

FREQUENCY OF CONDOM USE AMONG COLLEGE STUDENTS: A SOCIAL COGNITIVE THEORY BASED EXPLANATION

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Abstract

The present study used descriptive, correlational methods to assess frequency of condom use and 12 social cognitive theory (SCT) related constructs. Data were collected from 569 students enrolled in classes at a large Mid-Western university. Two, 2-stage multiple regressions were run. For females, 34% of the variance in condom use was explained by the model. For males, 37% of the variance in condom use was explained by the model.

Introduction

Descriptive studies regarding sexual activity and condom use in the college population have found that college students tend to be particularly permissive and lacking in their regular use of condoms (Brien et al., 1994; Butcher et al., 1991; Centers for Disease Control and Prevention [CDC], 1997; DiClemente et al., 1990; Freimuth et al., 1992; Hammer et al., 1996; Mahoney, 1995; Middleton et al., 1994; O'Leary et al., 1992; Thompson et al., 1996). During their lifetime almost 35% of college students nationwide have had sexual intercourse with six or more partners (CDC, 1997). Approximately 64% of college students report using a condom the first time they have sex with a new partner (Freimuth et al., 1992; Middleton et al., 1994). Only a minority (8 - 28%) of college students use condoms every time they engage in vaginal intercourse (Brien et al., 1994; Butcher et al., 1991; CDC, 1997; DiClemente et al., 1990). About one-third (26 - 37%) never use, while more than half (51 - 65%) sporadically use condoms during vaginal intercourse (Brien et al., 1994; Butcher et al., 1991; DiClemente et al., 1990; Mahoney, 1995). In more recent studies, college students reported using a condom during sexual intercourse an average of 47% of the time in the past year (Hammer et al., 1996). National data indicate that 30% of college students had used a condom during last sexual intercourse (CDC, 1997). About 48% of students report that they use condoms inconsistently (Thompson et al., 1996).

In an effort to understand condom use behavior, several researchers have attempted to identify factors that may influence a person's condom use behavior. Barriers to using condoms have been identified and

appear to be related to the actual condom use behavior of college students (Bruce et al., 1990; Hammer et al., 1996; Thompson et al., 1996). While barriers have been operationalized differently in each study, several barriers including inexperience with condoms (Thompson et al., 1996), a belief that condoms detracted from sensation and spontaneity (Hammer et al., 1996), and a concern that condoms were not reliable and might break (Hammer et al., 1996) have been linked to past and present condom use. A person's attitudes toward condoms and their opinions about the use of condoms as contraceptive devices have been significantly correlated with actual condom use among college students (Raj & Pollack, 1995).

College students are not immune to social pressures. Not surprisingly, perceived social norm has been found to be a significant predictor of frequency of condom use (Wulfert & Wan, 1993) and risky sexual behavior among college students (O'Leary et al., 1992). A person's confidence in their ability to use a condom (self-efficacy) has been a significant predictor of condom use and significantly related to condom use in college students (Brien et al., 1994; Mahoney, 1995; Wulfert & Wan, 1993). Models that include condom use self-efficacy related to mechanics, partner's disapproval, assertiveness, and intoxicants have accounted for moderate amounts of variance in condom use among college students (Brien et al., 1994). Self-efficacy related to intoxicants has been useful to discriminate between consistent and sporadic condom users and self-efficacy related to assertiveness has been useful to discriminate between sporadic and non-condom users (Mahoney, 1995). Among college students, condom use self-efficacy has been found to be highly correlated with consistency of condom use ($r=.48$) (Wulfert & Wan, 1993).

Factors related to social cognitive theory (SCT) have also been useful in explaining variance in condom use behavior of college students. A model which included social support for condom use, self-efficacy for condom use, and barriers related to condom use helped to predict 35% of the variance in frequency of condom use among a sample of college students (Basen-Engquist, 1992).

Purpose

While a modest amount of research has been conducted regarding condom use in college aged persons, most of this research has not been driven by a single theory. The purpose of the present study was to use selected components of SCT to identify predictors of frequency of male condom use during vaginal intercourse among college students. College students' sexual behavior and condom use-- 86% are sexually active, 35% report six or more sex partners, and 28% use condoms consistently (CDC, 1997)-- put them at great risk for HIV infection, other sexually transmitted disease infections, and unplanned pregnancy. Condom use behavior, like most human behavior, is complex and needs to be better understood. Without an understanding of condom use behavior, it is quite difficult to develop condom related health education programs that are appropriate and effective for college students.

Social cognitive theory was used as a conceptual framework to help guide the study. The theory explains human behavior in terms of a "triadic, dynamic, and reciprocal model in which behavior, personal factors, and environmental influences all interact" (Perry et al., 1990). In essence behavior is thought to be influenced by personal factors and the environment. Behavior is affected by an individual's personal characteristics and beliefs, while a person's environment helps to form the personal characteristics as well as influences the practicality of whether a behavior can be carried out.

Procedure**Subjects**

The target population for this study was undergraduate students, attending a large Mid-Western university, who had engaged in vaginal intercourse within the past month. The accessible population for this study included students enrolled in Health, Physical Education, and Recreation classes at the university during the Summer 1995 quarter. Of the 569 respondents (age, $M = 24.6$ years), 64 (11%) were not

included because they turned in incomplete questionnaires and 222 (39%) were not included because they had not engaged in vaginal intercourse during the past month.

Of the 283 remaining subjects (age, $M = 24.2$ years) that fit the study criteria, 52% were female and 48% were male, 58% were under the age of 23, 84% had attended three or more years of college, 73% were Caucasian, 10% were Asian/Pacific Islander, 12% were Black/African American, and 70% were single (as opposed to being married or living with a partner). Compared to data available from the university registrar's office, the sample had significantly fewer students aged 19 and younger and a higher percentage of nonwhites than the university student body as a whole.

Measures

The questionnaire contained 12 scales, designed to assess four concepts (environment, situation, expectations, and self-efficacy) related to SCT and one scale designed to assess frequency of condom use. The 12 scales designed to assess concepts related to SCT were adapted from scales designed and tested by previous researchers. Before the instrument was used in the present study, the validity and reliability were tested on a sample of college students believed to be similar to the target population ($n = 11$). Items were examined for content validity by a panel of experts, pilot tested for reliability, and factor analyzed using an exploratory principal components oblique rotation. Environment or physically external factors that can affect a person's behavior (Perry et al., 1990), was operationalized using two measures of social support: 1) social support from friends and sex partners regarding behavior change and belief in condom effectiveness (SSBC) (Zapka et al., 1990), and 2) social support from sexual partners regarding necessity of condom use (SSPNC) (Zapka et al., 1990). The SSBC scale was comprised of four, four-point Likert scale questions. In the present study, 2-day test-retest reliability correlations ranged from .77 to .21, Cronbach alpha internal consistency was .56, and factor loadings ranged from .61 to .35. The SSPNC measure was a single item, four-point Likert scale question. Two-day test-retest reliability correlation was .39.

Situation or a person's perception of their environment (Perry et al., 1990) was operationalized using four measures: 1) perceived barriers regarding attaining and negotiating the use of a condom (BANU)

(DiClemente et al., 1992), 2) perceived barrier concerning condom failure (BF) (DiClemente et al., 1992), 3) perceived barrier concerning condom cost (BC) (DiClemente et al., 1992), and 4) perceived social norm related to condom use (SN) (DiClemente et al., 1992). The BANU scale consisted of four, four-point, Likert scale items. In the present study, 2-day test-retest reliability correlations ranged from 1.0 to .67, Cronbach alpha internal consistency was .75 and factor loadings ranged from .65 to .47. Both the BF and BC measures were single item, four-point, Likert scales. In the present study, 2-day test-retest reliability correlations were .95 for the BF item and .90 for the BC item. Social norm (SN) was measured using two, four-point Likert scale items. In the present study, 2-day test-retest reliability correlations were .72 for each item, Cronbach alpha internal consistency was .43 and factor loadings ranged from .55 to .42.

Expectations or anticipatory aspects of behavior (Perry et al., 1990) was operationalized using two scales: 1) perceived physical and emotional outcomes of using a condom (PEO) (DiClemente et al., 1992; Jemmott & Jemmott, 1992) and 2) prevention related outcome expectations regarding using a condom (PO) (Jemmott & Jemmott, 1992). The PEO scale was comprised of three, four-point Likert scale items and four, five point Likert scale items. In the present study, 2-day test-retest reliability correlations ranged from .93 to .31, Cronbach alpha internal consistency was .82 and factor loadings ranged from .69 to .55. Prevention related outcome expectations (PO) were measured using three, five-point, Likert scale items. In the present study, 2-day test-retest reliability correlations ranged from .90 to .66, Cronbach alpha internal consistency was .99 and factor loadings ranged from .95 to .78.

Self-efficacy or a persons confidence in performing a particular behavior (Perry et al., 1990), was operationalized using four scales taken from a condom self-efficacy scale developed and tested by Brafford and Beck (1991): 1) condom use self-efficacy related to mechanics (SEM), 2) condom use self-efficacy related to partner's disapproval and embarrassment (SEPDE), 3) condom use self-efficacy related to assertive (SEA), and 4) condom use self-efficacy related to intoxicants (SEI). Each item was a five-point, Likert type question. The SEM consisted of three items. In the present study, 2-day test-retest reliability correlations ranged from .83 to .47, Cron-

bach alpha internal consistency was .51 and factor loadings ranged from .72 to .48. Six items comprised the SEPDE scale. In the present study, 2-day test-retest reliability correlations ranged from .83 to .42, Cronbach alpha internal consistency was .85 and factor loadings ranged from .87 to .40. Three items comprised the SEA scale. In the present study, 2-day test-retest reliability correlations ranged from .68 to .56, Cronbach alpha internal consistency was .87 and factor loadings ranged from .74 to .55. The SEI scale consisted of three items. In the present study, 2-day test-retest reliability correlations ranged from .92 to .06, Cronbach alpha internal consistency was .68 and factor loadings ranged from .92 to .44.

Frequency of the use of condoms during vaginal intercourse over the past month was measured using a single question: "Using the past month as a guide, how often did you use a condom during vaginal intercourse?". Retrospective reports of sexual behavior for one-month intervals have been found to be highly reliable (Catania et al., 1990a; Catania et al., 1990b). The scale consisted of six points (0%, 1-25%, 26-50%, 51-75%, 76-99%, 100%). Face validity was determined using a panel of experts. Two-day test-retest reliability was $r = .98$.

Results

Description of Condom Use Behavior

Over 53% of the women and 38% of the men reported that during the past month, they never (0% of the time) used condoms during vaginal intercourse. Twenty-one percent of the women and 34% of the men reported using condoms inconsistently (1 to 99% of the time) during the past month. Slightly more men than women used condoms 100% of the time during the past month (29% vs. 25%).

Description of SCT Scales

Table 1 is a summary of female and male mean scores for the 12 SCT scales.

Correlations Between SCT Scales and Frequency of Condom Use

A Pearson Product-Moment correlation was used to describe the relationships between frequency of condom use and the SCT constructs (Table 2). Out of the 12 SCT constructs, seven were significant for women and/or men. Constructs significant for both women and men included social support from sexual partners regarding the necessity of use (women: $r = .44$; men: $r = .38$), social norm (women: $r = .18$; men: $r = .20$), and physical and emotional outcomes (women: r

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= .26; men: $r = .19$). Additional constructs significant for women included social support from friends and partners regarding behavioral change and condom effectiveness ($r = .16$) and barrier concerning condom failure ($r = -.17$). Additional constructs significant for men included self-efficacy related to mechanics ($r = .19$) and self-efficacy related to intoxicants ($r = .19$).

Multiple Regression Model

To control for certain demographic variables (marital status, years in college, religion, and age) and determine how well the entire SCT model (all 12 SCT constructs) predicted frequency of condom use, a

Table 1. Mean SCT scale scores for women and men ($n=147$ women, $n=136$ men)

Scale	<u>M</u>		Possible Range	<u>SD</u>	
	Female	Male		Female	Male
social support from friends and partners regarding behavior change and condom effectiveness (SSBC)	12.63	12.74	4-16	2.11	2.16
social support from partners necessity of use (SSPC)	3.10	3.00	1-4	1.00	1.00
barrier attaining and negotiating use (BANU)	6.95	7.56	4-16	2.16	2.30
barrier concerning condom failure (BF)	2.10	2.20	1-4	0.80	0.70
barrier related to cost (BC)	2.40	2.60	1-4	0.90	0.90
social norm (SN)	5.86	5.89	2-8	1.25	1.11
physical & emotional outcomes (PEO)	22.10	19.90	7-32	5.17	4.47
prevention related outcomes (PO)	13.03	13.33	3-15	2.07	1.92
self-efficacy related to mechanics (SEM)	12.69	12.90	3-15	2.27	1.64
self-efficacy related to partner disapproval and embarrassment (SEPDE)	26.76	24.54	6-30	3.87	4.41
self-efficacy related to assertive (SEA)	13.21	12.83	3-15	1.95	1.73
self-efficacy related to intoxicants (SEI)	12.25	11.36	3-15	2.27	2.59

2-stage multiple regression was performed separately for females and for males. See Table 3. In the first

stage of the model marital status (single or other) and religion (identifying with a Christian religion other than

Catholicism or Protestantism) were significant for women but none of the demographic variables were significant for men. Consequently for women, the first stage of the model accounted for a significant 13% of the variance in condom use frequency. For men, the first stage of the model accounted for 10% of the variance which was nonsignificant. In the second stage, social support from partners regarding the necessity of condom use and barrier concerning condom cost were significant for both women and men. For females, two demographic variables-- marital status and religion, were also significant. In addition to the two SCT constructs listed above, barriers regarding obtaining and negotiating the use of condoms, and social norm regarding the use of condoms were significant for men. For both women and men, stage 2 of the model was significant and accounted for a moderate amount of additional variance in frequency of condom use (women, 21%; men, 27%). For women the entire model accounted for 34% of the variance and for men the entire model accounted for 37% of the variance in frequency of condom use.

Discussion

The present study had several limitations related to sample representativeness and measurement. The sample studied was unique; they were older and more ethnically diverse than the average college student at the present university. Therefore, until further research is conducted on random, representative populations of college students, the results of the present study should be generalized with caution. Despite the researcher's attempt to choose items from instruments that had previously been developed and tested, some of the scales and items lacked adequate internal consistency and test-retest reliability when tested in the present study. Possibly the low internal consistency and test-retest values of some scales were due to the small sample size of the pilot study ($n = 11$). Scales that pilot test data showed to have low reliability were still retained in the study because they were found to be valid and the researcher believed they were valuable questions that could help explain condom use behavior. Keeping these limitations in mind, the present study has several important findings.

Condom Use

There is a serious lack of consistent condom use by both female and male students. The percentage of students who used condoms consistently during the previous month was similar to recent national data--

25% women, 29% men in the present study; 25% women, 32% men in the National College Health Risk Behavior Survey (CDC, 1997). However, compared to previous studies, a larger portion of students in the present study never use condoms-- 54% women, 38% men in the present study; 29 to 37% in previous studies (Brien et al., 1994; Butcher et al., 1991; DiClemente et al., 1990; Mahoney, 1995). Possibly, because the present sample was older, participants might have been involved in more committed relationships where they did not see a need to protect themselves from sexually transmitted diseases.

Although use of birth control methods other than use of the male condom were not measured, the researcher suspects that many of the women who depended on hormonal methods of birth control or men whose female partners depended on hormonal methods of birth control did not also use condoms. Forty percent of women aged 18 to 44 years who use contraception, use a hormonal method (Forrest & Fordyce, 1993). It is not known what percentage of these women also use condoms. While hormonal methods are excellent at preventing pregnancy, they do nothing to prevent the transmission of sexually transmitted diseases, and in some cases actually make women more susceptible to sexually transmitted diseases (Cates & Stone, 1992). It appears that pregnancy, rather than STD'S, HIV, is still the primary concern of most college students. This conclusion is echoed by Raj and Pollack (1995) and Wulfert and Wan (1993). Wulfert and Wan (1993) asked 212 sexually active college students (109 women; 103 men) to describe their main reason for using condoms. The majority of both women and men (70% women, 76% men) listed pregnancy prevention. Twenty-one percent of women and 13% of men cited fear of AIDS and only 3% of both women and men cited fear of STDS.

SCT Constructs

Five of the 12 SCT constructs were significantly correlated with frequency of condom use. Social support from a sex partner regarding the necessity of condom use was the scale most strongly associated with frequency of condom use in both women and men. This follows the rationale of SCT that purports behavior is strongly influenced by the social environment (Bandura, 1994). It also further emphasizes that using a condom is a joint endeavor and even if a person has intentions of using a condom, if her/his partner does not support the use of a condom, she/he is likely to use

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a condom less frequently. Social support from friends and partners regarding behavioral change and condom effectiveness

was significant for women but not for men. This suggests that opinions and safer sex behaviors of friends and potential partners has more of an influence on condom use frequency for women than for men. This could be explained by Sacco et al.'s (1993) finding that women are more inhibited and rely upon their male partner to control the use of a condom.

For men, but not for women, self-efficacy related to mechanics and self-efficacy related to intoxicants were significantly associated with

frequency of condom use. Self-efficacy might not have been significant for women because there was little variability in the self-efficacy scores. All female scores tended to be high. Or maybe, for women, self-efficacy was not closely related to actual condom use frequency because using a condom is still generally considered something that a man does, as he is the one who actually wears the condom. This is consistent with Sacco et al.'s (1993) finding on gender differences

Table 2. Pearson Product Moment Correlation Coefficients Between Frequency of Condom Use and SCT Constructs (n=147 women, n=136 men)		
SCT Construct	Frequency of Condom Use	
	Women	Men
	r	r
social support from friends and partners behavior change and condom effectiveness (SSBC)	*.164	.100
social support from partners necessity of use (SSPNC)	*.440	*.376
barrier attaining and negotiating use (BANU)	-.009	.163
barrier concerning condom failure (BF)	*-.165	-.046
barrier related to cost (BC)	.144	.082
social norm (SN)	*.179	*.201
physical and emotional outcomes (PEO)	*.262	*.194
prevention related outcomes (PO)	.131	-.001
self-efficacy related to mechanics (SEM)	.129	*.190
self-efficacy related to partner disapproval and embarrassment (SEPDE)	.082	-.013
self-efficacy related to assertive (SEA)	.116	-.000
self-efficacy related to intoxicants (SEI)	.130	*.189

Note. *p < .05.

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Table 3. 2-Step Multiple Regression of Selected Demographic Variables and SCT Constructs by Frequency of Condom Use (n=147 women, n=136 men)								
Variable	β		t		R^2		R^2 Change	
	Women	Men	Women	Men	Women	Men	Women	Men
Step 1					.132	.095		
Marital status	.21	.14	2.50*	1.38				
Years of College	-.15	.03	-1.85	-0.31				
Religion								
D1: Catholic vs. Other	-.16	.10	-1.41	0.85				
D2: Protestant vs. Other	-.14	.14	-1.38	1.18				
D3: Other Christian vs. Other	-.32	-.12	-2.94*	-0.97				
D4: None vs. Other	-.12	-.08	-1.16	-0.69				
Age	.03	.04	.39	-0.41				
Step 2					.345	.365	.213*	.270*
Marital Status	.22	.12	2.79*	1.34				
Years of College	-.11	-.05	-1.39	-.066				
Religion								
D1: Catholic vs. Other	-.12	.10	-1.12	0.82				
D2: Protestant vs. Other	-.15	.10	-1.56	0.83				
D3: Other Christian vs. Other	-.23	-.13	-2.19*	-1.11				
D4: None vs. Other	-.12	-.03	-1.17	-0.31				
Age	.08	-.08	1.00	-0.80				
SSBC	0.00	-.04	0.02	-0.47				
SSPNC	.35	.24	4.15*	2.83*				
BANU	.04	.33	0.36	3.32*				
BF	-.12	.01	-1.46	0.11				
BC	.15	.18	1.91*	2.04*				
SN	-.07	.28	-0.73	3.03*				
PEO	.12	.14	1.36	1.70				
PO	.09	-.05	1.09	-0.56				
SEM	.03	.10	0.36	1.03				
SEPDE	-.10	-.19	-1.05	-1.89				
SEA	.08	.14	0.79	1.15				
SEI	.02	.09	0.20	0.95				

Note. *p < .05.

in attitudes and condom use behavior of college students. They concluded that although women may indirectly influence condom use decisions, providing and using the condom is still the expected role of men.

Physical and emotional outcomes of condom use and social norm were significantly correlated with frequency of condom use for both sexes. Other studies have found similar results. Valdiserri, Lyter, and Leviton (1989) examined factors effecting condom use behavior of women and found physical and emotional outcome expectations to be significantly associated with condom use. More negative expectations have been associated with lower frequencies of condom use and riskier sexual behavior in college students (O'Leary et al., 1992; Wulfert & Wan, 1993). In the past, social norm has been significantly associated with condom use among college students (Wulfer & Wan, 1993), but not significantly related to condom use among adolescent women (Catania et al., 1989).

A barrier concerning condom failure had a significant negative relationship with condom use frequency for women but not for men. This indicated that the more women agreed that condoms often slip off or break, the less frequently they used condoms. Possibly this supports the notion that college students use condoms primarily to prevent pregnancy. If women believe condoms not to be a reliable method of birth control, they will use another method of birth control rather than a condom. Perhaps this is because a woman would be the one most effected if a condom broke; she could become pregnant. Basen-Engquist (1992) found barriers in general to be significantly associated with condom use frequency in a group of women and men.

Model

Based upon results of the female and male models, SCT appears to be useful when looking at condom use frequency among college students. Constructs from all four SCT concept areas (environment, situation, expectations, and self-efficacy) were significant contributors to the variance in condom use frequency. The male model accounted for a higher percentage of variance in condom use than the female model. This suggests that the model might be more useful for explaining condom use frequency in men than women. Despite the lower percentage of variance accounted for in women, with the exception of self-efficacy theory (Brien, 1994), this model has explained more variance--

21% for females and 27% for males-- than any other single theory has been able to explain.

Within the regression model, constructs that were significant for women included only social support from partners regarding the necessity of condom use and barrier concerning condom cost. Bruce et al. (1990) also found immediate social reinforcement to be a significant predictor of condom use in a group of college students. Again, for women this emphasizes the importance of partner support for using a condom and draws attention once more to Sacco et al.'s (1993) findings. Women may indirectly influence condom use decisions, but providing a condom is an expected role of men and this infuses men with greater control over the interpersonal process. To change this women will have to take a more active role in providing condoms for use. This may be difficult for some women because the barrier concerning condom cost was also a significant construct in the frequency of condom use model. Perhaps this was a relevant construct because about 40% of women aged 18-44 (Forrest & Fordyce, 1993) are already paying for and using a hormonal method of birth control; paying "drugstore" prices for condoms can greatly increase this financial burden for women.

Constructs that were significant for men included social support from partners regarding the necessity of condom use, barriers regarding obtaining and negotiating the use of condoms, and social norm regarding the use of condoms. Similar to women, social support from partners regarding the necessity of condom use was significant for men. Consistent with Bruce et al.'s (1990) finding noted above, this emphasizes the importance of the "social environment" in determining condom use behavior. While barriers regarding obtaining and negotiating the use of condoms was not significant in the female model, it was in the male model. This again draws truth to Sacco et al.'s (1993) findings regarding the differences between condom use behaviors of women and men. Providing the condom and instigating the interpersonal process of condom use in the expected role of men. Social norm appears to significantly influence condom use frequency of men but not in women. Perhaps this is because women rely more heavily on their male partner to help determine whether a condom is used and men rely on the wishes of their female partner but also on their perception of what other people their age do.

Other studies have also found social norm to be a significant predictor of condom use among adolescent and college populations (Basen-Engquist & Parcel, 1992; Catania et al., 1994; O'Leary et al., 1992; Wulfert & Wan, 1993).

While not all constructs measured were significant in the regression models, this does not mean that the nonsignificant constructs were unimportant to the models. To be most effective, all of the constructs need to be viewed together as an entire model because the theory states that they are all interrelated. Social cognitive theory works on the premise of reciprocal determinism-- all factors interact and determine one another (Perry et al., 1990). Constructs can work by themselves but are much more effective when combined with other relevant constructs. Findings from a study by Basen-Engquist (1992) help to illustrate this point. The study found social support to be directly and indirectly related to frequency of condom use, self-efficacy to be indirectly related to frequency of condom use, and perceived barriers to be directly and indirectly related to frequency of condom use. To view self-efficacy as unimportant because it had no direct effects on condom use frequency would be too simplistic; for Basen-Engquist (1992) found self-efficacy to be directly related to barriers which in turn was found to have direct and indirect effects on condom use. In the present study, before nonsignificant constructs are removed from the model, analyses that measure the three dimensional nature of the model should be conducted. It is possible that nonsignificant constructs could be directly effecting the significant constructs. This would be valuable information for condom use program planners and designers.

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