Title

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Perceived Risk for Sexually Transmitted Infections Aligns with Sexual Risk Behavior with the Exception of Condom Nonuse: Data from a Nonclinical Sample of Sexually Active Young Adult Women

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SUMMARY

In a nonclinical sample of sexually active young women, the expected positive monotonic relationship was found between perceived risk for an STI and sexual risk behavior except for condom use.

ABSTRACT

Background Research on the relationship between sexual risk behavior and perceived risk for contracting a sexually transmitted infection (STI) has yielded mixed results. The objective of this study is to investigate the extent to which three measures of perceived risk accurately reflect five sexual risk behaviors in a sample of healthy, sexually active young adult women. A positive monotonic relationship between sexual risk behavior and perceived risk for STIs is hypothesized.

Methods A sample of 1192 U.S. Marine Corps females on their first duty assignment 10-11 months (on average) after graduation from recruit training (RT) answered a self-administered paper-and-pencil questionnaire as part of a larger study evaluating an intervention to prevent STIs and unintended pregnancy that was administered during RT.

Results All but one of the 15 bivariate associations between sexual risk behavior and perceived risk for STIs was statistically significant. The expected positive monotonic relationship was observed except for condom use. Women who never used condoms during intercourse reported lower levels of perceived risk than occasional users and, in some subgroups, consistent condom users. Multivariate analyses further explored the relationship between condom use and perceived risk.

Conclusions The results suggest that interventions directed at raising awareness of susceptibility to STIs should emphasize how the individual's own behavior puts them at risk, regardless of situation or context.

Keywords: perceived risk, sexual risk behavior, condom use, women

Surveillance data for 2010 from the Centers for Disease Control and Prevention show that incidence of chlamydia and gonorrhea continue to increase in the U.S. with the highest rates found among young women ages 15-24.[1] This is troubling because the health consequences of untreated infections can include pelvic inflammatory disease, sterility, and cervical cancer as well as increased susceptibility to HIV infection. Other than abstinence, always using a condom during intercourse, sometimes in combination with other risk reduction strategies (e.g., reducing the number of sex partners preferably to monogamy, avoiding risky sex partners, removing the influence of alcohol or drugs on sexual decision making), offers the best protection against acquisition of a sexually transmitted infection (STI).[2]

The first step in getting young women to adopt such protective behaviors is to make them aware of their vulnerability to STIs. Perceived vulnerability or risk is an explicit core concept of both the Health Belief Model[3] (perceived susceptibility) and the AIDS Risk Reduction Model[4] (labeling), and is an implicit facet of the motivation component in the Information-Motivation-Behavioral Skills Model.[5] As applied to STI prevention in risk-taking and help-seeking populations, these models of health behavior change call for interventions that increase levels of perceived risk for contracting an STI. Efforts in this area are complicated by two well-known phenomena affecting judgments of susceptibility to threats in adolescents and young adults: 1) *optimistic bias* in which people perceive themselves to be less vulnerable to a threat than other people like themselves,[6] and 2) *perceived invulnerability* in which people perceive themselves to be immune from harm.[7] Recent international data from population- based representative samples suggest these two cognitive mechanisms are found widely among adolescents and young adults.[8-10]

Nevertheless, to the extent that people are rational actors, in a general population one would expect to observe alignment between objective risk and perceived risk, i.e., more frequent sexual risk behavior engenders higher levels of perceived risk for STIs. The data on this point are decidedly mixed. Research on school-based[11-13] and clinic-based[14,15] samples of adolescents failed to find an association between perceived susceptibility of acquiring an STI and either condom use or number of sex partners. However, Rosengard et al.[16] found that greater perceived risk of contracting an STI was significantly associated with an increased likelihood of delay in onset of intercourse with a new boyfriend among STI clinic patients. Tangentially, Weisman et al.[17] found in a family planning clinic sample that perceived risk of acquiring AIDS in the next 5 years was associated with number of male sex partners (but not with condom use), and Crosby et al.[18] observed in a clinic-based sample of African American adolescent females that having unprotected vaginal sex in the past 30 days was significantly associated with greater HIV worry.

Regarding research on young adult women, Weinstein found substantial correlations between perceived risk and personality, family history, and physical attributes but not with behavior patterns.[19] However, in a study of women graduating from Marine Corps recruit training, participants who were asked to review their recent sexual behavior expressed greater perceived vulnerability to HIV than women who were not asked to review their behavior.[20] Similarly, Roberts and Kennedy found in a convenience sample of college women a significant positive correlation between perceived risk for an STI and overall sexual risk behavior (although not condom use specifically).[21] The Leval et al. study of a national cross-section of 18-30 year olds in Sweden observed a significant association between perceived risk and condom use in women (but not in men).[9]

It is possible that variance in perceived susceptibility for STIs is too limited in clinic-based samples to allow relationships with sexual risk behavior to manifest. In addition, measures of both behavioral risk and perceived risk vary markedly across studies, with some of the latter conflating worry about HIV (and its associated burdens of social stigma and threat to mortality) with worry about prevalent STIs. The current study avoids both the variance and measurement issues by analyzing the relationship between five different measures of sexual risk behavior and three different measures of perceived risk for STIs in a sample of female Marines. While not a representative sample of young women, it is an ethnically diverse group of healthy, sexually active young adult females from a non-clinical setting who were not seeking health care. Weinstein previously observed that absolute and comparative risk judgments tend to be correlated but not redundant.[19] We have included both types of perceived risk measures plus one of behavioral risk in order to evaluate whether the relationship between risk and perceived risk varies by the type of measure used to assess perceived risk. In general, our expectation is that a positive monotonic relationship will be observed between sexual risk behaviors and perceived risk for STIs, i.e., that as sexual risk behavior increases perceived risk for STIs will also increase.

METHODS

Participants and Procedure

Participants were recruited for a group randomized controlled trial to evaluate a cognitive-behavioral intervention designed to prevent unintended pregnancies and STIs. The procedures for the study have been detailed elsewhere.[22,23] Briefly, all women enrolled in United States Marine Corps recruit training (RT) at Parris Island, South Carolina between June 1999 and June 2000 were asked by trained civilian research assistants (outside the presence of other military

personnel) to participate voluntarily in the study. At the time of data collection, normal progress

for female Marine Corps recruits was 13 weeks of RT (when the intervention was administered

as four 2-hour group sessions that took place in weeks 1, 2, 4, and 12) followed by 10 days of

leave after graduation, then 3 weeks of follow-on training before proceeding to their designated

service schools. Study assessments (self-administered paper-and-pencil questionnaires plus

testing of self-collected biological specimens for STI's and pregnancy) took place during the first

week of RT just prior to administration of the intervention (T1), the last day of follow-on

training which is approximately 4½ weeks after graduation from RT and 5½ weeks after

completion of the intervention (T2), and during the first duty assignment, on average 10-11

months after graduation from RT (T3). Participants received no incentives other than a $5.00

phone card or a small gift bag of cosmetics upon completion of the final assessment. All

procedures were approved by institutional review boards at the University of California, San

Francisco and Naval Hospital Beaufort in Beaufort, SC.

Measures

Data are from the questionnaire at the last study assessment (T3, 10-11 months after graduation

from RT) unless otherwise specified. The demographic characteristics obtained include age (at

study enrollment), race/ethnicity, education, and marital status. Two scales assessed knowledge

about STIs, a 14-item transmission knowledge scale and a 12-item outcome knowledge scale.

Knowledge scale scores are the number of correct answers. Questions regarding behavior asked

about the period since graduation from RT. Sexual risk behaviors included number of sex

partners, number of casual sex partners, partner risk (derived from two questions asking whether

any sex partners were having sex with someone else or had an STI), and how frequently the

respondent had sex after consuming alcohol or a recreational drug (5-point Likert-type item ranging from "always" to "never"). Participants were also asked how often they used a condom when having sex. Responses were made on a scale ranging from 0% to 100% demarcated in 10% increments (although some women wrote in 99%). Other health behaviors assessed were whether or not the respondent engaged in oral sex, whether they smoked cigarettes, their alcohol use (abstained vs. non-heavy drinking vs. heavy drinking, defined as having 5 or more drinks at a sitting), and disordered eating behavior. The latter was composed of 5 items asking whether or not the participant had skipped 3 or more meals in a week, limited food intake, taken pills or laxatives, or vomited to lose weight, and if they had eaten so much in a short time that they lost control.[24] Whether or not the respondent had an STI diagnosis since graduating RT was based on biological testing results at the second assessment and self-reports from the questionnaires at both the second and third assessments.

Three measures of perceived risk for STIs were obtained. Participants were first asked, "What do you think your chances are of getting an STI during your next six months in the Corps?" Responses were on a 5-point scale: no chance, very low chance, low chance, moderate chance, and high chance. The next question asked about "the chance that a typical woman in your section will get an STI" using the same response set. *Perceived relative risk* was computed by subtracting the "typical woman" item score from the "your chances" item score. Next, respondents were asked, "With regard to your chances of getting an STI, would you say your behavior is very safe, fairly safe, somewhat risky, or very risky?" Responses to this *perceived behavioral risk* item were dichotomized into risky versus safe. Subsequently, participants were asked to respond to, "I think my chance of getting an STI during my next six months in the Corps is about…." The response set for *perceived acquisition risk* was presented on a scale

demarcated 0%, 1%, 5%, 10%, and then in 10% intervals through 100%. Perceived risk was

assessed <u>before</u> the review of health behavior.

Statistical Analysis

A constant was added to the perceived relative risk score to create a range of 1-9 with 5 as the

break-even point, i.e., scores above 5 mean the respondent perceives their own risk to be higher

than the risk of other women like them while scores below 5 indicate they perceive their own

risk to be lower. The distribution for relative risk is approximately normal. The distribution of

perceived acquisition risk, on the other hand, is severely positively skewed. Bivariate and

multivariate relationships between perceived risk and sexual risk behavior were assessed using

regression analysis (linear regression for relative risk, logistic regression for behavioral risk, and

negative binomial regression for acquisition risk).

Multivariate models of perceived risk were constructed by entering all possible correlates

(sexual risk behaviors, other health behaviors, STI diagnosis, the two STI knowledge scales, and

demographic characteristics) plus a measure of latency (number of months since graduating RT)

and an indicator of intervention condition into the regression model and then using a backward

elimination process to delete nonsignificant ($p > .05$) correlates. The remaining "main effects"

model was then used to test for each possible two-way interaction between condom use (since

that was the focus of the multivariate analyses) and every other correlate one at a time to avoid

collinearity issues. Only statistically significant ($p < .05$) interactions and correlates were

retained in a final model. All three final multivariate models were assessed to insure they met

their underlying statistical assumptions. All analyses were performed using Stata Release 12.[25]

RESULTS

Of the 2,288 female recruits approached for enrollment in the study 2,157 (94.3%) agreed to participate. However, 368 were discharged prior to the third assessment, 408 did not participate, and 39 contributed biological specimens but did not complete a questionnaire. Of the remaining 1,342 participants, the 1,192 (88.8%) reporting sexual activity since graduating RT constitute the sample of interest.

The sample ranged in age from 17 to 31 (mean=19.01, s.d.=1.98; age 17 8.8%, age 18 47.5%, age 19 20.3%, age 20 9.1%, age 21+ 14.2%) . All recruits must have a high school diploma or equivalent, but 23.7% also had vocational/technical training or some college coursework. About half (54.7%) of the recruits were white, 23% were Hispanic, 15% were African American, and 7.3% were from other or multiple racial/ethnic groups. A fifth of the respondents (20.1%) were married at the time of the third assessment.

About 1 in every 7 women (13.7%) reported heavy drinking (5+ drinks on the same occasion), 31.8% smoked cigarettes, and 36.5% disclosed a serious eating disorder behavior (binging, or using pills or laxatives or vomiting to lose weight). More than two-thirds of the women (69.7%) reported having oral sex, and 14.6% had been diagnosed with an STI since graduating from RT. Prevalence of sexual risk behavior was high as 82.8% were not consistent condom users, 62.6% had more than one sex partner, 47.6% had a causal sex partner, 70.6% had a risky sex partner, and 66.2% reported having sex after alcohol or substance use. STI knowledge was moderate with the sample averaging over 70% correct answers on both transmission knowledge (mean=10.33, s.d.=2.16) and outcome knowledge (mean=8.52, s.d.=2.43).

Point estimates for the three measures of perceived risk and their bivariate relationships with each of five sexual risk behaviors are presented in Table 1. Of the 15 bivariate tests only the relationship between sex after alcohol/substance use and relative risk failed to achieve statistical significance. The expected monotonic increase obtained for four of the risk behaviors but not for condom use. Generally speaking, perceived risk does increase as risk behavior increases (condom use declines), but then perceived risk drops significantly for condom nonusers. The nonuser group (0% condom use) is statistically indistinguishable from the consistent users (100% condom use) on acquisition risk and relative risk. Post hoc comparisons reveal that for all three variables the 0% condom use group has significantly lower perceived risk for STIs than the 10-40% condom use group.

Given this unexpected result, multivariate analyses were pursued to determine if a) the results for condom use persisted after adjusting for other risk behaviors and correlates, and b) if the results obtained among all groups of young women (i.e., are there effect moderators). Since sex partners and casual sex partners are highly correlated (r=.92), the former was not included in the regression models. Based on post-hoc comparisons, all risk behaviors were reduced to three categories to increase power and thus facilitate the search for interactions.

The final model for perceived acquisition risk (Table 2) includes a modest effect for latency, multiple demographic characteristics, STI diagnosis, and all four sexual risk behaviors including an interaction between transmission knowledge and condom use. In the lowest knowledge group perceived acquisition risk is higher as condom use declines, although condom nonusers do not exceed occasional users. However, as knowledge increases, the drop off in acquisition risk from occasional condom use to nonuse steepens to the point that in the two

highest knowledge groups perceived risk among 0% condom users is significantly <u>lower</u> than in 100% condom users.

The final model for perceived relative risk (Table 3) does not contain latency or sex after alcohol/substance use, and the variable that significantly interacts with condom use is oral sex. Among women who did not engage in oral sex, perceived relative risk is significantly greater among occasional condom users than in either consistent condom users or condom nonusers, essentially matching the bivariate analysis results. Among participants who did report oral sex since graduating RT, there was no relationship between condom use and relative risk.

The final model for perceived behavioral risk (Table 4) contains only the four risk behaviors, although the condom use effect once again is moderated by oral sex. In this case however, among women who did not have oral sex, occasional condom users were significantly more likely than consistent condom users to perceive their behavior as risky for STIs and condom nonusers were significantly more likely than occasional users, thus matching the initial hypothesis of a positive monotonic relationship between risk behavior and perceived risk. Among women who did engage in oral sex, both occasional condom users and nonusers were significantly more likely than consistent users to perceive their behavior as risky for STIs, but the latter two groups were statistically indistinguishable from each other.

DISCUSSION

Consistent with prior research, this sample of female Marines manifested an optimistic bias[6] (average perceived relative risk was well below the break-even point) and generally perceived themselves as invulnerable to STIs[7] (average self-reported chance of acquisition is 6%, under 11% of the sample labeled their own behavior as risky despite the vast majority of women

reporting risk behavior). Nevertheless, perceived risk did increase as risk behavior increased, except in the case of condom use. Specifically, condom nonusers reported unexpectedly low levels of perceived risk, in some cases lower than that of consistent condom users. This does not appear to reflect condom disinhibition[26,27] because respondents readily perceive the validity of other behavioral risks, and occasional condom users consistently evidenced higher levels of perceived risk than consistent condom users. Only condom nonusers deviate from the expected pattern. The absence of moderation by demographic characteristics (e.g., age, race/ethnicity, education) denotes that this phenomenon is not restricted to any specific subgroup of young women. Nor is this pattern of results a function of a participant's relationship situation as the condom use-perceived risk relationship is not moderated by either number of sex partners or marital status. The same results were observed regardless of whether the respondent was married or unmarried, or if she had only one sex partner or multiple sex partners (results not shown). However, for perceived relative risk and perceived behavioral risk the relationship is moderated by whether or not respondents reported having oral sex. Research suggests that some women engage in oral sex instead of intercourse as a behavioral strategy to avoid exposure to STIs (as well as HIV and unintended pregnancy) in the same manner that some gay men use serosorting and strategic positioning to decrease their risk of HIV exposure while still engaging in unprotected sex .[28]

Also of note is that the multivariate model for perceived acquisition risk includes demographic and contextual factors as well as sexual risk behaviors, which suggests that responses to this type of item involve a complex judgment that balances issues representing multiple domains. Although the effect of condom use on acquisition risk is moderated by STI outcome knowledge, condom nonusers exhibit levels of perceived risk comparable to occasional

users only among women with below average knowledge. Among women with greater

knowledge condom nonusers express lower levels of acquisition risk than occasional users, and

among the highest knowledge women it is even lower than for consistent condom users. Thus, it

appears that STI outcome knowledge, probably in combination with other unmeasured factors,

offsets the effect declining condom use might have on perceptions of risk for acquisition of STIs.

The multivariate model for perceived relative risk is not as expansive as for perceived

acquisition risk, but significant correlates reach beyond simply risk behavior, and despite

moderation by the oral sex variable, the expected monotonic relationship between declining

condom use and increasing perceived risk was not observed in either group of women.

However, the multivariate model for perceived behavioral risk is limited to sexual risk behaviors,

and among women who did not engage in oral sex perceived risk does increase as condom use

declines from consistent to occasional to nonuse. Among women who did report having oral

sex, the drop off in perceived risk from occasional condom use to nonuse is not statistically

significant. These results are highly suggestive that interventions to increase levels of perceived

risk among condom nonusers would be most successful if they emphasized this specific form of

perceived risk and how the individual's own sexual behavior (regardless of situation or context)

places them at risk of contracting an STI.

It must be noted that the women who participated in this study self-selected to join the

military; therefore, these findings are not necessarily generalizable to all young adult women.

Moreover, the absence of any assessment of psychological characteristics or qualitative data on

sexual decision-making from this sample precluded further explorations into the relationship

between sexual risk behavior and perceived risk for STIs. Future research on this topic should

take these issues into account.

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Table 1. Bivariate Relationships Between Risk Behavior Since Graduating from Recruit Training and Current Perceived Risk

Variable	Category	N	Perceived Acquisition Risk Mean	Perceived Acquisition Risk IRR (95% CI)	Perceived Relative Risk Mean	Perceived Relative Risk B (SE)	Perceived Behavioral Risk % Risky	Perceived Behavioral Risk OR (95% CI)
Total Sample		1192	6.05[1]		3.41[2]		10.7[3]	
Number of Sexual Partners	One	441	2.98	1	3.16	0	3.0	1
	Two	281	4.60	1.54 (0.97, 2.46)	3.37	0.21 (0.09)*	7.5	2.77 (1.37, 5.59)**
	Three	158	6.61	2.22 (1.41, 3.49)***	3.42	0.26 (0.11)*	13.3	4.95 (2.41, 10.16)***
	Four	112	8.97	3.01 (1.81, 5.00)***	3.65	0.49 (0.13)***	19.8	7.99 (3.87, 16.46)***
	Five or more	187	13.44	4.51 (2.98, 6.83)***	3.93	0.77 (0.11)***	25.0	10.77 (5.65, 20.53)***
Number of Casual Partners	None	618	3.54	1	3.23	0	4.9	1
	One	242	6.18	1.75 (1.21, 2.51)**	3.45	0.22 (0.09)*	10.8	2.25 (1.31, 3.89)**
	Two	134	7.92	2.24 (1.48, 3.38)***	3.50	0.26 (0.12)*	14.2	3.08 (1.68, 5.64)***
	Three or more	185	13.06	3.69 (2.58, 5.26)***	3.90	0.67 (0.11)***	26.5	6.73 (4.12, 10.98)***
Partner Risk	None	344	2.75	1	3.03	0	2.3	1
	Sex with others	559	4.68	1.70 (1.04, 2.79)*	3.48	0.45 (0.08)***	8.5	3.89 (1.81, 8.34)***
	Had an STI	268	13.31	4.83 (2.96, 7.90)***	3.76	0.73 (0.10)***	26.1	14.82 (6.98, 31.47)***
Sex After Alcohol/ Substance Use	Never	400	4.71	1	3.35	0	8.3	1
	Almost never	299	4.34	0.92 (0.60, 1.42)	3.37	0.02 (0.09)	6.4	0.79 (0.44, 1.41)
	Sometimes	389	6.83	1.45 (1.03, 2.05)*	3.45	0.09 (0.09)	12.9	1.63 (1.02, 2.60)*
	Usually/ always	94	14.58	3.09 (2.03, 4.70)***	3.59	0.24 (0.15)	26.9	4.04 (2.26, 7.23)***
Condom Use	100%	201	1.47	1	3.28	0	0.0	1
	90-99%	195	3.96	2.69 (1.53, 4.72)***	3.50	0.22 (0.12)	4.1	8.47 (1.05, 68.44)*
	60-80%	198	9.03	6.13 (3.63, 10.36)***	3.67	0.39 (0.11)***	14.4	33.40 (4.49, 248.30)***
	50%	118	8.88	6.03 (3.37, 10.80)***	3.34	0.07 (0.14)	13.8	31.68 (4.14, 242.53)***
	10-40%	246	11.05	7.51 (4.53, 12.46)***	3.56	0.28 (0.12)*	21.7	54.94 (7.51, 401.61)***
	0%	212	2.41	1.64 (0.87, 3.06)	3.07	-0.21 (0.12)	9.0	19.59 (2.60, 147.93)**

* p ≤ .05   ** p ≤ .01   *** p ≤ .001
[1] 95% confidence interval 5.91, 6.20
[2] 95% confidence interval 3.34, 3.48
[3] 95% confidence interval 9.0, 12.6

Table 2. Significant Multivariate Correlates of Perceived Acquisition Risk

Variable	Category	N	Mean	IRR (95% CI)[1]
Outcome Knowledge by Condom Use Interaction***	*0-7 Items Correct*			
	90-100% condom use	112	2.55	1
	10-80% condom use	140	8.26	2.20 (1.14, 4.25)*
	0% condom use	60	5.67	2.20 (1.08, 4.50)*
	8-9 Items Correct			
	90-100% condom use	142	2.15	1
	10-80% condom use	178	10.72	3.14 (1.99, 4.96)***
	0% condom use	64	1.11	0.59 (0.29, 1.19)
	10 Items Correct			
	90-100% condom use	61	2.46	1
	10-80% condom use	119	10.09	3.36 (1.66, 6.79)***
	0% condom use	46	0.78	0.24 (0.09, 0.69)**
	11-12 Items Correct			
	90-100% condom use	77	4.10	1
	10-80% condom use	114	10.37	1.92 (0.80, 4.61)
	0% condom use	41	1.49	0.27 (0.10, 0.76)*
Number of Casual Partners*	0	607	3.54	1
	1-2	373	6.80	1.39 (1.03, 1.88)*
	3+	180	13.06	1.59 (1.06, 2.37)*
Partner Risk***	None	342	2.75	1
	Sex with others	549	4.68	1.20 (0.82, 1.77)
	Had an STI	263	13.31	2.82 (1.84, 4.32)***
Sex After Alcohol/Substance Use*	Never/Almost never	692	4.55	1
	Sometimes	377	6.83	1.41 (1.07, 1.86)*
	Usually/Always	92	14.58	1.85 (1.04, 3.29)*
STI Diagnosis***	No	985	4.90	1
	Yes	170	12.89	1.90 (1.34, 2.68)***
Age at Recruitment by Education Interaction***	*17-18*: HS diploma/GED	623	6.81	8.26 (4.18, 16.35)***
	> HS diploma/GED	38	0.55	1
	19-20: HS diploma/GED	220	5.95	1.24 (0.75, 2.05)
	> HS diploma/GED	125	4.69	1
	21+: HS diploma/GED	53	8.00	1.89 (0.82, 4.40)
	> HS diploma/GED	112	4.50	1
Marital Status***	Not married	922	6.61	2.09 (1.37, 3.18)***
	Married	230	3.94	1
Number of Months Between 1st and 2nd Follow-up**	3.20-8.80 months	297	6.67	1
	8.81-9.79 months	296	5.91	0.82 (0.57, 1.19)
	9.80-12.09 months	288	7.09	0.86 (0.58, 1.29)
	12.10-28-70 months	290	4.54	0.53 (0.37, 0.77)***

* p ≤ .05 ** p ≤ .01 *** p ≤ .001
[1] Incidence-rate ratios and 95% confidence intervals from negative binomial regression

Table 3. Significant Multivariate Correlates of Perceived Relative Risk

Variable	Category	N	Mean	Coefficient (SE)[1]
Oral Sex by Condom Use Interaction*	*No Oral Sex*			
	90-100% condom use	181	3.25	0
	10-80% condom use	125	3.62	0.32 (0.15)*
	0% condom use	37	2.76	- 0.32 (0.19)
	Had Oral Sex			
	90-100% condom use	205	3.51	0
	10-80% condom use	422	3.53	- 0.06 (0.10)
	0% condom use	169	3.14	- 0.19 (0.13)
Number of Casual Partners*	0	602	3.23	0
	1-2	371	3.47	0.00 (0.09)
	3+	179	3.90	0.33 (0.12)**
Partner Risk**	None	337	3.03	0
	Sex with others	547	3.48	0.26 (0.09)**
	Had an STI	262	3.76	0.38 (0.12)***
STI Diagnosis*	No	978	3.36	0
	Yes	170	3.71	0.24 (0.12)*
Education*	HS diploma/GED	888	3.47	0.17 (0.08)*
	> HS diploma/GED	38	0.55	0
Marital Status***	Not married	915	3.51	0.35 (0.09)***
	Married	230	3.02	0

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$
[1] Coefficients and standard errors from linear regression analysis

Table 4. Significant Multivariate Correlates of Perceived Behavioral Risk

Variable	Category	N	% Risky	OR (95% CI)[1]
Oral Sex by Condom Use Interaction*	*No Oral Sex*			
	90-100% condom use	183	1.1	1
	10-80% condom use	127	9.4	5.81 (1.26, 26.67)*
	0% condom use	37	16.2	23.93 (4.36, 131.42)***
	Had Oral Sex			
	90-100% condom use	208	2.9	1
	10-80% condom use	426	20.0	6.13 (2.58, 14.59)***
	0% condom use	172	7.6	4.05 (1.41, 11.63)**
Number of Casual Partners*	0	609	4.9	1
	1-2	375	12.0	1.54 (0.88, 2.72)
	3+	181	26.5	2.56 (1.37, 4.80)**
Partner Risk***	None	343	2.3	1
	Sex with others	553	8.5	3.16 (1.34, 7.43)**
	Had an STI	264	26.1	8.11 (3.35, 19.66)***
Sex After Alcohol/Substance Use*	Never/Almost never	694	7.5	1
	Sometimes	379	12.9	1.31 (0.83, 2.07)
	Usually/Always	93	26.9	2.50 (1.28, 4.89)**

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$
[1] Odds ratios and 95% confidence intervals from logistic regression analysis; Hosmer-Lemeshow goodness-of-fit test p-value 0.40