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Psychosocial Constructs Associated with Condom Use Among High-Risk African American Men Newly Diagnosed with a Sexually Transmitted Disease

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Abstract

Background—African American men are disproportionately burdened by the US AIDS epidemic.

Purpose—The purpose of this study was to determine associations between condom-related psychosocial constructs and condom use among a sample of young, heterosexual, African American men newly diagnosed with a sexually transmitted disease.

Methods—This cross-sectional study collected data from 266 men. Predictors included seven scale measures and 12 covariates. Unadjusted odds ratios were estimated followed by multivariable logistic regression.

Results—Nearly one half (47.7%) used condoms at last sex. Five of the psychosocial measures had significant bivariate associations with condom use ($p < 0.05$). Specific attitudes toward condom use and partner-related barriers retained multivariable significance. Changes of one standard deviation in these measures increased the estimated odds of condom use by 40% ($p = 0.021$) and 55% ($p = 0.002$), respectively.

Conclusion—Specific attitudes toward condom use and partner-related barriers may be particularly important constructs to consider when designing behavioral interventions for high-risk, heterosexual, African American men.

Keywords

Condoms; Men; Sexually transmitted infections; Prevention; Sexual behavior

Introduction

In the USA, AIDS among African Americans has been declared a national crisis [1]. Case rates are approximately eight times as high among African American men compared to their

white counterparts [1, 2]. Indeed, African American men have the highest prevalence and incidence rates of AIDS among any demographic classification of US residents [3, 4]. This disparity is exacerbated by the fact that African Americans with HIV lose an average of 11 times as many life years compared to their white counterparts [5]. African American men are also disproportionately affected by a wide range of sexually transmitted diseases (STDs). Gonorrhea serves as a particularly important example. In 2004, for instance, the rate of gonorrhea was 629.6 (per 100,000) for African Americans compared to 33.3 for whites and 71.2 for Hispanics [6]. Given these disparities, an improved understanding of antecedents to African American men's STD-protective behaviors is a public health imperative. This is true both for African American men who have sex with men and for African American men who have sex predominantly (if not exclusively) with women. Far less research effort, however, has been devoted to the latter category of men [7–9]. Indeed, high-risk African American men (such as those newly diagnosed with an STD) who have sex with women are an understudied population in the ongoing effort to prevent HIV and STD acquisition.

Condom use is a critically important protective behavior against HIV and STDs. Unfortunately, there are relatively few published empirical investigations identifying antecedents of condom use among high-risk heterosexual African American men [10–12]. Antecedent identification is a valuable step in constructing effective behavioral intervention programs. A particularly important type of antecedent involves psychosocial constructs such as condom-related knowledge, attitudes, and perceptions. Thus, improved understanding of the roles played by these constructs in African American men's condom use behavior has considerable potential to inform prevention programs. Unfortunately, the urgency imposed by the rapid escalation of the HIV/AIDS epidemic among African Americans has not been matched by an equivalent response regarding the development of psychometrically established scale measures specifically designed for heterosexual African American males. Accordingly, the purpose of this study was twofold: (1) to assess the reliability and criterion validity of several scale measures, relevant to condom use, when applied to heterosexual African American males; and (2) to identify significant associations between condom-related psychosocial constructs and condom use among a sample of young African American men residing in the Southern US who were newly diagnosed with an STD.

Methods

Participants and Procedure

Data were collected as part of an HIV prevention trial [13]. Only the baseline data were used for the present study. Recruitment occurred at a large, urban, public STD clinic (located in the southern USA) from September 2004 to April 2006. Men attending the clinic were recruited after they had been clinically diagnosed with an STD. After the clinical encounter, the nurse asked potentially eligible men if they were interested in learning about a study and perhaps volunteering to participate. Men agreeing to this were introduced to the research assistant (in an adjacent office), who explained the study and obtained written informed consent. All trial procedures were approved by the Office of Research Integrity at the University of Kentucky.

Eligibility criteria were: (1) newly diagnosed with an STD; (2) self-identification as African American; (3) 18 to 29 years of age; (4) English speaking; (5) reporting that a male condom had been used at least once in the past 3 months; and (6) indicating he was not knowingly HIV positive. Among 296 eligible men, 271 (91.6%) agreed to participate. Among the 271 who agreed to participate, 266 self-identified as heterosexual; the present study was limited to these 266 men.

After providing written informed consent, men completed a brief self-administered, paper-and-pencil, questionnaire lasting about 20 min. Men completed this questionnaire in a private office located in a remote section of the clinic. To avoid literacy issues, the questions were recorded on a CD that men could play using a portable headset. Each question constituted a single track; thus, men could replay a question just as easily as they would replay a track of music. Men were compensated \$40 for their participation in these baseline assessments.

Response Variable, Psychosocial Measures, and Auxiliary Covariates

Condom Use at Last Encounter—To limit recall bias, the response variable was defined simply by asking men, “the last time you had sex (vaginal or anal), did you use a condom?” The distinct advantage of using this short recall period (i.e., the last time sex occurred) is high salience. Although longer recall periods have been used in other studies, there is a dearth of evidence supporting the superiority of longer recall periods over the “last episode” [14–16]. Moreover, evidence does suggest that using the last episode as the recall period may indeed mirror condom use over longer periods of time [16] and other evidence shows remarkable similarity across recall periods (including the last episode) with respect to analytic outcomes [17, 18]. Thus, in the absence of data to dictate the superiority of one recall period over another, we opted to maximize recall accuracy by using the last episode as the recall period.

Attitudes toward Condom Use—A 10-item scale, the first of seven psychosocial measures considered herein (listed in Table 1), assessed men’s attitudes toward condom use. This scale was initially created for and tested with a sample of predominately African American adolescents [19, 20]. Higher scores on the five-point Likert items (with appropriate reverse coding for some of the items) represented more favorable attitudes toward condom use. Inter-item reliability in our sample of young heterosexual African American men was $\alpha=0.81$. Because the 10-item scale was designed for a somewhat younger population (adolescents), we created and tested a second seven-item scale specifically for young African American men. This seven-item scale contained statements assuming that participants had recently used condoms (e.g., “condoms take all of the fun out of sex”), in contrast with the more generic statements in the 10-item scale (e.g., “People who use condoms sleep around a lot.”). Higher scores on the five-point Likert items represented *less* favorable attitudes toward condom use, and inter-item reliability was $\alpha=0.69$.

Self-Efficacy to Use Condoms—A four-item scale assessed men’s self-efficacy to negotiate condom use with their sex partners (e.g., “I could easily suggest using condoms to a sex partner even if we hadn’t used condoms in the past”). This scale was initially created for young African American women [21]. Higher scores on the five-point Likert items represented greater self-efficacy, and inter-item reliability was $\alpha=0.76$.

Communication with Sex Partners about Condoms—Adapted from a scale measure used in studies of young African American females [22, 23], this scale had four items assessing how often men discussed key condom-related issues with their sex partners (preventing STDs, preventing HIV, preventing pregnancy, and discussing how to use condoms). These items used a recall period of 3 months. The possible responses of “never,” “sometimes,” “often,” and “a lot” were coded as 1, 2, 3, and 4. Inter-item reliability was $\alpha=0.83$.

Perceived Barriers to Condom Use—Men’s perceived barriers to condom use were assessed using two scales derived from the Condom Barriers Scale (CBS) [17, 24]. Although the CBS was shown to possess reliability and validity in a sample of African American

females [17], there was a clear need to modify some of the items for applicability to young African American men. In addition, we wished to distinguish between sensation-related barriers (e.g., “Condoms don’t feel good”) and partner-related barriers (e.g., “My partner won’t use a condom”). Thus, a six-item scale was derived for sensation-related barriers, and a five-item scale was derived for partner-related barriers [25]. Higher scores on the five-point Likert items represented *fewer* barriers to condom use. Inter-item reliabilities were $\alpha=0.81$ and $\alpha=0.85$, respectively.

Impulsivity—A five-item scale, the last of seven psychosocial measures considered herein, assessed impulsivity (e.g., “I often do things without planning ahead”). This scale was derived from a similar scale used in a previous study of risky sexual behaviors among a sample of adolescents of diverse racial and ethnic backgrounds [26]. Higher scores on the five-point Likert items represented greater impulsivity, and inter-item reliability was $\alpha=0.60$.

Auxiliary Covariates—Based on a review of the relevant literature, we identified 12 auxiliary covariates that were potentially relevant to the present study (listed in Table 2). In addition to including the standard demographic covariates of age and income, we also included two single-item measures efficacy expectations regarding condoms and two single-item measures of self-efficacy to use condoms (one for the sex partner and one for the male study participant). Because the type of relationship is also a tremendously important variable in terms of condom use [27–29], this was also included. Being taught how to use condoms has been an important covariate in at least one past study [30], and having a history of multiple STDs is a fairly robust predictor of future sexual risk-taking behavior [31]. Causing an unintended pregnancy is a proxy measure of risk behavior. Planning to conceive a pregnancy was important to measure because men having these plans are not likely to use condoms with the female partners they intend to impregnate.

Data Analysis

Bivariate associations between condom use at last encounter and the psychosocial measures, as well as between condom use at last encounter and the auxiliary covariates, were assessed by retrieving odds ratio estimates, 95% confidence intervals, and *p* values (for null hypotheses of unit odds ratios) from single-variable logistic regression models.

Multivariate associations between condom use at last encounter and relevant predictors were assessed by retrieving odds ratio estimates, 95% confidence intervals, and *p* values from a multivariable logistic regression model. All seven psychosocial measures and 12 auxiliary covariates were eligible for inclusion in the multivariable logistic regression model, but only those predictors retained by a backward elimination algorithm (with significance threshold 0.05) were actually included. Because there were 47 men with incomplete data, 219 records were used in the selection of predictors and subsequent estimation of odds ratios. Thus, we also performed two sensitivity analyses. First, we reran the backward elimination algorithm using only those predictors that had generated bivariate *p* values less than 0.20. There were 31 men with incomplete data on this subset of predictors, so that 235 records could then be used in the selection of predictors. Second, we refit the multivariable logistic regression model starting directly with the selected predictors. There were only three men with incomplete data on the selected predictors, so that 263 records could then be used in the estimation of odds ratios.

Analyses were carried out in Version 9.1 of SAS (SAS Institute, Cary, NC). *P* values less than 0.05 were regarded as statistically significant.

Results

Characteristics of the Sample

Table 1 displays the inter-item reliabilities, minimum and maximum values, means, and standard deviations of the seven psychosocial measures. The men in this sample exhibited rather high self-efficacy (mean 16.68 on a four-item scale ranging from 4 to 20, average item score 4.17) and rather favorable general attitudes toward condom use (mean 22.25 on a 10-item scale ranging from -8 to 32, average item score 4.03 after adjustment for reverse coding).

Table 2 displays the minimum and maximum values, means, and standard deviations of the five numeric auxiliary covariates along with numbers and percentages for the seven dichotomous auxiliary covariates. The vast majority of men in this sample had been taught how to use a condom (237 out of 265, 89.4%), and very few had been trying to start a pregnancy in the preceding 3 months (31 out of 264, 11.7%). Of the 266 men, 127 (47.7%) reported they had used a condom during their last sexual encounter.

Bivariate Associations and Criterion Validity

Table 3 shows that five of the seven psychosocial measures had statistically significant bivariate associations with condom use at last encounter. For instance, a 3.53-unit increase in the self-efficacy scale (one standard deviation) multiplies the odds of using a condom by an estimated factor of $1.09^{3.53}=1.36$ ($p=0.016$). We emphasize that in interpreting the other odds ratio estimates, one must keep in mind which direction of each psychosocial measure is favorable toward condoms (Table 1).

None of the 12 auxiliary covariates had statistically significant bivariate associations with condom use at last encounter.

Because criterion validity is established through bivariate rather than multivariate associations, Table 3 also provides the findings relative to the first purpose of this study (i.e., to assess the criterion validity of several scale measures, relevant to condom use, when applied to heterosexual African American males). As shown, the behavior of condom use (the criterion) was significantly related to both scale measures of attitudes toward condom use, the measure of self-efficacy, sensation-related barriers to condom use, and partner-related barriers to condom use.

Bivariate associations between the psychosocial measures and auxiliary covariates themselves were also tabulated and are available from the second author upon request. One of the most interesting findings was that only four out of 66 Pearson correlations calculated to assess these bivariate associations were greater than 0.50, and none of them was greater than 0.70. This suggests that the psychosocial measures and auxiliary covariates, while not strictly independent, were sufficiently orthogonal to permit meaningful assessment of their multivariate associations with condom use at last encounter.

Multivariate Associations

Table 4 reveals that only two out of 19 eligible predictors were actually selected for inclusion in the multivariable logistic regression model, namely specific attitudes toward condom use and partner-related barriers. A 6.21-unit *decrease* in the specific attitudes scale multiplies the odds of using a condom by an estimated factor of 1.40 ($p=0.021$), if there is no change in the partner-related barriers scale. On the other hand, a 5.79-unit increase in the partner-related barriers scale multiplies the odds of using a condom by an estimated factor of 1.55 ($p=0.002$), if there is no change in the specific attitudes scale. The C statistic for the

multivariable logistic regression model was 0.66, indicating a moderate ability to distinguish between men who used condoms and men who did not. We emphasize that none of the predictors had gross outlying values that could have undermined the backward elimination algorithm or the subsequent inferences made from the multivariable logistic regression model.

For our first sensitivity analysis, we reran the backward elimination algorithm using only the six psychosocial measures and two auxiliary covariates that had generated bivariate p values less than 0.20. The purpose of this sensitivity analysis was to ensure that we had not inappropriately omitted other predictors from the multivariable logistic regression model due to the removal of 47 records with missing values; by excluding predictors that had very little potential for relevance, we were able to make 16 more records available. In fact, the same two predictors were selected as before, and the numerical results were nearly indistinguishable (Est. OR 0.95, 95% CI 0.91 to 0.99, $p=0.015$ for specific attitudes; Est. OR 1.09, 95% CI 1.04 to 1.14, $p=0.001$ for partner-related barriers; $C=0.66$).

For our second sensitivity analysis, we reran the multivariable logistic regression model starting directly with the two selected predictors. The purpose of this sensitivity analysis was to ensure that the estimated odds ratios obtained previously were not seriously biased due to the removal of 47 records with missing values; by starting directly with the two selected predictors, we were able to make 44 more records available. Once again, the numerical results were nearly indistinguishable (Est. OR 0.95, 95% CI 0.91 to 0.99, $p=0.020$ for specific attitudes; Est. OR 1.08, 95% CI 1.04 to 1.13, $p=0.001$ for partner-related barriers; $C=0.65$).

Because the number of eligible predictors was large, we had some concern that collinearity might have led the backward elimination algorithm to choose predictors sub-optimally. Fortunately, such a concern was found to be unsubstantiated. First, as noted previously, there were no large Pearson correlations between any two (of the numeric) eligible predictors. Second, a forward selection algorithm replicated exactly the results of the backward elimination algorithm. Third, when we computed variance inflation factors for a saturated logistic regression model including all 19 eligible predictors, none of the variance inflation factors was larger than 4. A rule of thumb among statisticians is that concern about collinearity is warranted only when a variance inflation factor exceeds 10.

Discussion

Regarding the first purpose of this study, we adapted and tested seven scale measures designed to predict condom use among a high-risk sample of young African American men. The dearth of measures specifically tested for this population is problematic given the extreme disparities in STDs and AIDS prevalence experienced by African American men. Of the seven scale measures tested only one (impulsivity) clearly failed to achieve reliability as defined by a Cronbach's alpha of .70 or higher. More importantly, only two of the measures (impulsivity and communication) failed to achieve bivariate significance with the criterion standard of condom use.

Regarding the second purpose of this study, controlled findings suggest that young, heterosexual, African American men newly diagnosed with an STD may be more likely to use condoms if they perceive fewer partner-related barriers to performing this behavior. This finding is quite similar to studies of African American women that have identified partner-related barriers to condom use as a strong predictor of actual condom use [32–34]. Although other studies of high-risk African American men are needed, the findings from this study imply that young African American men, newly diagnosed with an STD, may indeed benefit

from behavioral intervention designed to teach condom negotiation skills that may be needed to resolve condom use issues with their female partners. The assumption that men have volitional control over condom use may indeed be flawed given the finding from this study. This is a potentially critical observation given that sexual risk reduction interventions for men have traditionally ignored the possibility that their female partners may pose barriers to condom use. Indeed, our findings suggest that intervention efforts for young, heterosexually active, African American men may need to include components designed to help them successfully negotiate partner-related resistance to condom use.

Controlled findings also suggest that condom use among young, heterosexual, African American men may be more likely when condom-specific attitudes are favorable. Unlike the 10-item measure of general attitudes toward condoms (which did not retain significance in the multivariate model), this seven-item measure was designed specifically for condom-using men. The items were: (1) condoms take all of the fun out of sex, (2) my sex partners hate condoms, (3) condoms make me feel safe, (4) condoms can be highly arousing, (5) condoms make me think about disease, (6) I am highly motivated to use condoms, and (7) my partners are highly motivated to use condoms. In essence, the items comprising this measure may be viewed as a “blueprint” for behavioral intervention in that each of the attitudes may be amenable to improvement in the context of carefully designed and skillfully delivered programs. For example, in intervention programs, men responding affirmatively to the idea that condoms take all of the fun out of sex can and should be shown that condoms now come in a vast variety of sizes, shapes, and scents—all designed to meet comfort and erotic needs of men and women in addition to the traditional purpose of disease prevention. As a second example, men who do not agree with the statement that condoms make them safe can and should be engaged in interactive discussion that provides them with clear evidence that condoms are indeed highly protective against HIV and most STDs.

The value of condom-use self-efficacy in predicting men’s condom use was usurped by men’s perceptions about partner-related barriers and their condom-specific attitudes. Similarly, men’s sensation-related barriers to condom use also failed to achieve significance in the presence of measures pertaining to their perceptions about partner-related barriers and their condom-specific attitudes. However, from the perspective of intervention design the relatively greater value of partner-related barriers and condom-specific attitudes should not preclude teaching skills designed to promote condom-use self-efficacy or addressing sensation-related barriers to condom use. Indeed, each of these measures could potentially be used on a diagnostic basis meaning that men could first complete the measures and the intervention material could then be tailored accordingly.

Limitations

As is true for most sexuality research, findings are limited by the validity of retrospective self-report. In particular, the ability of men to accurately recall whether a condom was used during the last sexual event is critical to the validity of the study findings. The use of a convenience sample means that our findings may not be generalizable to other populations of young, African American men newly diagnosed with an STD. Also, it is important to note that reliability of the seven-item measure assessing specific attitudes toward condom use is somewhat questionable based on the obtained Cronbach’s alpha of .69. Given the traditional threshold of $\alpha=.70$, our obtained alpha is marginally weak. The sample was defined by the inclusion criteria of using condoms for sex with a female in the past 3 months. While this is an important feature in a study of condom use, the study findings can only be generalized to young, heterosexually active, African American men who use condoms at least sporadically. Finally, the study did not differentiate between penile–vaginal sex and penile–anal sex with female partners thereby precluding conclusions specifically pertaining to condom use for penile–vaginal sex.

Conclusions

Five condom-related psychosocial constructs were related to condom use at a bivariate level: condom use self-efficacy, generic attitudes toward condom use, specific attitudes toward condom use, sensation-related barriers to condom use, and partner-related barriers to condom use. Controlled analyses suggest that specific attitudes toward condom use and partner-related barriers are particularly important constructs to consider when designing behavioral intervention programs for young, heterosexual, African American men newly diagnosed with an STD.

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Table 1

Inter-item reliabilities and descriptive statistics for psychosocial measures

Psychosocial measure	Number of items	Cronbach alpha	Minimum ^a	Maximum	Mean	Standard deviation	Direction ^b	Number of values missing
Attitudes (generic)	10	0.81	-2	32	22.25	7.39	More positive toward condoms	6
Attitudes (specific)	7	0.69	-5	23	6.67	6.21	More negative toward condoms	3
Self-efficacy	4	0.76	4	20	16.68	3.53	More confident	1
Communication	4	0.83	4	16	8.22	3.41	More communicative	20
Barriers (sensation)	6	0.81	6	30	19.93	5.65	Fewer barriers to condoms	2
Barriers (partner)	5	0.85	5	25	17.63	5.79	Fewer barriers to condoms	0
Impulsivity	5	0.60	5	25	13.09	4.23	More impulsive	14

^aNegative scores were possible on some scales because some items were reverse coded^bEntries in this column describe men with higher scores on the respective scales

Table 2

Descriptive statistics for auxiliary covariates

Auxiliary covariate	Minimum	Maximum	Mean	Standard deviation	Number (percent of non-missing)	Direction ^a	Number of values missing
Age in years	18	29	23.26	3.29	NA	NA	0
Felt that condoms prevent STDs	1	4	1.46	0.68	NA	Less agreement	0
Felt that condoms prevent unintended pregnancy	1	4	1.45	0.63	NA	Less agreement	0
Felt that his partner had the ability to use condoms	1	5	4.28	1.11	NA	More agreement	1
Felt that he had the ability to use condoms	1	5	4.50	0.98	NA	More agreement	1
Monthly income greater than \$1,000	NA	NA	NA	NA	80 (30.2%)	NA	1
In a monogamous relationship	NA	NA	NA	NA	128 (48.3%)	NA	1
In an open relationship	NA	NA	NA	NA	113 (42.6%)	NA	1
Taught how to use a condom	NA	NA	NA	NA	237 (89.4%)	NA	1
Diagnosed with multiple STDs	NA	NA	NA	NA	68 (26.0%)	NA	4
Contributed to unintended pregnancy	NA	NA	NA	NA	113 (42.5%)	NA	0
Trying to start a pregnancy in the past three months	NA	NA	NA	NA	31 (11.7%)	NA	2

^a Entries in this column describe men with higher scores on the respective items

Table 3

Bivariate associations between condom use at last encounter and psychosocial measures, auxiliary covariates

Predictor (psychosocial measure or auxiliary covariate)	Odds ratio estimate ^a	95% confidence interval	<i>p</i> Value ^b
Attitudes (generic)	1.05	1.01 to 1.09	0.006
Attitudes (specific)	0.95	0.91 to 0.99	0.011
Self-efficacy	1.09	1.02 to 1.17	0.016
Communication	1.07	0.99 to 1.15	0.072
Barriers (sensation)	1.06	1.02 to 1.11	0.008
Barriers (partner)	1.09	1.04 to 1.13	<0.001
Impulsivity	0.99	0.93 to 1.05	0.634
Age in years	1.03	0.95 to 1.10	0.512
Felt that condoms prevent STDs	1.23	0.86 to 1.76	0.258
Felt that condoms prevent unintended pregnancy	1.30	0.88 to 1.91	0.190
Felt that his partner had the ability to use condoms	1.07	0.86 to 1.33	0.574
Felt that he had the ability to use condoms	0.93	0.72 to 1.19	0.551
Monthly income greater than \$1,000	1.30	0.77 to 2.20	0.327
In a monogamous relationship	1.21	0.75 to 1.96	0.440
In an open relationship	0.79	0.49 to 1.29	0.354
Taught how to use a condom	1.26	0.57 to 2.77	0.571
Diagnosed with multiple STDs	0.99	0.57 to 1.71	0.959
Contributed to unintended pregnancy	0.78	0.48 to 1.28	0.327
Trying to start a pregnancy in the past three months	0.56	0.26 to 1.23	0.150

^aThe odds ratio equals the odds of using a condom at last encounter for person A divided by the odds of using a condom at last encounter for person B, where person A is one unit higher on the predictor than person B (for a dichotomous predictor, this is presence versus absence). The estimates, confidence intervals, and *p* values were obtained from single-variable logistic regression models

^bThe null hypothesis is an odds ratio of 1.00, implying that larger values of the predictor neither increase nor decrease the likelihood of condom use at last encounter

Table 4

Multivariate associations between condom use at last encounter and selected psychosocial measures, auxiliary covariates

Predictor (selected psychosocial measure or auxiliary covariate) ^a	Odds ratio estimate ^b	95% confidence interval	<i>p</i> Value ^c
Attitudes (specific)	0.95	0.91 to 0.99	0.021
Barriers (partner)	1.08	1.03 to 1.13	0.002

^aThe seven psychosocial measures and 12 auxiliary covariates were eligible for inclusion in a multivariable logistic regression model. A backward elimination algorithm with significance threshold 0.05 was applied to determine which of the 19 predictors would actually be included. The above results are based on the 219 men with no missing values on any of the 19 predictors

^bThe odds ratio equals the odds of using a condom at last encounter for person A divided by the odds of using a condom at last encounter for person B, where person A is one unit higher on the given predictor than person B but is the same on the other predictor. The estimates, confidence intervals, and *p* values were obtained from the multivariable logistic regression model

^cThe null hypothesis is an odds ratio of 1.00, implying that larger values of the given predictor neither increase nor decrease the likelihood of condom use at last encounter when the value of the other predictor is fixed