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## Alcohol misuse, depressive symptoms, and HIV/STI risks of US Hispanic women

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### Abstract

**Objectives**—Alcohol misuse and depressive symptoms have been linked to HIV/STI risk, but studies have rarely included Hispanic women, who have over four times greater HIV incidence than white, non-Hispanic women. Understanding the connections among alcohol misuse, depressive symptoms, and HIV/STI risks may suggest ways to meet specific needs of Hispanic women. This study’s objective is to examine the relationships among alcohol misuse, depressive symptoms, and seven HIV/STI risk factors.

**Design**—Five hundred forty-eight US Hispanic women with intake data from a randomized trial were assessed for alcohol misuse (CAGE) and depressive symptoms (CES-D). GZLM and path analyses tested relationships between alcohol misuse or depressive symptoms and HIV/STI risk factors.

**Results**—Self-efficacy and condom use were not related to alcohol misuse or depressive symptoms, but only 15% of women reported consistent condom use. After controlling for demographics, women with alcohol misuse had significantly more perceived HIV/STI risk ( $OR = 2.15$ ) and better HIV/STI knowledge ( $\beta = -.54$ ); and women with depressive symptoms had significantly more perceived HIV/STI risk ( $OR = 1.76$ ) and worse HIV/STI knowledge ( $\beta = .37$ ).

**Conclusions**—Interventions to increase condom use for Hispanic women are needed, regardless of mental disorders. Working with Hispanic women with alcohol misuse or depressive symptoms presents a need (and opportunity) to address issues directly related to HIV/STI risk. Women’s health practitioners have an excellent opportunity to reach women by implementing regular screening programs in clinics that serve Hispanic women. For women with high depressive symptoms, poor HIV/STI knowledge should also be addressed. Future studies should test whether integrated and tailored risk reduction interventions affect these factors and lower HIV/STI risk for Hispanic women.

### Keywords

Alcohol; depressive symptoms; Hispanics; women; HIV

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## Introduction

HIV/AIDS is a health crisis for women in the US. A quarter of adults and adolescents living with HIV/AIDS in the US are women (Center for Disease Control and Prevention 2012a) and Hispanic women are disproportionately affected compared to non-Hispanic white women. In 2010, Hispanic women accounted for 15% of all newly HIV diagnosed women (CDC 2012a), an incidence four times the rate of white non-Hispanic women. In 2010, HIV was among the top 10 leading causes of death for Hispanic women aged 25–44 (Center for Disease Control and Prevention 2013). The rate of AIDS cases for Hispanic women is five times higher than white non-Hispanic women (The Henry J. Kaiser Family Foundation 2008). In addition to HIV infection, Hispanic women are vulnerable to other sexually transmitted infections (STI). In 2010, rates of gonorrhea and syphilis in Hispanic women were 2.2 times the rate of their white non-Hispanic counterparts; the rate of chlamydia was three times the rate of non-Hispanic Whites (Center for Disease Control and Prevention 2012b).

Preventing HIV/STI transmission and new HIV/STI cases is an important public health goal, and one way to reach that goal is to understand the correlates of HIV/STI risks of women. Gender inequality and roles and power dynamics are often overlooked with respect to HIV/STI risk (Amaro 1995). Self-in-relation theory (Miller 1986) describes how relationships often inform the identity and self-worth of women, which may then influence HIV/STI risk. Using this model of sexual risk behavior, HIV/STI risk in women has been linked to several emotional, physical, and environmental factors. In particular, there is evidence for a relationship between risk behaviors and psychological conditions, such as depression or alcohol misuse.

Depressive symptoms have been linked to a number of HIV/STI risks, including poor condom use, increased numbers of casual sexual relationships, and sex work (Windle 1997). Pratt et al. (2012) reported that women with depression had an earlier onset of sex (before age 15) and more sexual partners than women without depression. Recent estimates show between 39% and 45% of people at an HIV/STI clinic experienced psychological distress (Aral 2004; Wilson 2001). In one study of STI clinic patients, African-American individuals with depression were more likely to have sex for money or drugs, to have had sex with an intravenous drug user, to have sex when 'high' on alcohol or drugs, and to have a greater number of lifetime sex partners than were patients without depression (Hutton et al. 2004).

Alcohol misuse is also related to HIV/STI risk. Substantial evidence indicates that the initiation of alcohol/drug use among girls and women is linked to their male romantic/sexual partners (Amaro, Zuckerman, and Cabral 1989; Anglin, Hser, and McGlothlin 1987; Hser, Anglin, and McGlothlin 1987; Rosenbaum 1981; Worth and Rodriguez 1987). Male partners are often influential in women's initiation of alcohol or drug use. As substance use of women is more often in the context of romantic/sexual relationship than it is for men, it may be more difficult for women to stop or reduce use if their male partner is using, and/or to negotiate for sexual risk reduction behaviors with a male partner who has different opinions about condom use. Alcohol consumption alters cognitive functioning and may lower perception of risk, leading to poor decision-making and an increased likelihood of

unprotected sex in women (Norris, Masters, and Zawacki 2004). Leigh et al. (1994) found that in the general public, heavy drinking patterns were associated with being sexually active and having more than one sexual partner. White non-Hispanic women who drink heavily were more likely to have multiple sexual partners and were less likely to use a condom (Graves and Leigh 1995). In a sample of Hispanics, about half of whom were women between 18 and 39 years old, frequent episodes of intoxication were related to risky sexual behaviors, defined as having more than one partner and inconsistent condom use; and excessive consumption of alcohol and other drugs was independently associated with greater risk of HIV infection or transmission (Castilla et al. 1999). Further many women with alcohol problems have experienced sexual abuse, including rape and incest, in childhood or adulthood and this trauma may also affect women's power to negotiate sexual risk reduction behaviors (Benward and Densen-Gerber 1975; Schaefer and Evans 1987; Walker et al. 1992; Wilsnack 1984).

The literature shows evidence for links among depressive symptoms, alcohol misuse, and HIV/STI risk for women. Only one study examined these relationships in a sample of Hispanics, and did not examine women's risks specifically. None of these studies have examined links in a sample of Hispanic women, or tested whether any relationships were different for Hispanic women, if the sample had a subgroup of Hispanic women. Culture influences a range of perceptions and behaviors (Herbst et al. 2007), so it is likely that Hispanic women have unique profiles of risks compared to members of other cultural groups. Given the disproportionate risk for HIV/STI experience by Hispanic women, examining these links in a sample of Hispanic women is an important extension of the scientific literature. The purpose of this study was to expand the knowledge about relationships between depressive symptoms and alcohol misuse and HIV/STI risk among Hispanic women.

## Materials and methods

### Participants

Data for this study were collected from the initial assessment of 548 Hispanic women (of 871 recruited in South Florida) in a randomized trial of SEPA (*Salud, Educación, Prevención, y Autocuidado*/Health, Education, Prevention, and Self-care), a sexual health group intervention designed for Hispanic women (Peragallo et al. 2012). Characteristics of women in this sample are in Table 1. To be eligible, women had to be between the ages of 18 and 50 and report sexual activity within the three months prior to trial intake. Both the University of Miami and Florida Department of Health and Human Services Institutional Review Boards approved the study prior to recruitment. Participants were recruited from (1) a community-based social service (e.g. English classes, childcare, job development and placement, and health education) organization for Hispanics, (2) an urban Florida Department of Health site, (3) from flyers posted in the community, and (4) public service messages delivered via mass media. Women received \$50 for participation in the initial assessment.

## Measures

All measures were available in Spanish and English and had been used with Hispanic samples in past research. Assessments were conducted between January 2008 and April 2009. Questions were asked via face-to-face interview in English or Spanish and assessors documented participant responses on a computer using an internet-based software system (eVelos). Anchor sheets with each item and response choices were provided to participants so they could read along with assessors. All assessors were bilingual in English and Spanish.

### Alcohol misuse

The presence of alcohol misuse was determined using the CAGE alcohol screening measure (Ewing 1984). CAGE is an acronym for *Cut down, Annoyed, Guilty, Eye opener*. Women could respond with *yes* or *no* to four questions based on their lifetime experiences, e.g. *Have you ever felt Guilty about your drinking?* Low-risk drinking was defined as responding negatively to all four questions, high-risk drinking was defined as responding affirmatively to any of the four questions. Women were categorized in three levels: 0 = no drinking reported, 1 = low-risk drinking, 2 = high-risk drinking (alcohol misuse). For analysis, two dummy-coded variables were used with the no drinking as the comparison group.

### Depressive symptoms

The Center for Epidemiologic Studies Scale (CES-D) (Radloff 1977) was administered to assess depressive symptoms. This scale has 20 questions asking participants to report the frequency (i.e. number of days in the past week) of experiencing depressive symptoms (e.g. I had crying spells, I felt sad). This scale is widely used in population-based and community studies and has been translated and validated in Spanish (Roberts 1980). The CES-D had very good reliability in this study (Cronbach's  $\alpha = .94$ ). Responses to these questions are added for a total score ranging from 0 to 40 points. Scores of 16 and above indicate a likelihood of clinical depression (1 = high depressive symptoms, 0 = low depressive symptoms).

### HIV/STI risk variables

**Consistent condom use**—Participants reported frequency of condom use during vaginal sex with their most recent partner on a measure developed to assess sexual risk in the context of relationships called the Partner Table (Gonzalez-Guarda et al. 2008). The Partner Table gathered information regarding the characteristics and sexual behaviors of the participants' past five intimate relationships. Consistent condom use was defined as reporting 'always' using condoms during vaginal sex (1 = *always*, 0 = *sometimes or never*). Two women did not report whether they used condoms.

**Multiple sexual partners**—Participants reported the number of male sexual partners in the last three months on the Partner Table (Gonzalez-Guarda et al. 2008). Multiple sexual partners was defined as reporting more than one partner in the past three months (1 = *more than 1 partner*, 0 = *only 1 partner*).

*Perceived HIV/STI Risk* was assessed with a single item (What are the chances of getting HIV/AIDS from what you have done during the past 3 months?) used in previous research

with Hispanic women (Cianelli 2003). Women could respond on a 4-point scale, 0 = very low to 3 = very high. The variable was dichotomized, 0 = *low*, 1–3 = *high*, to account for extreme skew in the responses.

*Partner Communication* was measured with items from the Communication with Partner scale used in the National AIDS Behavioral Survey (Catania et al. 1995). This scale has 10 items about whether (*yes* or *no*) the respondent discussed topics related to HIV concerns (e.g. Asked your partner(s) how he/she felt about using condoms before you had intercourse) with their primary sexual partner (Cronbach's  $\alpha = .86$ ). To deal with extreme skew, a positive response to any of these behaviors was coded as 1; none was coded as 0. Six women did not report about their level of partner communication.

**Risky partner behavior**—Participants reported the number of male sexual partners in the last three months. Partner risk was assessed using items on the Partner Table Author 2008 that asked participants to report whether, to the best of their knowledge, their partner was ever drunk or high (during and not during sexual intercourse); ever injected drugs; and had sex with IV drug users, men, or commercial sex workers. This scale had good reliability (Cronbach's  $\alpha = .78$ ). All eight items were summed, so the scale could range from 0 to 8. A negative binomial distribution provided the best fit to the risky partner behavior data due to negative skew.

*HIV/STI Knowledge* was assessed with a 12-item scale containing questions about HIV transmission, prevention, and consequences (e.g. Condoms cause men physical pain). These questions were adapted from a tool used in a previous study of HIV risk of women (Heckman et al. 1995). Items were summed to a total score that was the number of items wrong, so lower numbers meant greater knowledge of HIV. Further, negative coefficients indicate better HIV/STI knowledge. A Poisson distribution provided the best fit to the HIV Knowledge data due to negative skew.

**Self-efficacy for condom use**—A 7-item scale of the women's confidence in their ability to accomplish HIV prevention behaviors (e.g. It would be easy to make my partner(s) use condoms). This scale was adapted from a previous study of Hispanic women (Cianelli 2003). Each item was a 4-point Likert scale ranging from *strongly disagree* to *strongly disagree*. Responses were averaged for a summary score with a theoretical range from one to four (Cronbach's  $\alpha = .68$ ). Self-efficacy was approximately normally distributed.

## Analysis plan

The Generalized Linear Model (GZLM) module in SPSS 19 was used for all analyses. GZLM is an extension of the generalized linear model that combines aspects of ANOVA and regression models. We chose to use GZLM because it allowed us to run a series of similar analyses with dependent variables with a number of distributions (e.g. normal, binary). The relationships between the independent variables (alcohol misuse and depressive symptoms) and each dependent variable (HIV/STI risk variables) were examined in separate analyses for each dependent variable. Pairwise comparisons with a sequential Bonferroni correction were used with alcohol misuse because the independent variable had three levels. Path analysis is an extension of regression models that allows multiple independent and

dependent variables to be included in the model at the same time. We chose to use a multivariate path analysis in Mplus 7.4 (Muthén and Muthén 2012) to include the variables, including demographic characteristics as covariates, which had significant results in the univariate analyses to simultaneously predict the HIV/STI risk outcome variables.

## Results

### Characteristics of women

Of the 548 women in the study, 96 (18%) reported no drinking, 347 (63%) had low-risk drinking, and 105 (19%) had high-risk drinking; and 292 (53%) were below the cutoff for likely clinical depression and 256 (47%) were above the cutoff for likely clinical depression. As shown in Table 1, women with high-risk drinking were significantly less likely to be married or living with a romantic partner,  $p < .001$ , have children  $p = .009$ , but on average spent more time living in the US,  $p < .001$  than women with no drinking or low-risk drinking. Women with depressive symptoms were significantly less likely to have a high school education,  $p < .001$ , or be married/living with a partner,  $p < .001$ , and on average spent more time living in the US,  $p = .034$ , and had fewer years of education,  $p < .001$ , compared to women without depressive symptoms.

### HIV-STI risk variables

Table 2 shows the levels of each outcome variable and significance test results for each GZLM analysis. Alcohol misuse was positively linked to multiple sexual partners, higher perceived HIV/STI risk, risky partner behavior, and lower HIV/STI knowledge. Women with high-risk drinking were significantly more likely to have multiple partners than those in the no drinking group ( $OR = 4.31$ ,  $p = .042$ ), but not significantly more than the low-risk drinking group ( $OR = 1.56$ ,  $p = .063$ ). There were no differences between the low-risk and no drinking groups ( $p = .431$ ). Women with high-risk drinking had significantly more risky partners than those in the no drinking group ( $p < .001$ ) and the low-risk drinking group ( $p < .001$ ); there were no differences between the low-risk and no drinking groups ( $p = .244$ ). Women with high depressive symptoms were more likely to have multiple sexual partners ( $OR = 2.44$ ), higher perceived HIV/STI risk, greater partner communication, more risky partner behavior, and greater HIV/STI knowledge.

### Multivariate analysis

Only variables that were significantly linked to risky alcohol use and/or depressive symptoms were used in this analysis. Five outcome variables, multiple sexual partners, perceived HIV/STI risk, partner communication, risky partner behavior, and HIV/STI knowledge were used in this analysis. Four covariates, living with a partner, having children, years living in the US, and years of education, were used. The dichotomous education was not used because years of education were included. The results are shown in Table 3. After controlling for the demographic characteristics of women, alcohol misuse and depressive symptoms were no longer related to multiple sexual partners, partner communication, or risky partner behavior. Controlling for demographics, women with high-risk drinking had significantly more perceived HIV/STI risk,  $B = 0.76$ ,  $SE = 0.37$ ,  $p = .040$ ,  $OR = 2.15$ , and better HIV/STI knowledge,  $B = -0.29$ ,  $SE = 0.10$ ,  $p = .005$ ,  $\beta = -.54$ , than women who did



not drink. Controlling for demographics, women with low-risk drinking had better HIV/STI knowledge,  $B = -0.24$ ,  $SE = 0.08$ ,  $p = .02$ ,  $\beta = -.55$ , than women who did not drink. Controlling for demographics, women with high depressive symptoms had significantly more perceived HIV/STI risk,  $B = 0.56$ ,  $SE = 0.21$ ,  $p = .017$ ,  $OR = 1.76$ , and worse HIV/STI knowledge,  $B = 0.16$ ,  $SE = 0.06$ ,  $p = .015$ ,  $\beta = .37$ , than women with low depressive symptoms.

## Discussion

This study is one of the first to examine links between depressive symptoms and alcohol misuse and HIV/STI risk profiles for Hispanic women. The relationships between alcohol misuse and depressive symptoms to multiple sexual partners, poor partner communication, and risky partner behavior, were not statistically significant after controlling for characteristics of women. This suggests that these links may be better explained by differences in demographics, but the results of the univariate analyses suggest that these variables may be important to assess in mental health treatment settings. After controlling for the demographics, women with depressive symptoms had poor knowledge about HIV/STI.

The results of this study also suggested some strengths of the women with alcohol misuse or high depressive symptoms with respect to HIV/STI prevention. The participants in this study with alcohol misuse had higher perceived risk for HIV/STI, and women with high depressive symptoms had higher perceived HIV/STI risk. Working with Hispanic women with alcohol misuse or depressive symptoms presents a need and an opportunity to address these HIV/STI risk and protective factors. Future studies should test whether integrated and tailored risk reduction/prevention interventions influences both the predisposing and protective factors and thus lower overall HIV/STI risk for Hispanic women.

The American Psychological Association (2014) recommends integrated care, stating ‘any targeted HIV prevention should include both sexual and substance abuse risk reduction approaches that factor in mental health treatment’. Results of this study suggest that the reverse is also important, that HIV/STI care should also be integrated into alcohol abuse or mental health intervention programs. Recent studies have demonstrated that substance abuse, mental health, and HIV/STI, as well as intimate partner violence, comprise a syndemic, or group of multiple interacting health conditions, in Hispanic women (e.g. Gonzalez-Guarda et al. 2008). Lower socioeconomic status increases the risk for substance use, depression, and HIV/STI risk. Hispanic women have unique cultural characteristics that may be related, either positively or negatively, to these conditions. For example, higher acculturation to the US may be linked to higher sexual partners, but also with greater condom use. Familism focuses on family unity, and the belief that the family is an interdependent, cooperative unit (Schwartz et al. 2010). In theory, greater familism in Hispanic women will protect against sexual risk taking and consequently increase protection against HIV/STI. However, traditional gender roles may limit women’s ability to use condoms or to converse about HIV/STI risks with their partners. Prevention programs should be compatible with cultural values and norms of the patient group, and be designed

or adapted from existing programs with consideration of the unique cultural characteristics of Hispanic women.

The links between HIV/STI risks and depressive symptoms are particularly concerning for Hispanic women. Women are 70% more likely than men to experience depression during their lifetime (Kessler et al. 2003). Hispanic women have depression at a roughly twice the rate of Hispanic men (National Alliance on Mental Illness 2009), and are more likely to experience depression than white, non-Hispanic or African American women (National Alliance on Mental Illness 2009). The findings in this study of a community sample of well-educated women, in which nearly half reported symptoms of depression that meet the cutoff for likely clinical depression speaks to the prevalence of depression among Hispanic women.

In this sample, just under a fifth (19%) had high-risk drinking, consistent with national estimates (Ramisetty-Mikler, Caetano, and Rodriguez 2010) for binge drinking of Hispanic women from Cuba (22%) or South/Central America (27%). Although there are multiple determinants of alcohol behavior, it is important to note that drinking norms have changed in recent years for Hispanic women living in the US. Historically, Hispanic women only drank during special occasions, but as Hispanic women have become acculturated to American life, evidence has shown young Hispanic women drinking as much or more than young Hispanic men (National Institute on Alcohol Abuse and Alcoholism 2013). Alcohol abuse among Hispanics was the highest (40%) compared to other minority groups (SAMSHA 2011). Although Hispanic men are still more likely to abuse alcohol than Hispanic women (Canino 1994), it is an important factor to consider when examining risky sexual behaviors of Hispanic women who may have high-risk partners.

Other HIV/STI risk variables tested, condom use and self-efficacy for condom use, were not associated with depressive symptoms or alcohol misuse in univariate analyses. Consistent condom use, the variable that would be most directly related to HIV/STI risk was not linked to alcohol misuse or depressive symptoms, but only 15% of women in this sample reported consistent condom use, which is slightly below the national average (18%) for Hispanic women in the US (Jones, Mosher, and Daniels 2012). Interventions to increase condom use that address this issue in culturally appropriate ways for Hispanic women are needed, regardless of mental health symptoms.

The results about condom use are relevant to considerations of self in relation theory. Women in more committed relationships (i.e. married or living with partner and with just one sexual partner) were less likely to have clinical depressive symptoms or high-risk drinking; and mothers were less likely to have high-risk drinking. There also appeared to be differences between the women with high depressive symptoms and high-risk drinking, i.e. the depressed women seem to have greater problems with risky partners and attempts at dealing with HIV risk (e.g. more partner communication about HIV concerns). This suggested that the women may know more about HIV than their peers, but may not feel confident that they can influence risky behaviors of their partners, which may contribute to their depressive symptoms. These results highlight the importance of relationships to understand the context and experience of women.



Results of this study should be interpreted in light of the limitations of this dataset. Variables were measured during a single assessment point, which precludes causal inference. The measures in this study were self-report, which may have been biased (e.g. poor recall, social desirability). However, it should be noted that the self-report measures were similar to frequently used screening tools in health clinics, and give some indication of the type of HIV/STI risks that might be associated with positive screens. Future studies should include corroborating data (e.g. biological assays) whenever possible. The sample was collected for a randomized trial of an intervention in South Florida, and may not be representative of all Hispanic women. We recommend replicating this study with a population-based sample of Hispanic women in the US.

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**Key messages**

1. Self-efficacy, and condom use were not related to alcohol misuse or depressive symptoms, but only 15% of women reported consistent condom use.
2. After controlling for women's demographics, women with alcohol misuse had significantly higher perceived HIV/STI risk, and better HIV/STI knowledge.
3. After controlling for women's characteristics, women with depressive symptoms had significantly greater perceived HIV/STI risk and worse HIV/STI knowledge.

**Table 1**

Characteristics of women in study (*N* = 548).

Characteristics	Alcohol misuse						Depressive symptoms					
	No drinking		Low-risk drinking		High-risk drinking		Low		High		<i>p</i>	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%		
High school education	69	73%	264	76%	71	68%	234	80%	170	67%	<.001	
Employed	22	23%	121	35%	37	35%	100	34%	80	31%	.456	
Married/living with partner	72	75%	253	73%	55	52%	232	79%	148	58%	<.001	
Have children	84	88%	271	79%	73	70%	232	80%	196	77%	.414	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>p</i>	
Age, years	38.70	8.20	36.80	8.49	36.50	8.85	36.78	8.11	37.41	8.98	0.386	
Time living in the US, years	10.88	8.69	10.50	9.52	14.94	13.26	10.54	9.62	12.41	11.02	<b>0.034</b>	
Education, years	13.31	3.55	13.46	3.36	13.10	3.67	13.90	3.26	12.41	11.02	<.001	
Number of children	1.84	1.31	1.59	1.31	1.45	1.52	1.60	1.31	1.61	1.40	0.918	

Note: **Bold** indicates statistically significant difference between groups.

**Table 2**  
Prevalence and levels of HIV/STI risk factors for alcohol misuse and depressive symptoms.

HIV/STI risk variables	Alcohol misuse						Depressive symptoms					
	No drinking		Low-risk drinking		High-risk drinking		Low		High		p	
	N	%	N	%	N	%	N	%	N	%		
Consistent condom use	16	17%	53	15%	15	14%	.898	46	16%	38	15%	.793
Multiple sexual partners	3	3%	16	5%	14	13%	<b>.012</b>	10	3%	23	9%	<b>.024</b>
Perceived HIV/STI risk	14	15%	60	17%	36	34%	<b>.002</b>	41	14%	69	27%	<b>.001</b>
Partner communication	60	63%	221	65%	95	90%	.199	176	61%	184	73%	<b>.008</b>
	M	SD	M	SD	M	SD	p	M	SD	M	SD	p
Risky partner behavior	0.65	1.08	0.77	1.08	1.69	1.56	< <b>.001</b>	0.72	1.05	1.16	1.4	<b>.001</b>
HIV/STI knowledge	3.10	1.77	2.39	1.86	2.18	1.67	< <b>.001</b>	2.32	1.7	2.66	1.96	<b>.005</b>
Self-efficacy for condom use	2.94	0.47	2.91	0.41	2.89	0.45	.771	2.93	0.42	2.89	0.44	.243

Notes: **Bold** indicates statistically significant difference between groups. The middle columns show the number (%) or mean (SD) of HIV/STI risk variables for women in each of the three possible levels of the alcohol misuse variable. The right columns show the number (%) or mean (SD) of HIV/STI risk variables for women in each of the two possible levels of the depressive symptoms variable.



Table 3

Results of multivariate path analysis with HIV/STI risk factors, characteristics of women, alcohol use, and depressive symptoms.

Predictors	Multiple sexual partners		Perceived HIV/STI risk		Partner communication		Risky partner behavior		HIV/STI knowledge	
	B	SE	B	SE	B	SE	B	SE	B	SE
Living with partner	<b>-2.25</b> <sup>***</sup>	0.48	<b>-0.74</b> <sup>**</sup>	0.24	<b>-1.14</b> <sup>***</sup>	0.25	1.02	0.99	0.11	0.06
Have children	0.18	0.46	<b>-0.64</b> <sup>*</sup>	0.26	-0.34	0.25	-0.88	0.84	<b>0.18</b> <sup>*</sup>	0.07
Time in the US, years	0.02	0.02	0.01	0.01	-0.02	0.01	0.01	0.03	<b>-0.01</b> <sup>***</sup>	0.00
Education, years	-0.02	0.06	0.00	0.03	-0.05	0.03	-0.04	0.11	<b>-0.03</b> <sup>**</sup>	0.01
High-risk drinking	1.10	0.69	<b>0.76</b> <sup>*</sup>	0.37	0.30	0.33	0.56	1.09	<b>-0.29</b> <sup>**</sup>	0.09
Low-risk drinking	0.43	0.66	0.15	0.33	0.02	0.25	-1.21	1.00	<b>-0.24</b> <sup>**</sup>	0.07
High depressive symptoms	0.38	0.42	<b>0.56</b> <sup>*</sup>	0.24	0.28	0.20	1.01	0.82	<b>0.16</b> <sup>*</sup>	0.06

Notes: This analysis only included variables that were statistically significant in univariate analyses. **Bold** indicates statistically significant coefficients.

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .