Please provide feedback

Please support the ScholarWorks@UMBC repository by emailing scholarworks-group@umbc.edu and telling us what having access to this work means to you and why it's important to you. Thank you.

Running Head: EFFECTS OF ALCOHOL AND PARTNER TYPE ON CONDOM USE

Revised and Resubmitted to *The Journal of Sex Research* (August 2004)

The Effects of Alcohol, Expectancies, and Partner Type

On Condom Use in College Males: An Event Level Study

Joseph W. LaBrie

Loyola Marymount University

Mitch Earleywine

University of Southern California

Jason Schiffman

University of Hawaii

Charles Marriott

Loyola Marymount University

Author Note

Correspondence concerning this article should be addressed to Joseph LaBrie,
Department of Psychology, Loyola Marymount University, 1 LMU Drive, Los Angeles,
CA 90045. Electronic mail may be sent to jlabrie@lmu.edu.

Abstract

Sexually active men (N=93) provided data on over 1,500 sexual encounters. Alcohol consumption, expectancies about alcohol's impact on condom use, and partner type each contributed to use of a condom. Partner type covaried with alcohol consumption and condom use. The men consumed significantly more alcohol with new partners, followed by casual partners, and then by regular partners. In contrast, they were more likely to use condoms with new partners than with casual or regular partners. Drinking alcohol decreased condom use, but only with casual partners. Expectancies about alcohol's disinhibiting sexual effects decreased condom use as well. These data suggest that alcohol consumption does decrease condom use, particularly with casual partners and when drinkers believe alcohol alters sexual disinhibition. Improving knowledge about HIV transmission in casual partners and challenging expectancies about alcohol as a sexual disinhibitor could help decrease the spread of HIV.

Introduction

Ninety percent of college students are sexually active, with many reporting multiple partners. In a survey of 5,514 first-year undergraduates, 54% of men and 37% of women already had five or more sexual partners, while 29% of men and 12% of women had 10 sexual partners (MacDonald et. al., 1990). Young people also drink alcohol in large amounts. Nationally, 80-90% of all underage college students' drink (Haines & Spear, 1996) and 44% of college students binge drink (drinking five or more drinks for men and four or more for women), while 20% binge drink three or more times during a two-week period (Wechsler, Lee, Kuo, & Lee, 2000). The notion that alcohol consumption in college students results in problematic behavior is well entrenched. From missed class to death, vandalism to sexual assaults, problem drinking leaves its mark (Hingson, Heeren, Zakocs, Kopstein, & Wechsler, 2002).

Risky sex (sex without a condom) is a problematic behavior that may covary with drinking. Young adults account for one of the fastest growing groups of new cases of HIV/AIDS (Gonzales, 1996); two thirds of all other STD's occur among those under the age of 25. For the first time in ten years the number of new HIV cases in the United States has risen; in 2002, there were 42,136 newly reported cases, a 2.2% increase over the previous year (Stein, 2003). Public AIDS prevention campaigns have directly targeted the proposed relationship between drinking and risky sex. Alcohol use may increase the likelihood of HIV and other STD infections by decreasing the likelihood of using a condom during sex. Dingle and Oei, (1997) labeled this proposed effect of drinking the "transmission hypothesis."

Research does indicate that the prevalence of condom use is increasing; yet approximately 82% of college men and 87% of college women still have sex with

multiple partners while failing to use condoms consistently (Seidman & Reider, 1994).

Researchers have employed different methodologies to examine the link between alcohol

consumption and risky sex. Most studies have been correlational, only looking at broad

situations or patterns of behavior. These studies have typically correlated quantity and

frequency measures for alcohol with the number of times participants engage in sex

without a condom (Weinhardt & Carey, 2002).

Several studies find that heavy drinkers are more likely to engage in high risk

sexual behavior, including sex for money (Shillington, Cottler, Compton, & Sptiznagel,

1995). They have more sexual partners (Graves, 1995), and use condoms less

consistently (e.g., Hingson, Strunin, Berlin, & Heeren, 1990). Further evidence for the

transmission hypothesis is found in studies that revealed associations between alcohol use

and sexual risk-taking, including sex without a condom and sex with multiple partners

(e.g., Leigh & Stall 1993; McEwan, McCallum, Bhopal, & Madhok, 1992; Meilman,

1993). A similar association, however, was absent in other studies (e.g., Gold & Skinner,

1993; Leigh, Temple, & Trocki, 1994; Weatherburn, Davies, Hickson, & Hunt, 1993).

Two reviews examining the proposed link between alcohol and risky sex (Dingle & Oei,

1997; Halpern-Felsher, Millstein, & Ellen, 1996) offered partial support for the

transmission hypothesis, but it is not consistent or universal. Many heavy drinkers can

use a condom consistently and many people who fail to use condoms do not drink much.

Overall, data from global association studies do not allow researchers to

disentangle the relationship between drinking and risky sexual behavior. Since these

studies do not look at specific situations involving sex and drinking, they also fail to

determine whether drinking and unsafe sex occur at the same time. These data often

reflect a simple tendency toward sensation seeking, where people who like to drink also

engage in unsafe sex, but drinking does not cause their risky sexual behavior. In contrast, event-level studies look at specific dynamics in sexual or drinking events. A detailed analysis can then reveal if alcohol consumption actually precedes risky sex.

In an event-level investigation of adolescents, Cooper, Peirce, and Huselid (1994) found sexual risk-taking related to alcohol consumption for first intercourse and first intercourse with most recent partner. In both types of events, adolescents who drank before intercourse reported significantly less condom use than participants who did not consume alcohol prior to the event. To the contrary, another study found that adult women were no less likely to use condoms when alcohol was consumed than when it was not (Testa & Collins, 1997). Kraft and Rise, (1994) found that drinking played a role in reducing birth control with a sample of Norwegian youth. In their study, young women were 2.4 times less likely to practice some form of birth control if they drank prior to sex, while the young men were twice less likely to use birth control if they had been drinking. Bailey, Camlin, and Ennett (1998) investigated risky sexual behavior in homeless youth ($n = 327$), a population particularly at-risk for HIV, and found no connection between drinking and condom use.

Based on the discrepancy in results from event-level studies, researchers have proposed potential mediators and moderators of alcohol's effect. These include expectancies, partner type, event type, and the amount of alcohol consumed. Two recent studies (Corbin & Fromme, 2002; LaBrie, Earleywine, & Schiffman, 2002) have identified a link between alcohol expectancies towards sex and subsequent risky sexual behavior. LaBrie et al., (2002) reported that expectancies specific to alcohol's impact on condom use mediated the relationship between drinking and risky sex. These expectancies accounted for a significant part of the drinking and risky sex link. Corbin

and Fromme (2002) found that in first sexual events with regular partners and first sexual events with casual partners, the amount of alcohol consumed correlated with a lower condom use *only* for participants with strong positive sex-related alcohol expectancies, revealing an Alcohol x Expectancy interaction. The amount of alcohol consumed was associated with a *reduced likelihood* of condom use for those individuals with strong positive sex-related alcohol expectancies. For the most recent sex event with a regular partner, however, neither alcohol use nor the interaction of alcohol use and expectancies was associated with condom use.

Event type (first sexual event vs. regular sex event with someone known well) and partner type may also contribute to the drinking and risky sex relationship. Corbin and Fromme (2002) only assessed people having sex with a new partner and a regular partner (both first and last events). These represent opposite ends of the same spectrum. Casual partners, people who have had fewer than five sexual events together and who have known each other for less than a month, may possess a heightened risk for unsafe behavior. They fall between new and regular partners; those completely new and possibly hyper-sensitive to the possibility of their new partner's disease potential, and those regular partners who have been with each other several times or known each other more than a month and with whom a regular pattern of sexual behavior is probably in place. Moreover, with regular partners, perceived vulnerability to STD transmission may decrease, shifting the function of condom use from protection against STDs to contraception to prevent pregnancy. For these participants, alcohol and expectancies may have little impact on condom use since the partners will have most likely negotiated a stable pattern of sexual behavior. There is a need, however, for further research into the alcohol risky-sex relationship to examine distinctions among types of partners.

In an extensive review of the literature, Weinhardt and Carey (2000) suggested that large-scale survey studies using event-level assessments are necessary. According to them, multiple-event assessment and within-subject analysis have been used in only a few (three) studies examining the alcohol risky-sex hypothesis. Thus, larger more detailed studies could produce evidence for such an association. They also suggested that a distinction between consuming alcohol before the sexual event (i.e., having only one or two drinks), and actually being intoxicated proximal to the event (i.e., binge drinking, having 5 or more drinks for men).

The current study investigated the influence of alcohol consumption (number of drinks consumed prior to sex event/ binge drinking prior to the sexual event) on the decision to use a condom in over 1,500 sex events on a high-risk sample of male college students. The influence of partner type (new partner, casual partner, regular partner), and sex-related alcohol expectancies (low, medium and high) are examined as likely moderators of condom use in sex events involving alcohol consumption. We predicted that drinking prior to a sexual event would significantly decrease condom use. In addition, we predicted that participant's expectancies about alcohol's sex-related effects would also alter the frequency of condom use when an individual was having sex after drinking. An interaction between alcohol consumption and expectancy would be consistent with these ideas, with increased alcohol consumption leading to decreased condom use particularly among people with strong expectancies about alcohol. Therefore we predict an Alcohol X Expectancy interaction. Additional findings will be reported for exploratory purposes.

Method

Participants

Ninety-three participants between the ages of 18 and 34 were used in the data collection and analyses. The study wanted to examine drinking and sexual behavior in college males at-risk for negative consequences from both drinking and sexual behavior. The 93 were selected from 315 male college students who responded by phone to on-campus fliers, classroom announcements, and advertisements in the student daily newspaper seeking research participants for a study on attitudes and behaviors towards sex and drinking. A screening process determined qualification for the study. Those who drank more than twice a week and who had two or more sexual partners in the previous two months were invited to participate. These criteria created a participant pool that could be considered high-risk with respect to drinking and sexual behavior.

The average age of these 93 participants was 20.58 (*SD* = 2.45). The ethnic self-identification was representative of the institution's student body. Sixty-nine percent were Caucasian, 18% were Hispanic, 10% were Asian American, and 3% were African American. They drank on average 3.41 (*SD* = 2.45) times per week and consumed an average of 6.25 (*SD* = 2.72) standard drinks per drinking occasion. They averaged 3.23 (*SD* = 1.80) sexual partners within the past three months, and had mean condom use of 58.5% (SD = 33.08) when engaging in sexual intercourse.

Procedures

An independent human subjects review board approved all procedures for the current study. Participants completed a one-time interview that included a questionnaire of basic demographic information as well as attitudinal and behavioral measures and a

interview calendaring all of their sexual and drinking events in the three months prior to the interview.

Measures

Time-line Follow Back Interview: Sexual Behavior and Substance Use. Each participant performed the *Time-Line Follow Back Interview: Sexual Behavior and Substance Use (TLFB-SS)* (Weinhardt, et. al., 1998; used with permission from Michael Carey). The TLFB-SS is a structured calendar aided interview adapted from the TLFB protocol for alcohol and drug use (Sobell & Sobell, 1992). The TLFB-SS yields a detailed assessment of sex and drinking while providing information about the behaviors and their co-occurrence on the event-level. Each behavior in the TLFB-SS (sex and alcohol) is assessed separately over a 3-month period, with participants reporting on every sexual and drinking event over that period. For each drinking day/event, participants reported time of day they drank and the number of standard drinks they consumed (a standard drink is equivalent to one 12-ounce beer, one 4-ounce glass of wine, or 1-ounce of hard liquor). For each sexual event, participants described their sexual partner (new, casual, or regular) and reported on whether they discussed condom use and whether they used a condom. When drinking and sex both occurred on the same day participants reported on whether and how much of the drinking took place within two hours of the sexual event.

Sex-Related Alcohol Expectancies: Derman and Cooper (1994) developed a scale to assess sex-related alcohol expectancies. The scale's 3-factor structure has good statistical properties. The factors are sexual enhancement (Fatcor 1), increased sexual risk taking (Factor 2), and disinhibition of sexual behavior (Factor 3). Each participant in the current study determined his level of agreement on a 7-point Likert scale for the items

from Factor 2 and Factor 3. These two factors reflect the extent to which alcohol impacts potential risky behaviors, they are more conceptually appropriate and sensitive to expectancy effects on risky behavior regarding alcohol consumption. Therefore, only scores from these two factors will be used in the analyses of alcohol expectancies. It

The sexual risk taking factor measures such items as: I am less likely to take precautions before sex; I am less likely to use a condom; and I am less likely to talk with a new sexual partner. Items on the disinhibition factor include: I have sex with people I wouldn't have sex with if I were sober; I am more likely to do sexual things I wouldn't do when sober; I find it harder to say no to sexual advances

Results

Descriptive Data

The 93 participants reported 1,546 sexual events; 207 (12.8%) occurred with a new partner (first time sexual event with that partner), 172 (10.7%) occurred with a casual partner (known less than a month or fewer than 5 sex events together), while 1,167 (72.4%) occurred with a regular partner (known more than a month, and more than 5 sex events). Condoms were used in 764 (49.4%) sexual events.

Analyses Across All Sex Events

Partner Type predicts alcohol consumption: For each sex event, partner type (new, casual, and regular) was entered as a fixed factor with Amount of Alcohol Consumed (number of drinks consumed) entered as the dependent measure in a one-way ANOVA. There were significant differences of alcohol consumption between partner types, $F(2,1543) = 32.754$, $p = .001$. Post Hoc comparisons also revealed significant differences in alcohol consumption between all partner types (all two-way comparisons

were significant at p < .01). Greatest alcohol consumption occurred before sex between new partners (*M* = 4.8, *SD* = 5.2), followed by sex with casual partners (*M* = 3.2, *SD* = 5.0), and then regular partners sex events had the least drinking (*M* = 2.3, *SD* = 3.8).

Partner Type Predicts Condom Use: The relationship between partner type (new, casual, and regular) and condom use (yes and no) was examined, revealing significant differences in condom use across partner types, χ^2 (2, N = 1, 546) = 29.67, *p* = .0001. Sixty percent of new partner sex events and 63.4% of the casual partner sex events involved condom use. However, condoms were only used in 45.6% of the regular partner sexual encounters. As expected, participants used condoms more often with new or casual partners than they did with regular partners (see Figure 1).

Alcohol Consumption Predicts Condom Use: Out of 631 sex events in which participants drank, 45.5% (287) of these sex events involved a condom and 54.5% (344) of them did not. Out of 915 sex events in which participants *did not* drink, 52.1% (477) of these non-drinking sex events involved condom use, while 47.9% (438) of them did not. There was a significant relationship between whether or not drinking occurred prior to sex and condom use, χ^2 (1, 1, 546) = 6.603, *p* < .01, revealing that drinking before the sexual event significantly decreased the frequency of condom use across all events. Over all sex events, drinking prior to sex is associated with reduced condom use, and drinking occurs more in new and casual partner sex events when compared to regular partner events.

Within Subject Analyses of Alcohol Consumption on Condom Use

Within-subjects analyses of whether or not drinking occurred prior to sex and condom use was conducted using paired samples t-tests. Participant's means for condom use when drinking were compared to means for condom use when not drinking for each

partner type. Only those participants with less than 100% condom use were used in these analyses since these participants engaged in risky sex at least some of the time, and thus, drinking may influence their condom use. There were no differences between participants' mean percentage of condom use when drinking compared to not drinking in sexual events with new partners ($M = 64.9$, $SD = 46.4$ vs. $M = 66$, $SD = 46.2$) and regular partners ($M = 42.9$, $SD = 42.7$ vs. $M = 49.9$, SD = 41.8). However, in sexual events with casual partners (not the first event) drinking does appear to negatively influence condom use, $t(35) = -2.30$, $p < .05$. In these events, the mean percentage condom use when drinking occurred prior to sex was 56.3% ($SD = 47.2$), while the mean when not drinking was 72.0% ($SD = 38.7$).

Between Subjects Analyses on the Role of Alcohol Expectancies

Scores from the Sex-Related Alcohol Expectancies questionnaire were used to create three levels of composite expectancies: low ($n = 21$), medium ($n = 41$), and high ($n = 31$), based on median splits of the disinhibition and sexual risk-taking factors. Participants who scored high on both factors were placed into the high expectancy group, those who scored high on one factor while scoring low on the other were placed into the medium group, and participants who scored low on both factors were placed into the low group.

Composite expectancy (low, medium and high) was entered as a fixed factor with participants' mean percentage Condom Use With Drink and with Binge Drink entered as the dependent measures in separate one-way ANOVA's. For events involving drinking there was a significant interaction effect for expectancy group on condom use, $F(2, 82) = 4.23$, $p < .05$. Post Hoc comparisons (LSD) revealed significant differences in mean condom use percentage between participants in the low expectancy group ($M = 64.93$, SD

= 36.03) and the high expectancy group (*M* = 35.54, *SD* = 36.49), as well as between

medium (*M* = 58.46, *SD* = 39.45) and high expectancies (see Figure 2).

There also was a significant interaction between expectancy group and binge

drinking before sex on mean condom use percentage (*F*(1, 39) = 7.08, p < .01). Again,

post hoc comparisons revealed significant differences in mean condom use percentage

between the high expectancy group (*M* = 31.12, *SD* = 35.32) and the low expectancy

group (*M* = 62.24, *SD* = 38.35), as well as between the medium expectancy group (*M* =

60.62, *SD* = 40.22) and the high expectancy group.

To determine if the interaction between expectancy group and drinking was

influenced by amount of alcohol consumed, we analyzed sex events in which drinking

occurred and in which participants drank fewer than five drinks (non-binge drinking). For

those participants with non-binge drinking prior to sex, there was no interaction between

expectancy group and non-binge drinking on condom use. Participants' mean condom

percentage for non-binge drinking sex events was 52.1% (*SD* = 44.18).

Further Analysis of Expectancies

For each partner type, the risk taking and disinhibition factors of the sex-related

alcohol expectancies of participants were each entered as a fixed factor with Condom Use

Percentage With Drink entered as the dependent measures in separate one-way

ANOVA's. Disinibition expectancies were related to percent Condom Use With Drink

for casual partners, *F*(1, 32) = 8.31, *p* < .01, and percent Condom Use With Drink for all

sex events, *F*(1, 83) = 7.5, *p* < .01. Results were not significant for risk-taking

expectancies, revealing that expectancies participants hold about alcohol's effects on

their inhibitions may be more influential in the decision to use a condom.

In an effort to obtain a clearer image of the disinhibition expectancies' influence on Condom Use Percentage when alcohol is consumed proximal to the sex event vs. when no drinking occurs before sex, we compared means. Again participants who always used a condom were excluded from the analysis based on the rationale that they are not at risk for problems associated with risky sex. Also participants were divided into low versus high disinhibition groups based on a median split of that sex-expectancy factor.

In sex events involving alcohol, participants with low disinhibition expectancies ($M = 66.13$, $SD = 36.74$) used a condom significantly more, $F(1, 83) = 8.03$, $p < .01$, than participants with high disinhibition expectancies ($M = 42.70$, $SD = 38.35$). There was no difference in mean condom percentage for low versus high disinhibition groups in sex events that did not involve alcohol use. The mean scores revealed that participants who maintained low expectancies yet drank before sex had higher mean condom use percentage than high disinhibition participants who did not drink ($M = 51.96$, $SD = 38.89$). Thus, alcohol's influence on condom use may be moderated by sex-related disinhibition expectancies. These expectancies appear to interact with alcohol use to reduce the likelihood of condom use.

Discussion

Relatively few previous studies have examined multiple individual events in an effort to establish a link between alcohol consumption and risky sex (Weinhardt & Carey, 2000). The present study, a multiple-event assessment, which included within-subjects analyses, addressed several key issues while examining over 1500 sex events across a three month period in 93 male college students at high risk for problems associated with drinking and unsafe sex.

The type of partner, alcohol consumption, alcohol expectancies, and condom use all covary. These men consumed more alcohol the less they knew the partner, but were more likely to use condoms with new partners. Condom use declines with alcohol consumption particularly for individuals who see alcohol as a sexual disinhibitor. Alcohol also decreases condom use with a casual partner. This combination of casual partner and alcohol seems particularly detrimental to safe sex. A few previous sexual experiences with a partner seems to create a false sense of security against STDs that can lead to more alcohol consumption than with a regular partner and less condom use than with a new partner. Increasing awareness about the potential for HIV transmission with casual partners could have tremendous impact on safe sex behaviors.

These data support the idea that alcohol consumption actually decreases safe sex but only in specific situations. Thus, we present partial support for the transmission hypothesis. Alcohol clearly decreases condom use, but certain situations may override the effect, including a new partner. Encouraging men to treat casual partners as new partners may improve safe sex behaviors. In a sense, redefining who qualifies as a new partner may improve condom use. Individual differences also contribute to the link between alcohol and safe sex, including expectancies that alcohol acts as a sexual disinhibitor. Countering these expectancies through various challenges could prove particularly helpful. If these men are capable of using a condom after drinking with a new partner, the same skills should apply with a casual partner.

The role of monogamy and variation in its definition is clearly important to these findings. These participants each had more than two sexual partners in over two months. Surprisingly, participants almost universally categorized a partner as monogamous even if they had several partners in the same weeks or within a few weeks. This result suggests

that traditional notions of monogamy (being sexual only with one person to whom one is committed to a long-term relationship) are not operational among these college men. It is unclear if their partners considered them monogamous. Thus, thinking of sex with a monogamous partner as *safe* can prove dangerous. Researchers and health professionals can no longer rely on self-reports of monogamy to infer minimized risk for HIV and other STD transmission. The nontraditional understanding of monogamy among this age group suggests that all health interventions should promote consistent condom use even in purportedly monogamous relationships.

Several improvements could enhance future event-level research. Accounting for the level of intoxication instead of the amount of alcohol consumed is an important distinction that future research could pursue. Participants in the present study indicated the number of drinks consumed proximal to each sex event. Including each participant's height and weight, allowing more accurate estimates of the level of intoxication, might improve prediction. Future research could, therefore, no longer just use the number of drinks consumed on a ratio scale, or nominal indicators of alcohol consumption (i.e., yes and no categories), but could incorporate blood alcohol level into its analyses.

This sample is limited as well. Even with over 1,500 sex events examined, only 93 participants may limit generalization. Further research is needed examining multiple events over time using larger and more representative samples of the overall population. The present college male participants represent an "at risk" population due to their predilection for high alcohol consumption and sexual frequency. Nevertheless, samples who show greater diversity will generalize better. Gay men, women, and people who vary more in age, education, and health status could help present a clearer picture of the moderators between alcohol consumption and unsafe sexual behaviors. The role of

alternative forms of birth control as potential deterrents to condom use may be particularly important in studies of women. Nonetheless, the "at-risk" male college students examined in this study are an important population to understand both for reducing negative effects of drinking and stemming the growing rate of HIV and other STD population among young adults. These data establish that alcohol consumption contributes to unsafe sex and that sexual encounters with casual partners can prove particularly risky for failing to use a condom.

References

Bailey, S. L., Camlin, C. S., & Ennet, S. T. (1998). Substance use and risky sexual behavior among homeless and runaway youth. *Journal-of-Adolescent-Health, 23,* 378-388.

Cooper, M. L., Peirce, R. S., & Huselid, R. F. (1994). Substance use and sexual risk taking among black adolescents and white adolescents. *Health Psychology, 13,* 251–262.

Corbin, W. R., & Fromme, K. (2002). Alcohol use and serial monogamy as risks for sexually transmitted diseases in young adults. *Health-Psychology, 21,* 229-236.

Derman, K. H., & Cooper, M. L. (1994). Sex-related alcohol expectancies among adolescents: I. Scale Development. *Psychology of Addictive Behaviors, 8,* 152-160.

Dingle, G. A., & Oei, T. P. S. (1997). Is alcohol a cofactor of HIV/AIDS? Evidence from immunological and behavioral studies. *Psychological Bulletin, 122,* 56-71.

Gold, R. S., & Skinner, M. J. (1993). Desire for unprotected intercourse preceding its occurence: The case of young gay men with an anonymous partner. *International-Journal-of-STD-and-AIDS, 4,* 326-329.

Gonzales, C. L. (1996). Psychological predictors within current models of safer sex behavior: Review and integration. *Paper presented to the graduate school at USC in partial fulfillment of the requirements for the Qualifying Examination.*

Graves, K. L. (1995). Risky sexual behavior and alcohol use among young adults: Results from a national survey. *American Journal of Health Promotion, 10,* 27–36.

Haines, M., & Spear, S. F. (1996). Changing the perception of the norm: A strategy to decrease binge drinking among college students. *Journal of American College Heath, 45,* 134-140.

Halpern-Felsher, B. L., Millstein, S. G., & Ellen, J. M. (1996). Relationship of alcohol use and risky sexual behavior: A review and analysis of findings. *Journal of Adolescent Health, 19,* 331-336.

Hingson, R. W., Heeren, T., Zakocs, R. C., Kopstein, A., & Wechsler, H. (2002). Magnitude of
    alcohol-related mortality and morbidity among U. S. college students ages 18-24. *Journal
    of Studies on Alcohol, 63*, 136-144.

Hingson, R. W., Strunin, L., Berlin, B. M., & Heeren, T. (1990). Beliefs about AIDS, use of
    alcohol and drugs, and unprotected sex among Massachusetts adolescents. *American
    Journal of Public Health, 80,* 295–299.

Kraft, P., & Rise, J. (1994). The relationship between sensation seeking and smoking, alcohol
    consumption and sexual behavior among Norwegian adolescents. *Heatlh Education
    Reserach, 9,* 193-200.

LaBrie, J. W., Schiffman, J., & Earleywine, M. (2002). Expectancies specific to condom use
    mediate the alcohol and sexual risk relationship. *Journal of Sex Research*, 2, 145-152.

Leigh, B. C., & Stall, R. (1993). Substance use and risky sexual behavior for exposure to HIV:
    Issues in methodology, interpretation, and prevention. *American Psychologist, 48,* 1035–
    1045.

Leigh, B. C., Temple, M. T., & Trocki, K. F. (1994). The relationship of alcohol use to sexual
    activity in a U.S. national sample. *Social Science and Medicine, 39,* 1527-1535.

MacDonald, N. E., Wells, G. A., Fisher, W. A., Warren, W. K., King, M. A., Doherty, J. A., &
    Bowie, W. R. (1990). High-risk STD/HIV behavior among college students. *Journal of
    the American Medical Association, 263,* 3155–3159.

McEwan, R. T., McCallum, A., Bhopal, R. S., & Madhok, R. (1992). Sex and the risk of HIV
    infection: The role of alcohol. *British Journal of Addiction, 87,* 577-584.

Meilman, P. W. (1993). Alcohol-induced sexual behavior on campus. *Journal of American
    College Health, 42,* 27-31.

Seidman, S. N., & Reider, R. O. (1994). A review of sexual behavior in the United States.
    American Journal of Psychiatry, 151, 330–341.

Shillington, A. M., Cottler, L. B., Compton, W. M., & Spitznagel, E. L. (1995). Is there a relationship between "heavy drinking" and HIV high risk sexual behaviors among general population subjects? *International Journal of Addictions, 30*, 1453-1478.

Stein, J. (2003, August 18). It hasn't gone away; Rising HIV infection rates are causing worries about a resurgence of AIDS amid public complacency. *Los Angeles Times,* p. F1.

Sobell, L. C., & Sobell, M. B. (1992). Timeline Follow-back: A technique for assessing self-reported alcohol consumption. In Raye Litten & John Allen (Eds.), *Measuring alcohol consumption: Psychosocial and biochemical methods.* Totowa, NJ: Humans Press.

Testa, M., & Collins, R. L. (1997). Alcohol and risky sexual behavior: Event-based analyses among a sample of high-risk women. *Psychology of Addictive Behaviors, 11,* 190–201.

Weatherburn, P., Davies, P. M., Hickson, F. C. I., & Hunt, A. J. (1993). No connection between alcohol use and unsafe sex among gay and bisexual men. *AIDS, 7,* 115-119.

Wechsler, H., Lee, J., Kuo, M., & Lee, H. (2000). College binge drinking in the 1990s: Results of a national survey. *Journal of American College Health, 48,* 199-210.

Weinhardt, L. S., & Carey, M. P. (2000). Does alcohol lead to sexual risk behavior? Findings from event-level research. *Annual Review of Sex Research, 11,* 125-157.

Weinhardt, L. S., Carey, M. P., Maisto, S., Carey, K. B., Cohen, M. M., & Wickramasinghe, S. M. (1998). Reliability of the Timeline Follow-Back sexual behavior interview. *Annals of Behavior Medicine, 20*, 25-30.
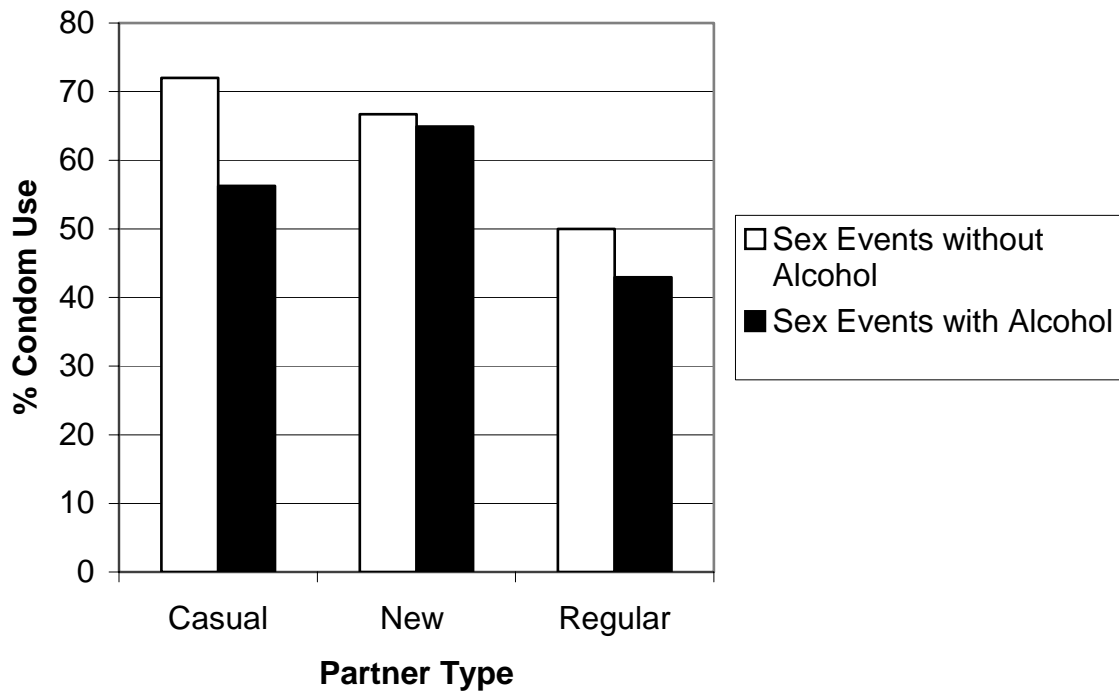
Figure Caption

Figure 1: Participants' Mean Condom Use Percentage by Partner Type.

Note: A significant difference was found between percent condom use of casual partner

sex events without alcohol consumption and percent condom use of casual partner sex events

with alcohol consumption. The only partner type which alcohol significantly reduced condom

use was in sex events with a casual partner. In addition, overall mean percentages were

different between casual partner sex events and regular partner sex events, as well as between

new partner sex events and regular partner sex events.

Figure 2: Impact of Sex-Related Alcohol Expectancies on Condom Use when Drinking.

Note: Values represent participants mean percent condom use in sex events involving

alcohol consumption. In sex events involving drinking, there was a significant drop in percent

condom use for participants in the high expectancy group as compared to the low and

medium expectancy groups.

Mean Condom Use by Partner Type

Impact of Sex-Related Alochol Expectancies on Condom Use when Drinking