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Men's Condom Use Resistance: Alcohol Effects on Theory of Planned Behavior Constructs

Kelly Cue Davis, Ph.D.[1], **Angela J. Jacques-Tiura, Ph.D.**[2], **Cynthia A. Stappenbeck, Ph.D.**[3], **Cinnamon L. Danube, Ph.D.**[4], **Diane M. Morrison, Ph.D.**[1], **Jeanette Norris, Ph.D.**[5], and **William H. George, Ph.D.**[6]

[1]School of Social Work, University of Washington, Seattle, WA

[2]Pediatric Prevention Research Center, Wayne State University, Detroit, MI

[3]Department of Psychiatry & Behavioral Sciences, University of Washington, Seattle, WA

[4]Institutional Research and Decision Support, University of California Merced, Merced, CA

[5]Alcohol and Drug Abuse Institute, University of Washington, Seattle, WA

[6]Department of Psychology, University of Washington, Seattle, WA

Abstract

Objective—This study is a novel investigation of 1) the utility of the Theory of Planned Behavior (TPB) to predict men's condom use resistance (CUR; i.e., attempts to avoid condom use with a partner who wants to use one) and 2) the effects of alcohol on endorsement of TPB-CUR constructs.

Methods—Using an alcohol administration protocol, a between- and within-subjects experiment was conducted with a community sample of 312 young male non-problem drinkers who have sex with women. After assessing endorsement of TPB-CUR constructs (e.g., attitudes, norms, self-efficacy, control, and intentions) in a sober state, beverage condition was experimentally manipulated between subjects and endorsement of TPB-CUR constructs was reassessed.

Results—Analyses included repeated measures MANOVAs with beverage condition (no alcohol vs. alcohol) as the between-subjects factor and time (pre-beverage vs. post-beverage) as the within-subjects factor. Between-subjects, intoxicated participants reported significantly stronger CUR intentions, more favorable CUR attitudes and normative perceptions, and greater CUR self-efficacy than sober participants. There were significant within-subject changes for CUR intentions, attitudes, normative perceptions, and self-efficacy. Neither between- nor within-subjects effects were found for CUR control. An exploratory multi-group path analysis indicated that the relationships among the TPB-CUR constructs were similar for alcohol and no alcohol groups.

Conclusions—Findings indicated that alcohol intoxication increased men's CUR intentions and self-efficacy and led to more positive CUR attitudes and norms, yet had no effect on CUR control.

Corresponding Author: Kelly Cue Davis, Ph.D., University of Washington, School of Social Work, Box 354900, 4101 15th Ave NE, Seattle, WA 98105, 206.616.2174 V, 206.543.5760 F, kcue@u.washington.edu.

Future research should examine whether there are similar effects of intoxication on TPB constructs related to other sexual risk behaviors.

Keywords

alcohol; condom use resistance; sexual risk; Theory of Planned Behavior

Although sexually transmitted infection rates continue to rise among young adults (Centers for Disease Control and Prevention [CDC], 2010), only about half of men aged 18–29 reported using condoms during their most recent vaginal intercourse with a casual sex partner (Reece et al., 2011). Many young men actively resist using condoms despite their female partners' requests for condom use (Davis et al., 2014b). The present study investigated young men's intentions to engage in condom use resistance (CUR; i.e., attempts to avoid condom use with a partner who wants to use one) and whether these intentions were influenced by alcohol consumption, given alcohol's association with men's condom use in casual sexual situations (LaBrie, Earleywine, Schiffman, Pedersen, & Marriot, 2005). Further, because the Theory of Planned Behavior (TPB; Ajzen, 1991) has been used extensively to predict sexual risk intentions, we examined these questions in the context of the TPB. Specifically, the present study investigated 1) the applicability of TPB constructs to young men's CUR intentions with a casual partner and 2) the effects of alcohol intoxication on men's CUR intentions and their antecedents as stipulated by the TPB: attitudes, perceived social norms, and perceived behavioral control.

Theory of Planned Behavior and Condom Use

Socio-cognitive theories such as the TPB have shown promise for elucidating mechanisms underlying sexual risk behavior. According to the TPB, the best predictor of actual behavior is behavioral intentions, which are predicated on attitudes (e.g., whether the behavior is good, pleasant, smart), perceived social norms (perceptions of what important others expect one to do), and perceived behavioral control (perceptions of one's control over, and self-efficacy regarding, the behavior; Ajzen, 2002). Empirical research has provided substantial support for the utility of the TPB to predict condom use intentions, condom use behavior, and other safe sex behaviors (Albarracín, Johnson, Fishbein, & Muellerleile, 2001). Moreover, many STI prevention programs rely upon the TPB for guidance regarding their intervention strategies. Interventions targeting these constructs as pathways to changing sexual risk behavior have been effective (Albarracín et al., 2005). To date, however, the applicability of the TPB to predicting CUR has not been empirically examined.

Condom Use Resistance (CUR)

Men are more likely than women to resist using a condom when their partner wants to use one (DeBro, Campbell, & Peplau, 1994; Oncale & King, 2001). Moreover, resisting condom use with female partners is viewed as a normative activity by young men (Davis et al., 2014a). A recent study of young male moderate drinkers found that 80% reported successfully engaging in CUR since the age of 14 with CUR tactics ranging from attempting to reassure the partner about supposed minimal infection risks to deceiving or manipulating the partner (Davis et al., 2014b). Because of these high CUR rates among young men, as well as empirical support for the importance of the TPB in predicting sexual risk taking, the current study investigated the utility of TPB constructs in understanding the particular sexual risk behavior of CUR.

Alcohol Intoxication and Condom Use

Although the relationship between alcohol use and risky sexual behavior is complex, cross-sectional survey research generally indicates that alcohol consumption is related to greater sexual risk taking, including unprotected sexual intercourse and sex with casual partners (Cooper, 2010). In real world situations, intentions to have risky sex may actually precede drinking. However, alcohol administration experiments in which participants are randomly assigned to consume alcoholic or non-alcoholic beverages enable researchers to control the causal stream of events such that alcohol consumption precedes sexual risk intentions. Such studies have found that acute alcohol intoxication increases intentions to engage in unprotected sex (see Rehm, Shield, Joharchi, & Shuper, 2011 for a meta-analysis). The TPB can contribute to our understanding of how alcohol effects on intentions and behavior are mediated by social-cognitive constructs, and thereby suggest intervention content to target these mediators.

In addition, researchers have examined alcohol intoxication's influence on TPB-related antecedents of condom use (Conner & Flesch, 2001; Conner, Graham, & Moore, 1999; Conner, Sutherland, Kennedy, Grearly, & Berry, 2008). These studies found general support for the TPB in that attitudes, norms, and perceived behavioral control were all predictive of sexual risk intentions (Conner & Flesch, 2001; Conner et al., 1999). However, the effects of intoxication across the studies were inconsistent. For example, Conner et al. (1999) found that alcohol did not have significant main effects on intentions related to condom use, yet Conner et al. (2008) reported that intoxication was associated with men's unprotected sex intentions. In one study perceived behavioral control had a stronger *positive* association with sexual intentions for intoxicated individuals relative to sober individuals (Conner et al., 1999), whereas in another study the relationship between perceived behavioral control and sexual intentions was more strongly *negative* for those who had consumed alcohol (Conner & Flesch, 2001).

These contradictory results, coupled with the fact that these studies have methodological limitations, calls for further empirical examination. Because alcohol consumption was only systematically controlled in one of Conner's studies (Conner et al., 2008), rigorous experimentation involving tightly controlled alcohol administration protocols is warranted. Further, across studies, measures of perceived behavioral control varied (e.g., control vs. self-efficacy) yielding different results and suggesting that control and self-efficacy may function somewhat differently (Rodgers, Conner, & Murray, 2008). Further, these studies all used between-subjects designs. Because research has shown that within-person factors, such as states of intoxication or sobriety, account for a substantial portion of the variance in sexual risk behavior (Cooper, 2010), it is also important to consider how alcohol intoxication may affect within-person changes in endorsement of TPB constructs pertaining to sexual risk. Finally, although several studies suggest that alcohol intoxication is related to increased intentions to resist condom use (Abbey, Parkhill, Jacques-Tiura, & Saenz, 2009;

Davis, 2010), alcohol's influence on other TPB constructs related to CUR has not yet been investigated.

Study Overview and Hypotheses

The current research addressed these methodological concerns and knowledge gaps by investigating TPB-CUR constructs during both intoxicated and sober states using a between- and within-subjects experimental design. Using repeated measures multivariate analysis of variance, we investigated whether intoxicated participants would rate TPB-CUR constructs differently than sober participants. We hypothesized between-subjects alcohol effects, such that intoxicated men would report H1a) stronger CUR intentions, H1b) more positive attitudes regarding CUR, H1c) more positive normative perceptions of CUR, and H1d) greater control over CUR and self-efficacy regarding CUR than their sober counterparts. We also assessed whether endorsement of TPB-CUR constructs differed between sober and intoxicated states for those who consumed alcohol. We expected alcohol intoxication to result in within-subject changes such that after consuming alcohol, men would report H2a) stronger CUR intentions, H2b) more positive attitudes towards CUR, H2c) more positive normative perceptions of CUR, and H2d) greater control over CUR and self-efficacy regarding CUR than they reported when sober. We then explored how relationships among TPB-CUR variables differed for sober and intoxicated participants using multi-group path analysis.

Method

Participants

We recruited 321 men aged 21–30 (M = 25.5, SD = 3.5) through online and print advertisements to participate in a study on male-female social interactions. Interested men called and were screened for eligibility. Because of this study's focus on risky heterosexual behavior and alcohol consumption, participants were eligible if they reported interest in sexual activity with women, were moderate drinkers, and had vaginal or anal sexual intercourse without a condom at least once in the past year. Participants were excluded if they reported medical conditions or medications that contraindicated alcohol consumption, an adverse reaction to alcohol in the past, or problematic drinking (as defined by a score of 5 or more on the Brief Michigan Alcoholism Screening Test; Pokorny, Miller, & Kaplan, 1972). Approximately two-thirds of participants (67.4%) were Caucasian, 15.3% were Multiracial (or "other"), 8.4% were Asian/Pacific Islander, 7.8% were African American/ Black, 0.7% were Native American, and 6.5% were Hispanic/Latino of any race.

Procedure

All study protocols were approved by the University's Human Subjects Division. Subjects were told to abstain from eating and drinking for four hours prior to their appointment and to abstain from over-the-counter medications and alcohol consumption for 24 hours prior to their appointment. Upon arrival participants verified their identity and provided informed consent. They were weighed to determine their beverage volume and completed a

Breathalyzer test (AlcoSensor IV, St. Louis, MO) to ensure their breath alcohol content (BrAC) was .00.

General survey procedures—Participants completed a background survey in private on a desktop computer using Datstat Illume v. 4.7 data collection software. The background questionnaire contained several attitude, personality, and behavior measures, including the TPB-derived constructs for condom use resistance (TPB-CUR). After completion, a male research assistant prepared and served the participant's beverage (see beverage administration procedures below). After consuming their beverages, participants completed the post-beverage TPB-CUR assessment followed by other experimental tasks not relevant to the present investigation. Participants were debriefed and compensated $15/hour. Participants who consumed alcohol remained at the laboratory until their BrAC was below .03% (NIAAA, 2005).

Beverage administration—After completing the background survey, the block randomization method was used to randomly assign participants to one of four beverage conditions: control (told no alcohol, given no alcohol), placebo (told they would be given enough alcohol to raise their BrAC to .04%, but actually given no alcohol), low dose (told and given enough alcohol to reach a peak BrAC of .04%), and high dose (told and given enough alcohol to reach a peak BrAC of .08%). We included the low dose condition in order to have a condition matched to the placebo with regards to the participants' expectations for the amount of alcohol consumed as well as to test for potential dosage effects. Participants assigned to the .04% condition received 0.408 ml ethanol per pound of body weight. Participants in the .08% condition received twice that dosage. Alcoholic beverages consisted of one part 100-proof vodka to three parts orange juice. Control participants consumed a volume of orange juice that was equivalent to the total volume of beverage that they would have received in the alcohol condition to which they were yoked (yoking procedures explained below). Placebo manipulation procedures followed those recommended by Marlatt and Rohsenow (1980). Participants were instructed to pace their beverage consumption evenly over nine minutes.

We ensured that the post-beverage assessments were completed on the ascending blood alcohol limb by testing participant BrACs every four minutes until they reached a criterion BrAC of ≥ .025% for those in the low dose condition and ≥ .05% for participants in the high dose condition (Schacht, Stoner, George, & Norris, 2010) at which point they began the post-beverage measures. A yoked control design was used to reduce error variance in the time between beverage consumption and experimental manipulation (Giancola & Zeichner, 1997) such that each participant assigned to either a control or placebo condition was yoked to a prior alcohol participant and was conducted through the experiment at the same time intervals as the alcohol participant to whom he had been yoked. Half of the control participants were yoked to low-dose alcohol participants; half were yoked to high-dose participants. Placebo condition participants were yoked only to alcohol participants in the .04% condition.

Measures

All TPB-CUR scales used in the current analyses were presented at two separate points: pre- and post-beverage administration, and were consistent with respect to the time frame (i.e., the next three months) and type of sexual partner (i.e., casual; defined as "women you have sex with, but do not have an ongoing romantic relationship with"). Scales were developed for the current study and based on the extensive TPB literature (e.g., Ajzen, 1991, 2002, 2006), and pilot data confirmed that items were easy to understand and interpret. All response options used 7-point scales, and scores were computed by taking the mean of the scale items. Internal reliability (detailed below) ranged from adequate to excellent.

CUR intentions—Three items measured intentions to resist using a condom with a casual sex partner who wanted to use one in the next three months. A sample item stated, "How likely would you be to try to avoid using a condom?" Response options ranged from *very unlikely* to *very likely* such that higher scores indicated stronger CUR intentions. Both α's = .92.

Attitudes toward CUR—Five items began with the stem, "In the next 3 months, trying to avoid using condoms with a casual partner who wants to use one would be," and participants indicated how *bad* vs. *good*, *awful* vs. *nice*, *harmful* vs. *helpful*, *foolish* vs. *wise*, and *unpleasant* vs. *pleasant* that behavior would be. Higher scores indicated more positive attitudes (α = .86 pre-beverage and .87 post-beverage).

Perceived social norms regarding CUR—Three items assessed participants' perceived social norms regarding CUR. A sample item was, "Do people in your life support or oppose you trying to avoid condom use with a casual sex partner who wants to use one?" Higher scores indicated more positive norms for CUR (α = .73 pre-beverage and .72 post-beverage).

Perceived behavioral control regarding CUR—Per Ajzen (2002, 2006), the construct of perceived behavioral control was measured two ways, separately assessing control and self-efficacy. Three items measured how strongly participants believed they were in control of trying to resist using a condom. A sample item stated, "In the next 3 months, I am in complete control over whether I will try to avoid using condoms with my casual sex partner(s)." Higher scores indicated greater perceived control (α = .86 pre-beverage and .88 post-beverage). Three items measured how much self-efficacy participants felt for trying to resist using a condom. A sample item stated, "In the next 3 months, I have the ability to avoid using condoms with my casual sex partner(s)." Higher scores indicated greater perceived self-efficacy. (α = .82 pre-beverage and .83 post-beverage).

Data Analysis Plan

First, we examined mean differences in TPB-CUR constructs both between- and within-subjects using a series of repeated measures MANOVAs with beverage condition as the between-subjects factor, time as the within-subjects factor, and each TPB-CUR construct as the dependent variable. The between-subjects hypotheses (H1) were assessed by testing whether there was an alcohol effect on TPB-CUR constructs post-beverage (i.e., comparing post-beverage means between the two groups) after controlling for pre-beverage ratings. The within-subjects hypotheses (H2) were addressed by testing whether pre- and post-beverage TPB-CUR constructs changed over time within the received alcohol condition. The overall test of these is an interaction effect, which signifies different changes in TPB constructs, pre- to post-beverage, for those in the received alcohol and received no alcohol groups. Post-hoc tests were then used to examine whether the direction of these effects confirmed our hypotheses.

To examine relationships among TPB-CUR constructs post-beverage by beverage condition, we conducted an exploratory multi-group (no alcohol versus alcohol) path analysis using Mplus Version 7 (Muthen & Muthen, 2012). As can be seen in Figure 1, we modeled paths from post-beverage TPB-CUR constructs (i.e., attitudes, social norms, control, and self-efficacy regarding CUR) to post-beverage TPB-CUR intentions. We allowed correlations between attitudes and social norms because these constructs typically are correlated in TPB studies and between control and self-efficacy because they are operationalizations of related constructs. We first constrained all paths to be equal and then released the constraints one at a time and utilized chi-square difference tests to examine significant differences in model fit of the nested models to determine significant differences in paths between the alcohol and no alcohol groups.

Results

Preliminary Analyses

We first examined possible experimental manipulation check failures and missing data patterns. Two subjects withdrew from the study prior to completion, and four failed experimental manipulation checks. Two participants responded “no answer” to the majority of study items, and one did not provide responses for any of the TPB-CUR items. Thus, 312 men comprised the final sample. Missing data for the rest of the sample was minimal; post-beverage self-efficacy had the most missing values at 1.6% ($n = 5$) of all observations. Cases with missing data were removed from MANOVAs, whereas we used maximum likelihood estimation in MPlus path analyses to account for the minimal missing data. All scale scores met the assumptions of normality.

Next, we conducted a series of MANOVAs using all four beverage conditions as the between-subjects factor and time as the within-subjects factor predicting each TPB-CUR construct. There were no differences between control and placebo or between low and high alcohol dose conditions. There were also no differences between control participants yoked to low dose vs. high dose participants. Thus, in the interest of Type I error rate concerns and parsimony, we grouped control and placebo participants together into a “no alcohol” condition and the low and high dose participants together into an “alcohol” condition. Additionally, at pre-beverage, participants had not yet been randomized to a beverage condition and thus there should be no significant between-groups differences. A series of independent samples *t*-tests with beverage condition (no alcohol vs. alcohol) as the between-groups factor confirmed that there were no differences on the dependent measures pre-beverage, all t’s < 1.32, p’s > .19.

Examination of Mean Differences

See Table 1 for descriptive statistics and results of these analyses.

Between-subjects effects of alcohol on TPB-CUR constructs—Controlling for pre-beverage responses, post-beverage CUR intentions were significantly higher among participants who were intoxicated compared to those who were sober, F (1, 308) = 12.63, $p < .001$ (H1a). Compared to sober participants, intoxicated participants had significantly more positive post-beverage attitudes toward CUR, F (1, 307) = 5.58, $p < .05$ (H1b), and perceived more supportive social norms, F (1, 307) = 13.75, $p < .001$ (H1c). In partial support of H1d, intoxicated participants reported greater CUR self-efficacy than did sober participants, F (1, 304) = 4.79, $p < .05$; however, there were no differences between sober and intoxicated men on post-beverage perceptions of CUR control, F (1, 306) = .337, $p =.56$.

Within-subjects effects of alcohol on TPB-CUR constructs—There was a significant main effect of time on intentions to resist condom use that was qualified by a significant time by alcohol consumption interaction. Supporting H2a, CUR intentions increased significantly after men consumed alcohol, $t(153) = 4.33$, $p < .001$; however, intentions were unchanged when men were sober for both assessments, $t(156) = 0.34$, $p = .73$. There was also a significant main effect of time on attitudes toward CUR. In support of H2b, attitudes toward CUR were significantly more positive after men consumed alcohol, $t(153) = 4.19$, $p < .001$. Unexpectedly, there was a significant, although smaller, positive change in attitudes towards CUR among men who remained sober, $t(155) = 2.00$, $p < .05$. There was a significant time by alcohol interaction for perceived social norms regarding CUR (H2c) such that perceived social norms about CUR became more positive among men who became intoxicated, $t(153) = 2.81$, $p < .01$ and became less positive among men who were sober for both assessments, $t(155) = 2.15$, $p < .05$. Contrary to predictions, no support was found for the within-subjects change in control related to CUR after consuming alcohol (H2d), $t(152) = .41$, $p = .68$. There was, however, a significant time by alcohol interaction on CUR self-efficacy. Participants' CUR self-efficacy significantly increased after they consumed alcohol, $t(153) = 3.32$, $p < .001$; but there was no change in self-efficacy among men who remained sober, $t(152) = 0.08$, $p = .93$.

Relationships among TPB-CUR Constructs Post-Beverage

To examine differences in the relationships among post-beverage TPB-CUR constructs between the alcohol and no alcohol groups, we conducted an exploratory multi-group (no alcohol vs. alcohol) path analysis (Figure 1). Bivariate correlations among all variables included in the model are presented in Table 2. The initial model resulted in a significant model chi-square, $\chi^2(df = 14) = 75.12$, $p < .001$; Comparative Fit Index (CFI) = .64; Tucker-Lewis Index (TLI) = .79; root mean square error of approximation (RMSEA) = .17 (95% CI: [.13, .21]); standardized root mean square residual (SRMR) = .11. After examining the modification indices, we added paths between attitudes and self-efficacy as well as between social norms and control which were conceptually appropriate and resulted in a well-fitting model, $\chi^2(df = 12) = 16.25$, $p = .18$; CFI = .98; TLI = .98; RMSEA = .05 (95% CI: [.00, .

10]); SRMR = .06. In the final model, the TPB-CUR constructs accounted for 42% and 44% of the variance in CUR intentions in the no alcohol and alcohol groups, respectively.

In the no alcohol group (Figure 1a), more positive attitudes and greater self-efficacy were associated with greater CUR intentions. However, social norms and control were not significantly associated with CUR intentions. In the alcohol group (Figure 1b), a similar pattern of results emerged with more positive attitudes and greater self-efficacy associated with greater CUR intentions. When the path constraints were released one at a time, one significant difference emerged between the no alcohol and alcohol groups. The association between attitudes and self-efficacy was significantly stronger in the alcohol compared to no alcohol group as the release of that path constraint significantly improved model fit, $\chi^2(df_\Delta = 1) = 5.31$, $p = .02$. There were no other significant differences between the no alcohol and alcohol groups.

Discussion

Overall, our hypotheses were partially supported and findings were consistent across TPB-CUR variables. Regarding between-subjects effects, intoxicated participants reported stronger CUR intentions, more favorable CUR attitudes, more favorable CUR normative perceptions, and greater CUR self-efficacy than their sober counterparts. Within-subjects effects were also found for each of these variables. Unexpectedly, intoxication had no between- or within-subjects effects on CUR control. Taken together, results are consistent with literature indicating that alcohol intoxication tends to increase sexual risk factors (e.g., Rehm et al., 2011) and are also consistent with previous research on alcohol and TPB, particularly that alcohol appears to be associated with risky attitudes (e.g., Gordon & Carey, 1996). Although Conner et al. (1999, 2008) found little evidence that alcohol affected TPB constructs other than predicting riskier intentions, in those studies alcohol intoxication was either not manipulated in the laboratory or was manipulated but target BrAC was not assessed. Our protocols contributed to this literature by including a placebo condition and two different alcohol dose conditions. The lack of differences between the placebo and control groups suggests that alcohol expectancy effects may not influence TPB-CUR constructs, while the lack of differences between the two alcohol doses may indicate that alcohol's influence on TPB-CUR measures does not increase concomitantly with dosage. Although more artificial in nature than bar-based field studies, this lab-based alcohol administration paradigm complements previous research through its use of rigorous experimental protocols that offer strong internal validity and the ability to infer causal relationships between manipulated alcohol variables and outcomes.

Our hypotheses regarding alcohol intoxication effects on within-subject changes in TPB-CUR constructs pre- and post-beverage administration were partially supported, yielding a novel contribution to the literature. As predicted, participants who received alcohol reported greater CUR intentions and greater CUR self-efficacy when they were intoxicated, compared to when they were sober, while ratings of participants who did not receive alcohol did not change. Although the current study did not test possible mechanisms for these effects, other studies (e.g., Davis, Hendershot, George, Norris, & Heiman, 2007; MacDonald, Fong, Zanna, & Martineau, 2000) have found support for alcohol myopia processes (Steele & Josephs, 1990) to explain linkages between alcohol intoxication and sexual risk. Alcohol myopia postulates that cognitive impairments that occur during states of intoxication decrease attention to distal inhibitory cues (e.g., STI risk) relative to proximal impelling cues (e.g., sexual pleasure; George & Stoner, 2000). Future research should investigate the potential role of alcohol myopia processes, as well as other possible mechanisms, in within-subject changes in TPB-CUR construct endorsement between states of sobriety and intoxication.

Also in line with our hypotheses, ratings of CUR attitudes and normative perceptions became significantly more favorable for participants who received alcohol. Unexpectedly, however, for no alcohol participants favorable attitudes towards CUR increased over time and favorable normative perceptions of CUR decreased. We can only speculate why this might have occurred. Because there is no reason to expect time *per se* to have changed these cognitions, this effect seems likely due to reflection caused by repetition of the TPB-CUR items. Insofar as endorsing intentions to defy their sexual partner’s desire to use condoms led participants to adjust their assessment of the social acceptability of condom resistance downward, they may have adjusted their attitudes upward to justify maintaining an intention to resist. Although this may suggest that ratings of TPB-CUR constructs are malleable and thus potentially useful intervention foci, in order to draw more definitive conclusions, the possible effects of repeated measurement on TPB-CUR constructs should be explored in future research.

Our exploratory multi-group path analysis also provides insights into the manner in which TPB-CUR constructs are interrelated. Although alcohol intoxication affected mean levels of some TPB-CUR constructs, interrelationships among constructs were similar across both sober and intoxicated states and the amount of variance explained in post-beverage CUR intentions was about the same for the no alcohol and alcohol groups. For both groups, attitudes and self-efficacy were positively associated with CUR intentions although CUR attitudes and self-efficacy were more strongly correlated in the alcohol group. This pattern of results suggests that attitudes and self-efficacy are important predictors of CUR intentions regardless of alcohol consumption and that they may serve as useful targets for interventions addressing men’s CUR in both sober and intoxicated states. That noted, because the mean levels of CUR attitudes, self-efficacy, and intentions all increased under states of intoxication relative to sober states, interventions that address the influence of alcohol intoxication on these factors may ultimately have an even greater impact on reducing CUR behavior.

In contrast, perceived social norms and control were not related to CUR intentions. It is interesting that mean levels of CUR control ratings were not influenced by alcohol consumption and that control was not predictive of CUR intentions in either sober or intoxicated participants. Although control and self-efficacy are thought to be indicators of the same overall construct of perceived behavioral control (Ajzen, 2002), supported by the fact that they significantly covaried, they differentially predicted intentions and were differentially influenced by intoxication, which supports their measurement as separate constructs (Azjen, 2006). This finding adds to a small but growing literature (e.g., Norman, 2011) on how perceived behavioral control should be operationalized and the situations in which control vs. self-efficacy dimensions are most salient. Further, perceived social norms were not predictive of CUR intentions, suggesting that the perceived acceptability of CUR may not hold much sway over young men's intentions to engage in such behavior.

Implications for Research and Intervention

Our results suggest that the TPB has some applicability for understanding men's CUR. Further, our findings with regards to acute alcohol effects on TPB-CUR constructs suggest that the state in which decisions are made may influence some aspects of decision-making processes (Lowenstein, 2005) – a factor which may also underlie some of the variance in its predictive utility (e.g., McEachan, Conner, Taylor, & Lawton, 2011). Using the TPB within an experimental alcohol manipulation context provides a window into changes in cognitions that follow from alcohol intoxication. Future experiments examining the TPB could investigate in greater depth the effects of specific states (e.g., intoxication, sexual arousal) on cognitive processes, as well as the role of these states in both current and prospective empathy gaps whereby individuals may be poor at predicting relevant thoughts and actions in different states (Lowenstein, 2005).

Our results also have implications for interventions aimed at reducing sexual risk behaviors. Many interventions implicitly or explicitly target social norms, but these results suggest that is unlikely to be effective here, since social norms about CUR are already on the disapproving end of the scale and because social norms had no relationship to intentions. Because alcohol influenced some TPB-CUR constructs such that participants endorsed responses consistent with increased risk, efforts to reduce heavy drinking, particularly in sexual contexts, are warranted (e.g., Ingersoll et al., 2005). Interventions could also be targeted towards inoculating drinkers by teaching them about ways that alcohol induces risky cognitions. However, such strategies must also be tempered by the fact that it is problematic to enhance risk-related alcohol expectancies because such expectancies can serve as self-fulfilling prophecies (George, Stoner, Norris, Lopez, & Lehman, 2000). Our findings also underscore the importance of assessing the effectiveness of interventions when individuals are in both sober and intoxicated states to ensure intervention success under both conditions. Finally, our results suggest that efforts to reduce CUR should also target TPB-related antecedents of CUR. In particular, attitudes and self-efficacy might be particularly effective targets for intervention because they predicted CUR intentions strongly and robustly for both sober and intoxicated participants in our multi-group path analyses. Examination of the factors that underlie CUR attitudes and self-efficacy, and specifically those that change after intoxication, is an important next step in this line of research.

Limitations and Future Directions

Limitations of the present study suggest important avenues for future research. It is possible that our results would not generalize to men who did not fit our inclusion criteria or from more diverse racial/ethnic backgrounds. Thus, it will be important to examine these relationships in a more ethnically diverse sample and in men who have sex with men because there may be important differences in group norms or perceptions of CUR.

Our findings with regards to within-subjects alcohol intoxication effects and our exploratory examination of alcohol effects on interrelationships between TPB-CUR constructs were the first to examine these associations and thus require replication. We cannot determine the effects of social desirability on our findings, nor can we control for the effects of repeated measurement in relation to the effects of alcohol; future studies could control for these factors.

Laboratory experiments complement, rather than replace, studies of complex, "real world" sexual situations and cannot be directly generalized. We asked participants to answer the questions about CUR with a hypothetical casual partner independent of the myriad contextual elements present in a real-life sexual situation, which likely influence these associations (e.g., salient risk cues such as sexual history). We did not examine other relational sex contexts and expect that type of sexual relationship might influence whether CUR is deemed appropriate (e.g., it might be more/less appropriate to refuse a request from a more serious relationship partner) or even applicable (e.g., people are less likely to use condoms in relationships compared to casual sex encounters; Morrison et al., 2003). Consequently, more research is needed to explore how elements of a sexual situation might influence these relationships.

Although intentions can predict sexual risk behavior, we do not know the extent to which these intentions correspond to actual CUR behavior; discrepancies between the two are often notable (Turchik & Gidycz, 2012). The magnitudes of the associations among the TPB-CUR variables were similar to those found in other TPB studies of risky sexual behavior (cf, McEachan et al., 2011); however, future research assessing CUR behavior in a real world setting will be needed to confirm this speculation. Ajzen and Fishbein (1977) have argued that correspondence between TPB constructs may be increased by facilitating congruity in the mode of processing, but this tenet of their theory has been little tested. Our findings demonstrate that intoxication influences endorsement of some TPB-CUR constructs. Thus, measuring TPB constructs under conditions of acute alcohol intoxication in the laboratory and then assessing their relation to actual behaviors outside of the laboratory under similar conditions of intoxication may be one fruitful avenue for increasing the intention-behavior correspondence for alcohol-involved sexual risk. Additionally, future research should also investigate the ways in which intentions to engage in CUR may influence subsequent alcohol consumption.

In conclusion, this investigation contributes to the growing body of literature on men's CUR and specifically to the TPB's applicability in predicting CUR. It also augments our understanding of how acute intoxication influences TPB-CUR constructs, as well as the interrelationships among TPB constructs. Findings indicate that alcohol intoxication may increase men's CUR through its effects on some TPB-CUR constructs (particularly CUR attitudes, self-efficacy, and intentions), suggesting that both research and intervention efforts targeting TPB constructs related to sexual risk should consider the effects of intoxication. These results also suggest that TPB constructs are not necessarily stable, and examinations of the states that could influence these constructs should be considered in future research.

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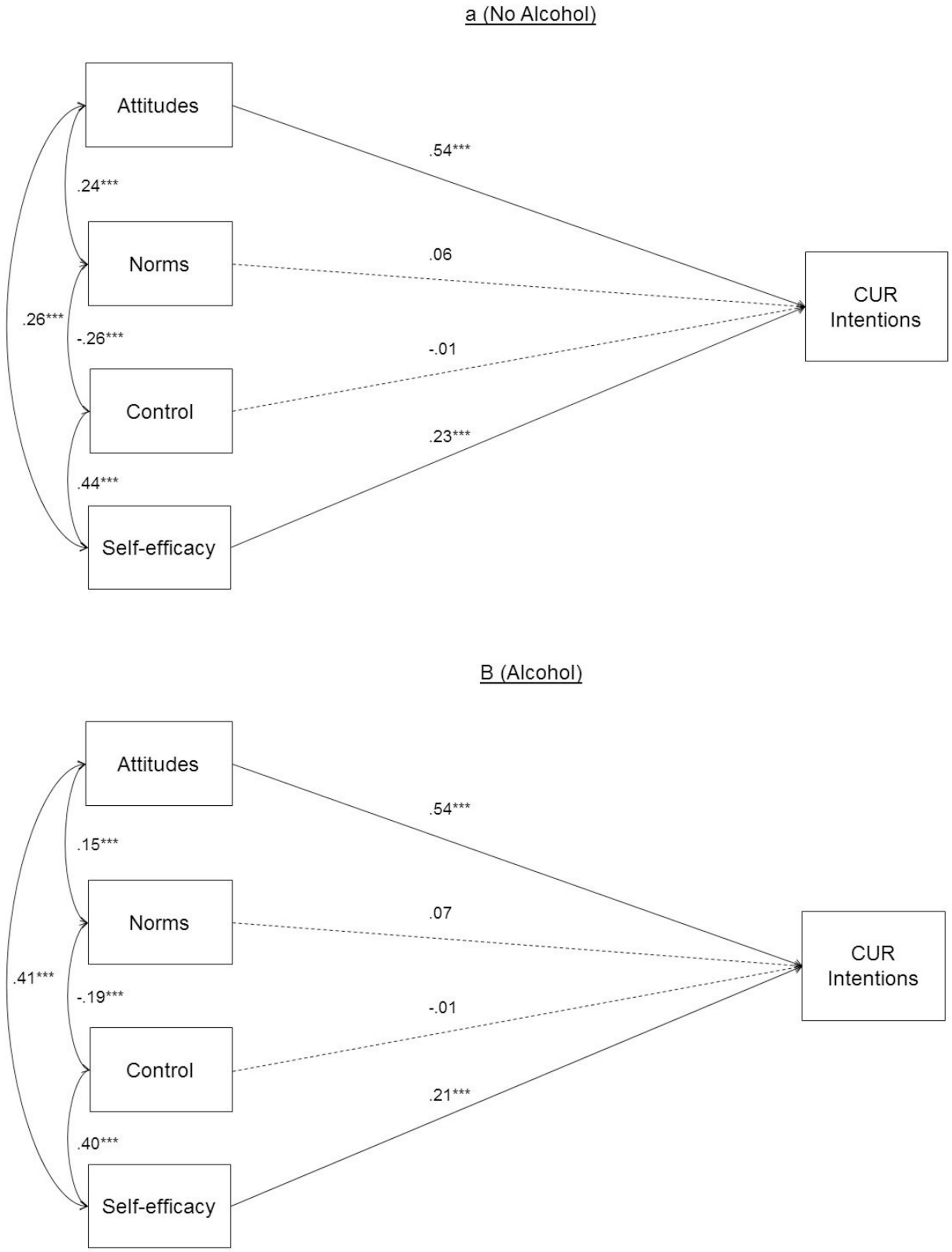

Figure 1.

Multi-group path analyses examining relationships between TPB-CUR constructs post-beverage for the no alcohol (a) and alcohol (b) groups. Standardized coefficients are presented with dashed lines representing non-significant paths. ***$p < .001$.

Table 1

Means, Standard Deviations (SDs), and Results of MANOVAs Examining Mean Differences between Those who Received No Alcohol Versus Alcohol and Within Person Differences From Pre-beverage to Post-beverage.

	Pre-Beverage		Post-Beverage		M.E. of Time		M.E. of Alcohol		Time x Alcohol Interaction	
Variable	**No Alcohol**	**Alcohol**	**No Alcohol**	**Alcohol**	***F* (df)**	**Partial η^2**	***F***	**Partial η^2**	***F***	**Partial η^2**
Intentions *M*	2.39	2.47_a	2.42_b	$2.94_{a,b}$	12.68^{***}	0.04	$3.08^{\dagger}$	0.01	9.75^{**}	0.03
SD	1.52	1.76	1.50	1.77	(1, 309)					
Attitudes *M*	1.96_a	2.09_b	$2.11_{a,c}$	$2.45_{b,c}$	19.84^{***}	0.06	$3.58^{\dagger}$	0.01	$3.13^{\dagger}$	0.01
SD	1.11	1.26	1.12	1.29	(1, 308)					
Perceived Norms *M*	2.50_a	2.37_b	$2.24_{a,c}$	$2.81_{b,c}$	0.77	0.00	1.58	0.00	12.53^{***}	0.04
SD	1.78	1.73	1.55	1.91	(1, 308)					
Control *M*	5.54	5.58	5.60	5.53	0.002	0.00	0.005	0.00	0.38	0.00
SD	1.63	1.62	1.65	1.58	(1, 307)					
Self-Efficacy *M*	4.12	3.83_a	4.12_b	$4.26_{a,b}$	6.51^{**}	0.02	0.18	0.00	7.06^{**}	0.02
SD	1.61	1.69	1.59	1.78	(1, 305)					

Note. Means with the *same* subscript within rows differ at the $p < .05$ level. See the text for *simple effects* tests. M.E. = main effect.

$^{\dagger}p < 10.$

$^{*}p < .05.$

$^{**}p < .01.$

$^{***}p < .001.$

Table 2

Bivariate Correlations among TPB-CUR Constructs and Intentions to Resist Condoms Post-beverage with those in the alcohol condition (n = 155) above the diagonal and the no alcohol condition (n = 157) below the diagonal.

	1.	2.	3.	4.	5.
1. Post-beverage intentions	--	.64***	.08	.09	.42***
2. Post-beverage attitudes	.60***	--	.04	−.03	.40***
3. Post -beverage norms	.28***	.34***	--	−.07	.02
4. Post -beverage control	−.03	−.10	−.33***	--	.39***
5. Post -beverage self-efficacy	.35***	.24***	.04	.38***	--

* *p* < .05.

** *p* < .01.

*** *p* < .001.