Thus, more research seems needed to address the possibility that alcohol-use related sexual enhancement expectancies might interact with other factors that play a more complex role in shaping sexual risk-taking.

With regard to further hypotheses, individuals with more sexual fears were not more likely to engage in sexual risk-taking after consuming alcohol prior or during sex. This implies that alcohol use with sex did not mediate the association between sexual fears and sexual risk-taking, as sexual fears were not directly associated to sexual risk-taking which thus excludes a mediation effect. This is in contrast with previous research (Stoner et al., 2007), that showed that the more sexual fears individuals experienced, the more likely they were to drink alcohol prior to sex, and to engage in sex despite the absence of a condom in a hypothetical situation presented. However, due to their laboratory-based experiment, their study examined sexual decision-making via a vignette as an experimental analog, and therefore did not measure actual sexual risk-taking in intoxicated individuals.

Furthermore, our study did not obtain significant results that could support that sexual fears might also moderate the association between alcohol use with sex and sexual risk-taking. As sexual fears did not affect the association between alcohol use with sex and sexual risk-taking in our study, several alternative explanations for our study results were considered. As sexual fears are a broad label for different types of sexual anxieties and aversions, it is possible that in the current study, participants' fears might be expressed in

different ways or effects. Future studies should thus delineate different types of sexual fears and their potential effects associated with alcohol consumption and sexual risk-taking.

It is also possible that sexual fears did not affect the association between alcohol use with sex and sexual risk-taking, because sexual fears may be more strongly associated with alcohol use with sex and sexual risk-taking in specific subpopulations, such as individuals with a history of sexual trauma (Simoni, Sehgal, & Walters, 2004) or sexual victimization (Champion, Foley, DuRant, Hensberry, Altman, & Wolfson, 2004). For example, using alcohol with sex may be a method used to self-medicate or mentally cope after being sexually assaulted (Champion et al., 2004). The knowledge to be gained from the assumption that sexual fears may be more strongly related alcohol use with sex and sexual risk-taking in specific groups could help in the planning of prevention programs tailored to these groups that may be at higher risk of alcohol effects related to sexual fears.

Regarding sexual health goal importance, our findings found no moderating effects of sexual health goal importance on the association between alcohol use with sex and sexual risk-taking. In addition, alcohol use with sex could not mediate the association between sexual health goal importance and sexual risk-taking, as sexual health goal importance was not significantly associated with consuming alcohol prior or during sex. This study therefore did not support previous research (MacDonald et al., 2000). However, their experimental study allowed them to introduce inhibiting cues into the environment, thus manipulating participants with a goal to refrain from sexual risk-taking. Moreover, their study only assessed intentions to engage in sexual intercourse without a condom and not actual condom use behaviour. Future studies should thus examine if the inhibiting effects of sexual health goals on the association between alcohol use with sex and sexual risk-taking are effective when manipulated into salient cues.

Furthermore, although individuals with stronger sexual health goals might have good intentions to refrain from sexual risk-taking, strong goal intentions do not necessarily guarantee goal achievement (Gollwitzer 1993, 1996, 1999; Gollwitzer, & Sheeran, 2006). It is plausible that participants in our study may have had good intentions to remain sexually healthy, but failed to achieve this goal due to, for example, the inhibiting effects of alcohol intoxication. According to Gollwitzer (1993), successful goal achievement is facilitated by a second act of willing that furnishes the goal intention with an if-then plan, specifying how, when and where the individual will instigate responses that support goal realization. These implementation intentions appear important to the translation of goal intentions into actions (Gollwitzer 1993, 1996, 1999). In a meta-analysis by Golwitzer and Sheeran (2006), they showed that although implementation intentions were effective in enabling individuals to translate their goal intentions into action, most studies that focused on health goals predominantly concerned the initiation of health-protective behaviours (e.g. exercise). However, health risk-behaviours such as alcohol consumption with sex received less attention. Therefore, how well implementation intentions can help individuals to assiduously avoid these actions in sexual situations constitutes an important avenue for future investigation.

4.3 Conclusions

To the best of our knowledge, our research is unique in simultaneously assessing how alcohol use-related sexual enhancement expectancies, sexual fears, and sexual health goal importance affect the association between alcohol use with sex and sexual risk-taking. In addition, despite previously mentioned limitations, the current study has several implications. Consistent with previous research (Baskin-Sommers, & Sommers, 2006; Dermen, et al., 1998; Kalichman et al., 2003), our findings highlight the importance of alcohol consumption

prior or during sex in relation to sexual risk-taking by showing that consuming alcohol prior or during sex tends to make individuals take more sexual risks. Furthermore, this study showed that individuals who believed that alcohol consumption enhances their sexual behaviour engage more in sexual risk-taking by consuming more alcohol prior or during sex. Therefore, intervention strategies should attempt to change various beliefs that individuals hold about sexual behaviours after consuming alcohol prior or during sex. Moreover, further research should also assess whether the effects of alcohol-use related sexual enhancement expectances suggested in this study can be confirmed when used simultaneously with other factors that play a more complex role in shaping sexual risk-taking.

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Appendix I: Questionnaire

Welcome to this survey!

*"**A drink or two**"* is an online survey on the influence of alcohol on your sex life. The survey asks about your opinions and experiences with alcohol and sex. This survey is designed for **sexually active** individuals who are **attracted to the opposite sex**. You are eligible to participate in this survey if you are **aged between 18-29 years** and living in NSW, Australia.

Please answer the questions as honestly as possible. You can stop at any time should you feel distressed when participating in this survey. The survey will take about 10 minutes to complete.

Any information that is obtained in connection with this survey and that can be identified with you will remain confidential and will be disclosed only with your permission, except as required by law. In any publication, information will be provided in such a way that you cannot be identified.

The study has been approved by the Human Research Ethics Committee of the University of New South Wales. The full version of the Participant Information Statement is available on the survey website at the following address: www.ADrinkOrTwo.nchsr.org. We advise that you save and print this document for your records.

Thanks in advance for your participation,

Dr Philippe Adam
National Centre in HIV Social Research
The University of New South Wales, Sydney
Kensington, NSW 2052

Phone number: +612 9385 6776
E-mail address: ADrinkOrTwo@nchsr.org
Survey website: www.ADrinkOrTwo.nchsr.org

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1. **I understand what this survey is about and I agree to participate.**
   - ☐ Yes, **I agree** to participate in this survey
   - ☐ No, **I do not agree** to participate in this survey

2. **What is your gender?**
   - ☐ Male
   - ☐ Female

3. **How old are you? Please type your age in years.**
   ☐

4. **Have you ever had sex?**
   - ☐ Yes
   - ☐ No

5. **What is your country of birth?**
   - ☐ Australia
   - ☐ Other country, please specify ☐

6. **Do you currently live in Australia?**
   - ☐ Yes
   - ☐ No, in another country. Please specify ☐

7. **In which Australian state do you currently live?**
   - ☐ Australian Capital Territory
   - ☐ New South Wales
   - ☐ Northern Territory
   - ☐ Queensland
   - ☐ South Australia
   - ☐ Tasmania
   - ☐ Victoria
   - ☐ Western Australia

8. **Which of the following best describes where you live?**
   - ☐ Capital city
   - ☐ Major regional centre city
   - ☐ Smaller city or town
   - ☐ Rural or remote area

9. **Are you of Aboriginal or Torres Strait Islander origin?**
   - ☐ Yes
   - ☐ No

10. Is your ethnic background?

- ☐ Anglo-Australian only
- ☐ Other background

11. Where does your family originate from? You can select several answers if needed.

- ☐ Europe
- ☐ Middle East
- ☐ Asia, please specify which country ☐
- ☐ India
- ☐ Oceania
- ☐ Africa
- ☐ North America
- ☐ South America

12. Do you think of yourself as...

- ☐ Exclusively straight
- ☐ More straight than gay
- ☐ Equally straight as gay
- ☐ More gay than straight
- ☐ Exclusively gay

13. How important is religion in your life?

- ☐ Not important
- ☐ Somewhat important
- ☐ Very important

14. In the past 12 months have you had sex with...

	Yes	No
A female partner	☐	☐
A male partner	☐	☐

The next questions ask about sex. This survey distinguishes between SEX and SEXUAL INTERCOURSE.

SEX means:

1. Oral sex
2. Vaginal sex/intercourse
3. Anal sex/intercourse

SEXUAL INTERCOURSE means:

1. Vaginal sex/intercourse
2. Anal sex/intercourse

Kissing, masturbation, dry humping, fingering etc. are not included.

The survey distinguishes between *REGULAR* (that is, having a boyfriend/girlfriend) and *CASUAL* partners.

---

15. Have you had a regular partner in the past 12 months?

- ☐ Yes, one regular partner
- ☐ Yes, several regular partners
- ☐ No

16. Did you practice intercourse with a regular partner(s) in the past 12 months?

- ☐ Yes
- ☐ No

17. How often did you use a condom when you had intercourse with a regular partner in the past 12 months?

- ☐ Always
- ☐ Often
- ☐ Sometimes
- ☐ Rarely
- ☐ Never

18. Have you had one or more casual partners in the past 12 months?

- ☐ Yes, one casual partner
- ☐ Yes, several casual partners. Please specify how many? ☐
- ☐ No

19. Did you practice intercourse with one or more casual partners in the past 12 months?

- ☐ Yes
- ☐ No

20. How often did you use a condom when you had intercourse with casual partner(s) in the past 12 months?

- ☐ Always
- ☐ Often
- ☐ Sometimes
- ☐ Rarely
- ☐ Never

21. With how many different casual partners have you had intercourse without condoms within the past 12 months? Please specify how many.

☐

22. Below is a list of statements about health. Please indicate to what extent you agree with each of these statements.

	Totally agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Totally disagree
a. I am motivated to stay healthy.	☐	☐	☐	☐	☐
b. Sexual intercourse is not important to me.	☐	☐	☐	☐	☐
c. It is important to me to use condoms during sex.	☐	☐	☐	☐	☐
d. I do not think about my health as much as other people do.	☐	☐	☐	☐	☐
e. My health is very important to me.	☐	☐	☐	☐	☐
f. I am motivated to use condoms during sex.	☐	☐	☐	☐	☐
g. It is important to me to avoid getting an STI.	☐	☐	☐	☐	☐

Below are some questions about alcohol use.

23. What is the number of drinks you typically consume when you go out (e.g. club, bar, houseparty etc.)?

- I do not go out
- I do not drink alcohol when I go out
- 1-3
- 4-6
- 7-10
- 11 or more

24. What is the number of drinks you typically consume when you are on a date?

- I don't have dates
- I do not drink alcohol when I am on a date
- 1-3
- 4-6
- 7-10
- 11 or more

25. After how many drinks do you typically feel tipsy?

- I do not know, I have never been tipsy
- 1-3
- 4-6
- 7-10
- 11 or more

The following questions ask about alcohol and sex.

26. How often did you consume alcohol before or during sex?

- Always
- Often
- Sometimes
- Rarely
- Never

27. During the past 12 months, how often did you consume alcohol before or during sex?

- Always
- Often
- Sometimes
- Rarely
- Never

Think about the situation(s) in the past 12 months in which you consumed alcohol before or during sex.

28. On average, how intoxicated were you?

- Not at all intoxicated
- Somewhat intoxicated
- Moderately intoxicated
- Very intoxicated
- Extremely intoxicated

29. In the past 12 months, have you had sexual intercourse after or during you consumed alcohol?

- Always
- Often
- Sometimes
- Rarely
- Never

30. How often did you use a condom when you had intercourse after or during you consumed alcohol?

- Always
- Often
- Sometimes
- Rarely
- Never

Now think about *the last time* you consumed alcohol before or during sex.

31. How intoxicated were you *the last time* you consumed alcohol before or during sexual intercourse?

- Extremely intoxicated
- Very intoxicated
- Moderately intoxicated
- Somewhat intoxicated
- Not at all intoxicated

Remember, this survey distinguishes between SEX and SEXUAL INTERCOURSE

32. Have you consumed alcohol before or during *the last time* you had sex?

- Yes
- No

33. Have you consumed alcohol before or during *the last time* you had sexual intercourse?

- □ Yes
- □ No

34. Did you use a condom *the last time* you consumed alcohol before or during sexual intercourse?

- □ Yes
- □ No

How do you *think* having a few drinks of alcohol affects your sexual feelings and behaviour?

35. After a few drinks of alcohol...

	Totally agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Totally disagree
a. I feel closer to a sexual partner.	□	□	□	□	□
b. I am more sexually responsive.	□	□	□	□	□
c. I am less nervous about sex.	□	□	□	□	□
d. I enjoy sex more than usual.	□	□	□	□	□
e. I am a better lover.	□	□	□	□	□
f. I am less likely to use condoms during sex	□	□	□	□	□

(Continued)

	Totally agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Totally disagree
g. I am less likely to talk with a new sexual partner about whether they have had a STI.	□	□	□	□	□
h. I am less likely (to ask a partner) to use a condom.	□	□	□	□	□
i. I have sex with people whom I would not have sex with if I were sober	□	□	□	□	□

j. I am more likely to do sexual things that I would not do when sober.	□	□	□	□	□
k. I find it harder to say no to sexual advances.	□	□	□	□	□
l. I am more likely to have sex on a first date.	□	□	□	□	□

Below are some statements about possible feelings or thoughts you might have concerning sex.

36. Please indicate what extent you agree with each statement.

	Totally agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Totally disagree
a. I worry a lot about having sexual intercourse.	□	□	□	□	□
b. I am afraid to have sex with another person.	□	□	□	□	□
c. I have avoided sexual relationships recently because of my sexual fears.	□	□	□	□	□
d. Knowing about HIV has increased my fear about having sexual intercourse.	□	□	□	□	□
e. I believe the risks associated with having sex are greater than its rewards.	□	□	□	□	□
f. I worry about being criticized because of my sexual behaviour.	□	□	□	□	□

(Continued)

	Totally agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Totally disagree
g. I try to avoid situations where I might get involved sexually.	□	□	□	□	□
h. I have strong sexual urges that I am unable to express.	□	□	□	□	□

i. I would like to feel more relaxed in sexual situations.	☐	☐	☐	☐	☐
j. The thought of HIV really scares me.	☐	☐	☐	☐	☐
k. I have exceptional fears of sex.	☐	☐	☐	☐	☐
l. I have repeatedly avoided all or almost all genital sexual contact with a sexual partner.	☐	☐	☐	☐	☐

	Totally agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Totally disagree
	☐	☐	☐	☐	☐
m. I am not afraid of kissing or petting but the thought of having sex really scares me.					
n. I worry a lot about catching an STI.	☐	☐	☐	☐	☐
o. I believe I have exceptional attitudes about having sexual intercourse.	☐	☐	☐	☐	☐
p. The way things are now, I would not likely engage in sexual intercourse.	☐	☐	☐	☐	☐
q. The thought of having sex makes me nervous.	☐	☐	☐	☐	☐
r. I believe that sex can never be totally safe.	☐	☐	☐	☐	☐

(*Continued)*

	Totally agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Totally disagree
	☐	☐	☐	☐	☐
s. The thought of becoming (or getting someone) pregnant scares me.					
t. My sex life has always been a source of dissatisfaction.	☐	☐	☐	☐	☐
u. I often wonder what other people think of me.	☐	☐	☐	☐	☐

v. I would become more sexually active if I knew there was no such thing as a sexually transmitted disease.	□	□	□	□	□
w. I have become more and more afraid of having sex.	□	□	□	□	□
x. I would like to feel less anxious about my sexual behaviour.	□	□	□	□	□

These are the last statements about possible feelings or thoughts you might have concerning sex. Please indicate to what extent you agree with each statement.

	Totally agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Totally disagree
	□	□	□	□	□
y. I do my best to avoid being alone with a member of the opposite sex.					
z. Sex is a constant source of frustration for me.	□	□	□	□	□
aa. I feel sexually inadequate.	□	□	□	□	□
bb. I would like to get help to deal with my sexual problems.	□	□	□	□	□

Below are some statements about your intentions regarding condom use.

37. How likely is it that you do any of the following in the next few months?

	Very low likelihood	Moderate low likelihood	Neither high or low likelihood	Moderate high likelihood	Very high likelihood
	□	□	□	□	□
a. I will use a condom when I have sexual intercourse					
b. I will use a condom when I *drink before or during* sexual intercourse	□	□	□	□	□
c. I will use condoms as a protection against STIs	□	□	□	□	□

Below is a list of statements about (un)protected sex. Please indicate to what extent you agree with each of these statements**.**

38. Do you intend to do any of the following in the next few months...

	Totally agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Totally disagree
d. Use a condom as a protection against getting (someone) pregnant.	□	□	□	□	□
e. Use a condom the next time I have sexual intercourse.	□	□	□	□	□
f. Not drinking alcohol before or during sex.	□	□	□	□	□

Below are some questions about your personality. How well do the following statements describe your personality? Please indicate to what extent you agree with each of these statements**.**

39. I see myself as someone who...

	Totally agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Totally disagree
a. Is reserved.	□	□	□	□	□
b. Is generally trusting.	□	□	□	□	□
c. Tends to be lazy.	□	□	□	□	□
d. Is relaxed, handles stress well.	□	□	□	□	□
e. Has few artistic interests.	□	□	□	□	□
f. Is outgoing, sociable.	□	□	□	□	□
g. Tends to find fault with others.	□	□	□	□	□
h. Does a thorough job.	□	□	□	□	□
i. Gets nervous easily.	□	□	□	□	□
j. Has an active imagination.	□	□	□	□	□
k. Is considerate and kind to almost everyone.	□	□	□	□	□

Here are some final questions.

40. Which of the following best describes how you heard about this study?

- ☐ I was directly approached by one of the research staff members on the UNSW Kensington campus
- ☐ Through Facebook
- ☐ I saw a flyer advertising for the study
- ☐ A friend told me about it
- ☐ Other, please specify ☐

41. Would you agree that you provided honest answers to all of our questions?

- ☐ Totally agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Totally disagree

Thank you so much for your contribution to the study. We greatly appreciate your assistance.

In September 2012 a summary of the results will be available on the website of The National Centre in HIV Social Research (http://nchsr.arts.unsw.edu.au). In the meantime, you will be kept posted on preliminary results though the "a drink or two" Facebook page.

During or after responding to the survey, you may have questions or concerns related to sexual health or alcohol consumption. In case you need information and support in these domains, you can call the free infolines or consult the websites mentioned below:

***For questions on sexual health**:*
NSW Sexual Health Infoline, NSW call 1800 451 625 (free of charge)
Website: www.yoursexhealth.org

For questions on alcohol or drugs:
Alcohol Drug Information Service (ADIS): NSW call 1800 422 599 (free of charge);
Sydney call 02 9361 8000 (free of charge)
http://yourroom.com.au/

Appendix II: Participant Information Statement

THE UNIVERSITY OF NEW SOUTH WALES
PARTICIPANT INFORMATION STATEMENT

A drink or two... What role does alcohol play in your sex life?

Description of the study
"*A drink or two"* is an online survey on the influence of alcohol on your sex life. This survey is designed for sexually active individuals who are attracted to the opposite sex. You are eligible to participate in this survey if you are aged between 18-29 years and living in NSW, Australia. The survey asks about your opinions and experiences with alcohol and sex and will take about 10 minutes to complete.

Please Note
The survey contains some questions about sexual practices and alcohol use. If you are not comfortable answering these kinds of questions we advise you not to take part in the survey.

Confidentiality
If you were approached by research staff on the UNSW campus and consented to provide your email address, this email address will only be used to send you a link to the survey. If you found out about the survey through an online advertisement or through the survey website, you will not be asked to provide any email address to participate in the survey. Any information that is obtained in connection with this survey and that can be identified with you will remain confidential and will be disclosed only with your permission, except as required by law. In any publication, information will be provided in such a way that you cannot be identified.

Risks and benefits
We do not anticipate any risks associated with your participation in this survey. The survey results will help to improve sexual health programs for people your age and the survey will also provide you with information about sex and alcohol that may benefit you and your sexual health.

Information and support on sexual health and alcohol consumption
During or after responding to the survey, you may have questions or concerns related to sexual health or alcohol consumption. In case you need information and support in these domains, you can call the infolines or consult the websites mentioned below:

For questions on sexual health:
NSW Sexual Health Infoline, NSW call 1800 451 625 (free of charge)

Website: www.yoursexhealth.org

For questions on alcohol or drugs:
Alcohol Drug Information Service (ADIS): NSW call 1800 422 599 (free of charge);
Sydney call 02 9361 8000 (free of charge)
http://yourroom.com.au/

Payment for participants
There will be no payment provided to participants in this survey.

Complaints
Complaints may be directed to the Ethics Secretariat, The University of New South Wales, Sydney 2052 (ph: 9385 4234, fax 9385 6648, ethics.sec@unsw.edu.au). Any complaint you make will be investigated promptly and you will be informed of the outcome.

Feedback to participants
In September 2012 a summary of the results will be available on the website of The National Centre in HIV Social Research (http://nchsr.arts.unsw.edu.au). In the meantime, participants will be kept posted on preliminary results though the '**A drink or two'** Facebook page.

Your consent and participation
Your decision whether or not to take part in the survey will not affect your future relations with the University of New South Wales. Also, this survey guarantees that you can stop participation at any moment without penalty. In addition, you can stop at any time should you feel distressed when participating in this survey.

Withdrawal from the survey
You will not be able to withdraw from the survey *after* submitting your responses to the online questionnaire. It is not possible to identify which responses were provided by which participant.

Contact us
If you have any questions about the survey or your participation, please feel free to contact the chief investigator:

Dr Philippe Adam

National Centre in HIV Social Research
The University of New South Wales, Sydney
Kensington**,** NSW 2052

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Participants are advised to save and print this document for their records.