The Development of a New Condom Use Expectancy Scale for At-Risk Adults

Liesl A. Nydegger, Ph.D., MPH,

Medical College of Wisconsin, Center for AIDS Intervention Research, 2071 North Summit Avenue, Milwaukee, WI 53203, Phone: (414) 955-7744, Fax: (414) 287-4209, liesl.nydegger@gmail.com

Susan L. Ames, Ph.D., and

Claremont Graduate University, School of Community and Global Health, 675 W. Foothill Blvd., Suite 310, Claremont, CA 91711, Phone: (909) 607-2825, susan.ames@cgu.edu

Alan W. Stacy, Ph.D.

Claremont Graduate University, School of Community and Global Health, 675 W. Foothill Blvd., Suite 310, Claremont, CA 91711, Phone: (909) 607-2825, alan.stacy@cgu.edu

Abstract

Rationale—Engaging in risky sexual behavior increases transmission of HIV.

Objective—The present study used previously elicited salient outcomes of condom use to examine the factor structure and test the predictive utility of a condom use expectancy scale.

Methods—Participants were drug offenders from court ordered drug diversion programs in Southern California. The condom use expectancy scale consisted of three factors: positive condom outcome items, negative condom outcome items, and safe sex items.

Results—The factor analysis confirmed the three-factor structure. Positive condom use expectancies were a significant predictor of both condom use and intentions to use condoms, and negative condom use expectancies predicted non-use of condoms.

Conclusion—Understanding conditions of condom use can aid public health researchers and practitioners to better identify those in need of HIV prevention and how to target those needs.

Keywords

HIV; Condom use; Drug use; Expectancies

Introduction

Engaging in risky sexual behavior continues to be one of the chief routes for the transmission of HIV, especially among non-injection drug users (NIDUs; Khan et al., 2013; Mitchell & Latimer, 2009; Semple, Patterson, & Grant, 2004; Strathdee & Sherman, 2003). Substance use increases the chance of engaging in unprotected sex and having multiple sex partners, thus increasing the likelihood of contracting HIV or other sexually transmitted diseases (STDs; Trenz et al., 2013). Inconsistent condom use has been associated with other risky sexual practices including NIDUs engaging in sex with injection drug users (Molitor,

Truax, Ruiz, & Sun, 1998), sex work (Molitor et al., 1998; Semple, Grant, & Patterson, 2004), and having multiple sexual partners (Khan et al., 2013; Molitor et al., 1998; Semple, Grant, et al., 2004). Studies examining an association between alcohol and condom use in discrete-sexual encounters revealed an association with inconsistent condom use at first intercourse (Cooper, 2002; Leigh, 2002). The failure to use condoms increases one's risk of HIV and other STDs. It is especially important to advance the understanding of inconsistent condom use in populations that are particularly at risk for HIV and other STDs, such as drug users (Mitchell & Latimer, 2009; Molitor et al., 1998; Nydegger, Ames, Stacy, & Grenard, 2014). Increasing our understanding of the perceived outcomes of condom use and related beliefs may help explain variation in this preventable behavior and contribute to the effectiveness of HIV prevention interventions. Perceived Outcomes of Condom Use

Perceived anticipated or expected outcomes of a behavior (both positive and negative) are integral aspects of many theories of health behavior. These outcomes are often studied in the context of theories of beliefs or expectancies. Numerous studies have found outcome expectancies to be correlated with alcohol (Brown, Carrello, Vik, & Porter, 1998; Brown, Christiansen, & Goldman, 1987; Leigh & Stacy, 1993) and other drug use (Schafer & Brown, 1991; Sussman, Dent, & Stacy, 1996). A few studies have found linkages between sex-related alcohol expectancies and social and sexual situations (Brown et al., 1987; D'Amico, Fromme, Katz, D'Amico, & Katz, 1999; Dermen & Cooper, 1994; Tubman, Des Rosiers, Schwartz, & O'Hare, 2012).

Several researchers have evaluated condom use expectancies, across various populations, as predictors of risky sexual behavior (Albarracín et al., 2000; Bowen, Williams, McCoy, & McCoy, 2001; DiFranceisco et al., 1998; DiIorio, Maibach, O'Leary, Sanderson, & Celentano, 1997). For example, Hogben and colleagues (2006) investigated adolescent girls' condom use expectancies with scale items categorized as perceived pleasure or perceived obligation. Perceived pleasure and perceived obligation condom use expectancies were found to be positively associated with intentions to use condoms, and intentions were positively associated with condom use consistency. Newby, Brown, French, and Wallace (2013) reviewed research that elicited condom use expectancies and combined the most commonly elicited items into a scale to evaluate college students' condom use intentions. They found that those who had negative condom use expectancies had low intentions to use condoms (Newby et al., 2013). The present study evaluated the factor structure and predictive utility of a condom use expectancy scale in the prediction of risky sexual behavior among drug users. This scale focused specifically on casual, non-main sexual partners.

Methods

Population

Participants were 440 individuals (32% females; $n = 140$) in drug diversion programs throughout the Los Angeles metropolitan area. Of those responding to a question regarding ethnicity, 44% ($n = 193$) were non-Hispanic whites, 44.47% ($n = 195$) were Hispanic, 2.35% ($n = 10$) were Black, 2.35% were Native American ($n = 10$), 3.0% were Asian ($n = 13$), and 3.77% ($n = 16$) were other minorities.

Procedures

Participants completed anonymous paper questionnaires in groups. Potential participants were informed that their participation was voluntary and they could withdraw at any time without prejudice. The University of California Los Angeles Institutional Review Board approved all of the procedures used in this study.

Measures

Condom use expectancy scale. The condom use expectancy scale was developed from eliciting salient outcomes of condom use during casual sex among a similar population. The 18-item questionnaire consisted of three factors: positive outcomes, negative outcomes, and safe sex outcomes. First, participants were provided a definition of casual partner. Participants were instructed as follows: "Here is a list of some things that some people might experience when using a condom with a casual partner. How likely is it that these things happen to you when you use a condom with a casual partner? Please check the box that best describes how using a condom would affect you. If you do not use condoms at all, you can still fill this out: just answer it according to what you think would happen to you if you did use a condom." Response options ranged from 1 = *no chance*, 2 = *very unlikely*, 3 = *unlikely*, 4 = *likely*, 5 = *very likely* and 6 = *certainly*. Participants were instructed to check the box that applies when prompted with the following: "When I use a condom with a casual partner…" Example of items used include, "Sex is good or it feels good." and "There is less feeling or a lack of sensation." For the complete scale, see Appendix A.

Condom use. Participants were asked, "In the last 12 months, how often did you (or your partners) use condoms when you had sex?" Response options included, 1) *I have not had sex in the last 12 months*; 2) *never used condoms*, 3) *rarely*, 4) *less than half the time*, 5) *about half the time*, 6) *more than half the time*, 7) *almost always*, 8) *used condoms every time*.

Intentions to use condoms. Participants were asked "How likely is it that you would use a condom (or get the other person to use one) in each of these situations 1) with someone you have never had sex with before; 2) with someone you have known only for a few weeks or less; 3) with someone you know had other sexual partners; 4) with someone you have dated for a long time; 5) with someone you have already had sex with?" (Cronbach's alpha = 0.87). Participants were asked to check one box for each item. Response options were *definitely yes, probably yes, probably not* and *definitely not* (Albarracín, Johnson, Fishbein, & Muellerleile, 2001; Morrison, Baker, & Gillmore, 1998; Stacy, Ames, Ullman, Zogg, & Leigh, 2006).

Intention to have multiple sex partners. Participants were asked, "Within the next year, do you think you will: 1) have sex with more than one sexual partner; 2) have sex with at least several new sexual partners; 3) have sex with a casual partner?; 4) have sex with a new partner the same day you first meet him or her?" (Cronbach's alpha = 0.93). Participants were asked to check one box for each item. Response options were *definitely yes, probably yes, probably not* and *definitely not* (Stacy et al., 2006).

Self-reported alcohol use and alcohol use before sex. Participants were asked how frequently they consumed alcohol in the last 12 months. The 9-item response options ranged from *not*

in the last 12 months to *every day* (Graham et al., 1984). Additionally, participants were instructed to think about the most recent time they had sex with a casual partner and were asked "Did you drink alcohol (beer, wine, liquor) before or during sex?" Response options were *yes* and *no* (Leigh, Ames, & Stacy, 2008).

Analyses

Primary data analyses initially consisted of a confirmatory factor analysis (CFA) to verify whether the hypothesized indicators adequately reflected the proposed three-factor structure of the condom use expectancy scale based on condom use expectancies elicited beforehand. The CFA was evaluated with the EQS 6.0 program and recommended model modification procedures (Bentler, 1995). Multiple regression procedures (e.g., Aiken & West, 1991) conducted using SAS® software (SAS Institute., 2013) were then used to evaluate whether the three factors independently predicted condom use, intentions to use condoms, and intentions to have multiple sex partners. Simultaneous regression models were used since there were no specific hypotheses regarding positive, negative, or safe sex outcomes and other covariate predictive effects on condom use or intentions to have multiple partners or use condoms.

Results

Factor Structure of the Condom Use Expectancy Scale

An initial CFA model was evaluated to determine whether the hypothesized indicators adequately reflected the proposed latent scale factors. Although the initial intent was to create a scale with positive and negative outcomes, many participants mentioned safe sex, specifically. During CFA analyses, the original model did not fit the data well, χ^2(132, *N*=407) = 705.090, *p* < 0.0001, NNFI = 0.832, CFI = 0.855, RSMEA = 0.103, (90% CI: 0.096, 0.111). Further, the safe sex items did not load sufficiently on the positive outcome factor, and four negative outcome items did not load adequately on the negative outcome factor according to modification indexes. On the basis of these findings, four of nine negative outcome items were removed the model, and a third factor of safe sex was created. With these modifications, the CFA model fit the data better, confirming a 3-factor structure with the following factors: positive condom outcome items, negative condom outcome items, and safe sex outcome items (see Tables 1 and 2). The final condom use expectancy scale factor loadings are presented in Tables 1 and 2. All factor loadings were significant (*p* < 0.001). The fit of this final model did not reach statistical non-significance but fit the data reasonably well, χ^2(74, *N* = 407) = 250.003, *p* < 0.0001, NNFI = 0.940, CFI = 0.951, RMSEA = 0.077 (90% CI: 0.066, 0.087). The means, standard deviations, and range for the factor constructs are as follows: a) positive outcome expectancies: *M(SD)* = 26.37 (7.35), range = 6.00 – 36.00; b) negative outcome expectancies: *M(SD)* = 14.04 (5.61), range = 5.00 – 30.00; and c) safe sex outcome expectancies: *M(SD)* = 13.40 (3.41), range = 3.00 – 18.00).

Multivariate Regression Analyses

Hispanic and non-Hispanic white ethnicities comprised a large majority of the sample. Ethnicity was dummy coded as Non-Hispanic white = 0 verses all other races/ethnicities = 1. Gender was binary coded as males = 1 and females = 2. The same predictors were used in

all of the analyses. Listwise deletion was used in the analyses to handle missing data, resulting in a random subset of the data. However, the analytic sample was reduced by 16 to 18% as a result of this missing data method. The outcome variables analyzed here were condom use when having sex, intentions to use condoms, and intentions to have multiple partners.

Condom use. The overall simultaneous model was statistically significant ($F(7, 354) = 6.32$, $p < 0.001$) and accounted for 11.1% of the variance of condom use when having sex in the past 12 months. Gender was a significant predictor such that males were significantly more likely to use condoms in the past year than females ($p < 0.05$). Positive outcome expectancies was a significant main effect predictor ($p < 0.001$), suggesting greater condom use with more positive use expectancies, although the effect was small. Negative outcome expectancies was negatively associated with condom use when having sex in the past 12 months ($p < 0.05$). This indicates that those who held negative outcome expectances were less likely to use condoms, although, again the effect of negative outcome expectancies on condom use was small. Safe sex outcome expectancies was not a significant predictor ($p > 0.05$). Alcohol use in the past year, sex while drunk in the past year, and non-Hispanic whites vs. all other race/ethnicities were not significant predictors of condom use (see Table 3).

Intentions to use condoms. The overall simultaneous model was statistically significant ($F(7, 362) = 6.03$, $p < 0.001$) and accounted for 10.4% of the variance of intentions to use condoms (see Table 4). Gender was a significant predictor such that females were significantly more likely to have higher intentions to use condoms than males ($p < 0.05$). Positive condom use expectancies was a significant main effect predictor of intentions to use condoms ($p < 0.001$). These findings suggest greater condom use intentions with more positive outcome expectancies. Negative outcome expectancies and safe sex expectancies were not significant predictors ($p > 0.05$). Alcohol use in the past year, sex while drunk in the past year, and non-Hispanic whites vs. all other race/ethnicities were not significant predictors.

Intentions to have multiple partners. The overall simultaneous model was statistically significant ($F(7, 362) = 15.45$, $p < 0.001$) and accounted for 23.0% of the variance of intentions to have multiple partners (see Table 5). Gender was a significant predictor such that males were significantly more likely to have higher intentions to have multiple partners than females ($p < 0.001$). Positive outcome expectancies, negative outcome expectancies, and safe sex outcome expectancies were not significant predictors ($p > 0.05$). Alcohol use in the past year was not a significant predictor ($p > 0.05$). Sex while drunk in the past year was a marginally significant predictor of intentions to have multiple partners ($p = 0.0587$). Non-Hispanic whites vs. all other race/ethnicities was not a significant predictor ($p > 0.05$).

Discussion

The present research examined the factor structure of a condom use expectancy scale created from previously elicited perceived outcomes of condom use, and its efficacy was tested among drug users in the prediction of condom use, intentions to use condoms, and intentions

to have multiple sex partners. A three-factor structure consisting of positive outcome expectancies of condom use, negative outcome expectancies of condom use, and safe sex outcome expectancies was confirmed. Regression analyses were then conducted to determine the predictive effects of each factor and the factors' relationship to condom use, intentions to use condoms, and intentions to have multiple sex partners.

The positive outcome expectancy factor was a significant predictor of both condom use and intentions to use condoms, while negative outcome expectancies predicted non-use of condoms. Although effects were small based on Cohen's effect sizes (Cohen, 1988), these expectancy constructs explain a meaningful portion of the variance in condom use and intentions to use condoms. Even a small effect among a drug using population is important in the prevention of HIV/AIDS. Individuals in drug diversion programs are more likely to engage in a range of behaviors that place them at increased risk for contracting various STDs including HIV/AIDS and the practice of engaging in preventive behaviors such as condom use can effectively minimize risk.

There were no significant predictive effects of the three expectancy factors when the dependent variable was intentions to have multiple sex partners. This can be expected given that intentions to have multiple partners is not a condom-specific outcome variable. Further, alcohol use in the past 12 months and engaging in sexual activity while intoxicated were not significantly related to any of the outcome variables. Finally, ethnicity was not a significant predictor.

In sum, while the magnitude of effects of the condom use outcome expectancies may be small, the findings indicate that positive condom use outcomes in particular are an important indicator of previous use and future intentions to use condoms and condom use behavior. Thus, researchers and practitioners might consider emphasizing the positive aspects of condom use to increase usage among risky populations. Even though negative condom use outcomes only predicted condom non-use in the past year and had a small effect, future research and practice might consider addressing and minimizing the negative aspects of condom use.

These findings are consistent with previous studies that found positive condom use expectancies to be associated with increased intentions to use condoms (Albarracín et al., 2000; Hogben et al., 2006) and increased use of condoms (DiIorio et al., 1997). Additionally, studies have found negative outcome expectancies associated with lower intentions to use condoms (Newby et al., 2013) and less condom use (Albarracín et al., 2000), and safe sex outcome expectancies did not predict condom use (Albarracín et al., 2000). This indicates that the scale developed and analyzed in the current study assesses similar aspects of condom use expectancies, while it is more comprehensive for this specific, high-risk population. The findings from this work provide preliminary support for the construct validity of the new condom use expectancy scale and predictive validity among a drug using population.

Although others have developed and tested condom use expectancy scales, the current study provides a more comprehensive scale for drug users based on eliciting salient responses

from the same drug offending population, which identified three domains relevant to condom use expectancies. For example, Bowen and colleagues (2001) showed that a three-item condom use expectancy scale significantly predicted intentions to use condoms in a sample of crack cocaine smokers. However, while particular items in Bowen's scale are similar to the newly developed scale for drug users reported in the present research, Bowen and colleagues' scale did not address many potential outcomes, such as guilt and other specific feelings (e.g., sex is fun, boring) among a population that uses different types of drugs. In another study, Albarracín and colleagues (2000) found clients at STD clinics at high risk for HIV to be less likely to use condoms, believed using condoms decreased sexual pleasure, and that those who believed condoms decreased sexual pleasure were less likely to use condoms. This finding is consistent with the research findings reported here. Finally, similar to our approach, Newby and colleagues (2013) reviewed research that elicited condom use expectancies and combined the most commonly elicited responses to develop and test a scale. They also found an association between condom use expectancies and intentions to use condoms (Newby et al., 2013). The current study used an expectancy scale developed based on responses of the population of interest with significantly predictive findings.

Limitations

Several limitations of the present work should be noted. First, due to a small representation of certain minorities, ethnic groups were combined and compared to non-Hispanic whites. Although no significant differences were found between the combined ethnic group and non-Hispanic whites, it is possible that there may be differences between various ethnic groups as a result of cultural norms or influences. Future studies might consider replicating the current findings with ethnically diverse high-risk populations. Further, we did not explore gender or sexual orientation differences in condom use outcomes, which could provide further insight into condom use. Future studies might address gender specific condom use expectancies (Hogben et al., 2006). In addition, the analytic sample was reduced somewhat from the original sample due to the use of listwise deletion to handle missing data. Although this approach is reasonable when there is no need to assume data are not missing at random, alternative approaches may be preferred to improve statistical power and inference. Lastly, the present study was cross sectional and therefore causal inferences cannot be made. Future longitudinal studies should expand upon our findings and help in determining causation that could lead to improved interventions.

Nevertheless, the newly developed condom use expectancy scale can be used to increase understanding of one's expected outcomes of condom use and engagement in risky sexual behavior. Since unprotected sex is one of the chief routes among NIDUs contracting HIV (Khan et al., 2013; Mitchell & Latimer, 2009; Semple, Patterson, et al., 2004; Strathdee & Sherman, 2003), it is important to understand patterns of condom use among this high-risk population. Determination of conditions of condom use (e.g., positive condom use expectancies) can aid public health practitioners and researchers to better identify who is in need of HIV prevention methods, how to best target their needs, and create appropriate intervention components to decrease risky sexual behavior. Further, it is possible that

intervention components could be tailored based on condom use expectancies, which might, in turn, reduce program attrition (DiFranceisco et al., 1998).

Acknowledgements

Appendix A – Condom Use Expectancy Scale

Here is a list of some things that some people might experience when using a condom with a causal partner.

How likely is it that these things happen to you when you use a condom with a casual partner? Please check the box that best describes how using a condom would affect you. If you do not use condoms at all, you can still fill this out: just answer it according to what you think would happen to you if you did use a condom.

Check the box ☑						
When I use a condom with a causal partner ↓	**No Chance 1**	**Very Unlikely 2**	**Unlikely 3**	**Likely 4**	**Very Likely 5**	**Certainly 6**
1. Sex is good or it feels good	☐	☐	☐	☐	☐	☐
2. There is less feeling or a lack of sensation	☐	☐	☐	☐	☐	☐
3. Sex is safe	☐	☐	☐	☐	☐	☐
4. Sex is pleasant	☐	☐	☐	☐	☐	☐
5. I feel happy	☐	☐	☐	☐	☐	☐
6. Sex is exciting	☐	☐	☐	☐	☐	☐
7. Sex is fun	☐	☐	☐	☐	☐	☐
8. There is no commitment to the other person	☐	☐	☐	☐	☐	☐
9. Sex is uncomfortable	☐	☐	☐	☐	☐	☐
10. The condom would break	☐	☐	☐	☐	☐	☐
11. I feel protected from HIV and STDs	☐	☐	☐	☐	☐	☐
12. Sex is unpleasant	☐	☐	☐	☐	☐	☐
13. Sex is boring	☐	☐	☐	☐	☐	☐
14. Sex is pleasurable	☐	☐	☐	☐	☐	☐
15. Sex is not good or it feels bad	☐	☐	☐	☐	☐	☐
16. I feel less guilt	☐	☐	☐	☐	☐	☐
17. It decreases sexual pleasure	☐	☐	☐	☐	☐	☐

Check the box ☑						
When I use a condom with a causal partner ↓	**No Chance 1**	**Very Unlikely 2**	**Unlikely 3**	**Likely 4**	**Very Likely 5**	**Certainly 6**
18. It protects me (my partner) from getting pregnant	☐	☐	☐	☐	☐	☐

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Highlights

- Used self-generated condom use outcomes to generate a questionnaire

- Confirmed the 3-factor structure: positive, negative, and safe sex outcomes

- Positive condom use outcome expectancies predicted condom use

- Positive condom use outcome expectancies predicted intentions to use condoms

- Negative condom use outcome expectancies predicted non-use of condoms

Table 1

Unstandardized estimates for condom use outcome expectancy items with standard errors of measurement

Items	Estimate (*SE*)	Z Value
Positive Outcomes		
Sex is good or it feels good	1.048 (0.070)	14.90
Sex is pleasant	1.236 (0.059)	20.84
I feel happy	1.365 (0.060)	22.89
Sex is exciting	1.425 (0.057)	24.90
Sex is fun	1.400 (0.059)	23.87
Sex is pleasurable	1.207 (0.064)	18.83
Negative Outcomes		
Sex is uncomfortable	0.902 (0.072)	12.57
Sex is unpleasant	1.270 (0.062)	20.49
Sex is boring	1.193 (0.059)	20.14
Sex is not good or it feels bad	1.079 (0.061)	17.66
It decreases sexual pleasure	0.837 (0.076)	11.05
Safe Sex		
Sex if safe	1.002 (0.072)	14.00
I feel protected from HIV and STDs	1.155 (0.072)	15.94
It protects me (my partner) from getting pregnant	1.035 (0.073)	14.20

Note: All parameter estimates, *p* < 0.001. SE = Standard Error.

Table 2

Standardized condom use outcome expectancy scale factor loadings

Items	Factor 1	Factor 2	Factor 3
Positive Outcomes (alpha = 0.93)			
Sex is good or it feels good	0.664		
Sex is pleasant	0.842		
I feel happy	0.892		
Sex is exciting	0.936		
Sex is fun	0.914		
Sex is pleasurable	0.788		
Negative Outcomes (alpha = 0.825)			
Sex is uncomfortable		0.596	
Sex is unpleasant		0.855	
Sex is boring		0.845	
Sex is not good or it feels bad		0.772	
It decreases sexual pleasure		0.535	
Safe Sex (alpha = 0.76)			
Sex if safe			0.695
I feel protected from HIV and STDs			0.782
It protects me (my partner) from getting pregnant			0.704

Table 3

Multivariate Analyses for condom use when having sex in the past year.

Predictor Variable	Simultaneous Model ($N = 362$)			
	Beta	*B* (metric)	*F*	*p*
Gender	−0.100	−0.457	3.87	0.049
Positive outcome expectancies	0.226	0.067	15.74	< 0.001
Negative outcome expectancies	−0.121	−0.048	4.71	0.030
Safe sex expectancies	0.036	0.024	0.46	ns
Alcohol use past year	0.055	−0.208	1.25	ns
Sex while drunk in the past year	0.011	0.047	0.088	ns
White vs. other race/ethnicities	−0.057	0.020	0.04	ns

*Note. F*s are from a simultaneous model. $F(7, 354) = 6.32$, $p < 0.001$. Because of insufficient cell sizes of some ethnicities, these models include non-Hispanic white vs. all other ethnicities.

Table 4

Multivariate Analyses for intentions to use a condom.

Predictor Variable	Simultaneous Model (*N* = 370)			
	Beta	***B* (metric)**	***F***	***p***
Gender	0.119	0.917	5.63	0.018
Positive outcome expectancies	0.276	0.134	23.89	< 0.001
Negative outcome expectancies	−0.019	−0.013	0.12	ns
Safe sex expectancies	0.014	0.151	0.07	ns
Alcohol use past year	0.067	0.093	1.30	ns
Sex while drunk in the past year	0.079	0.233	1.89	ns
White vs. other race/ethnicities	−0.023	−0.138	0.20	ns

*Note. F*s are from a simultaneous model. $F(7, 362) = 6.03$, $p < 0.001$. Because of insufficient cell sizes of some ethnicities, these models include non-Hispanic white vs. all other ethnicities.

Table 5

Multivariate Analyses for intention to have multiple partners.

Predictor Variable	Simultaneous Model (N = 370)			
	Beta	**B (metric)**	**F**	**p**
Gender	−0.446	−3.645	91.72	< 0.001
Positive outcome expectancies	0.066	0.034	1.58	ns
Negative outcome expectancies	0.045	0.031	0.79	ns
Safe sex expectancies	−0.016	−0.018	0.10	ns
Alcohol use past year	0.035	0.052	0.42	ns
Sex while drunk in the past year	−0.102	−0.317	3.60	0.059
White vs. other race/ethnicities	−0.076	−0.489	2.65	ns

Note. Fs are from a simultaneous model. $F(7, 362) = 15.45$, $p < 0.001$. Because of insufficient cell sizes of some ethnicities, these models include non-Hispanic white vs. all other ethnicities.