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Predictors of Condom Use Self-Efficacy in an Ethnically Diverse University Sample

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A multitude of factors influence condom use self-efficacy, including age, gender, ethnicity, condom use attitudes and barriers, sexual experience, and partner characteristics. The current study integrated past research by evaluating these factors in a large, ethnically diverse university sample of women and men ($N = 665$). The role of gender on condom use and sexuality variables was assessed across ethnic groups. Hierarchical linear regressions were then calculated to explain levels of condom use self-efficacy using the hypothesized sexual predictors in nonvirgin, sexually active, and recent condom use subsamples. Predictors explained 18–45% of variance in condom use self-efficacy. Findings suggest that a few key variables accounted for the majority of variance in condom use self-efficacy: condom use attitudes, condom use barriers, satisfaction with sexual communication, anticipated number of sexual partners, one-time sexual encounters, and ethnic identity. Significant gender differences emerged in condom use self-efficacy, condom use attitudes, and condom use behaviors. Ethnic differences were found in range of sexual experience and sexual partner characteristics. It is recommended that future studies examining sexual risk behavior incorporate the diverse sexual factors that affect condom use self-efficacy.

KEY WORDS: condom use self-efficacy; ethnicity; sexual risk behavior; gender differences; psychosexual behavior; sexual communication.

INTRODUCTION

Condom use self-efficacy has consistently been linked to condom use behavior in a variety of populations, ethnicities, and for both men and women. Self-efficacy is defined as confidence in one's ability to exhibit the motivation and capability to achieve a given goal (Bandura, 1986). Condom use self-efficacy, defined as the belief that one is both capable of and likely to use condoms in sexual situations, may play a key role in promoting condom use behavior; however, the lack of continuity in condom use self-efficacy research has resulted in ambiguous definitions of the construct and poor success in interventions targeting condom use self-efficacy.

A primary concern is the consistency with which condom use self-efficacy is measured. Studies have evaluated condom use self-efficacy with few items (e.g., Svenson, Oestergren, Merlo, & Rastam, 2002), a validated scale (e.g., Basen-Engquist, Edmundson, & Parcel, 1996), and even modified subscales to address separate dimensions, such as self-efficacy to negotiate the use of a condom versus self-efficacy to correctly apply a condom during a sexual encounter (Murphy, Stein, Schlenger, Maibach, & NIMH, 2001). In addition, past research has typically focused on core factors of condom use self-efficacy (e.g., attitudes, peer norms, barriers) and a fluctuating spectrum of additional cognitive and social factors. Few studies have attempted to evaluate the diverse elements of past findings in a single sample (but see Quatrella, 2000), and mixed results in condom use self-efficacy research have complicated the interpretation of past work. In this study, the diverse variables linked with condom use self-efficacy will be explored and statistically compared with

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each other in an effort to increase clarity about condom use self-efficacy and its impact on promoting responsible sexual behavior.

Ransom (1998) reported that condom use self-efficacy accounted for approximately 16% of the variance in STI prevention behavior and 13% of the variance in STI risk behavior in a college sample of women (Hale & Trumbetta, 1996). In another study, contraceptive self-efficacy was moderately positively correlated with and predicted contraceptive use in women (Heinrich, 1993). Although self-efficacy is a promising tool for measuring sexual risk behavior, it is important to note that a type of self-efficacy (such as condom use self-efficacy) is more closely related to the indicated behavior (e.g., condom use) than to more general health behaviors (e.g., contraceptive use as described earlier; Abraham et al., 1999; Baele, Dusseldorp, & Maes, 2001).

The majority of research supports the relation between condom use self-efficacy and condom use, with some exceptions among selective populations (O'Leary, Maibach, Ambrose, Jemmott, & Celentano, 2000). For example, findings from an ethnically diverse sample of young adults with a history of high risk sexual and/or drug behaviors did not find a link between condom application skills and condom use self-efficacy (Langer, Zimmerman, & Cabral, 1994). Similarly, a study examining low-income African American female teenagers failed to show the link between condom use self-efficacy and condom use (Crosby et al., 2001).

Correlational studies have revealed that condom use self-efficacy is positively associated with condom use frequency (Basen-Engquist & Parcel, 1992; Basen-Engquist et al., 1999; Heinrich, 1993; Murphy, 1999; Svenson et al., 2002), with r values ranging from .31 to .71. Self-reported condom use self-efficacy strongly predicted condom use (Gerteisen, 1998; Goldstein, 1997), although one study indicated that it only accounted for 2% of the total variance in condom use (Soet, Dilorio, & Dudley, 1998). However, the regression model Soet et al. used included variables closely related with self-efficacy, such as the expected consequences of condom use and anticipated cooperation of the partner. The theory of self-efficacy, by definition, involves the decisions and actions intended to shape future outcomes. Thus, the small contribution of self-efficacy in the regression model may reflect overlapping constructs, rather than independent variables affecting condom use behavior. In summary, the literature as a whole supports the consistent correlational and predictive link between self-efficacy and condom use behavior. The relationship between condom use self-efficacy and condom use behavior indicates the need to develop an understanding of the factors that affect condom use self-efficacy.

A number of studies have examined variables associated with condom use self-efficacy. Lower self-efficacy for birth control use (especially condom use) in women was associated with having more than one sexual partner within the preceding six months (Lauby, Semaan, O'Connell, Person, & Vogel, 2001). The opposite was found in other studies in which greater numbers of sexual partners corresponded with higher condom use self-efficacy and actual condom use in men and women (Gerteisen, 1998; Richard & van der Pligt, 1991; Salina, Razzano, & Lesondak, 2000). Similarly, frequency of intercourse was positively associated with condom use self-efficacy in a sample of college-aged women (Heinrich, 1993). Relationship duration has been negatively associated with condom use such that individuals in long-term relationships showed less condom use consistency (Glaser, 1997; Raj & Pollack, 1995). This suggests that perceived health risk may be related to condom use self-efficacy (Parsons, Halkitis, Bimbi, & Borkowski, 2000; Redding & Rossi, 1999), such that newer relationships are perceived as greater behavioral risks.

In addition to sexual partner characteristics, age and sexual experience are thought to impact condom use self-efficacy. Several studies have reported that younger populations are more likely to report higher condom use (Glaser, 1997; Lauby et al., 2001; Sterk, Klein, & Elifson, 2003). However, this trend was contradicted by evidence showing that a sample of women increased their responsible sexual behavior with age (Magoun & Alison, 2000). The uncertain role of age in condom use self-efficacy may also be impacted by sexual experience, which typically increases with age (Heinrich, 1993). Although more sexual experience seems to enhance one's confidence in condom use, some evidence suggests that younger, less sexually experienced individuals may exhibit high condom use self-efficacy (Glaser, 1997). The correspondence between younger age and greater condom use self-efficacy may also partially reflect the increasing exposure to safer sex media campaigns.

A primary contextual element of condom use self-efficacy emerges when the self-efficacy of men and women is compared. With the exception of a handful of studies reporting higher self-efficacy in men (Carroll, 1991; Quatrella, 2000), most research identifying gender differences have attributed higher self-efficacy to women (Dekin, 1996; Fisher, 1996; Parsons et al., 2000; Ransom, 1998). Indeed, few studies have found no gender differences in condom use self-efficacy (Reis & Stephens, 1998; Wulfert & Wan, 1993).

The finding that women show higher condom use self-efficacy may seem counterintuitive, considering that men have more behavioral control over the application of condoms. Fisher (1996) suggested potential gender differences in subtypes of condom use self-efficacy. Men have tended to endorse condom behavior questions that rely on male control, such as preventing condom slippage during withdrawal (Gerteisen, 1998). Conversely, in women it may reflect their ability to apply condoms, negotiate condom use, exert self-control during sexually arousing encounters, and develop acceptance of sexuality (Bryan, Aiken, & West, 1997; O'Leary, Goodhart, Jemmott, & Boccher-Lattimore, 1992). The importance of condom use negotiation is indirectly supported by findings that women are more likely than men to communicate about safe sex behavior and convince their partners to use condoms (Allen, Emmers-Sommer, & Crowell, 2002; Carter, McNair, Corbin, & Williams, 1999). Condom use self-efficacy in women may then reflect the ability to effectively and convincingly communicate the desire to use a condom (Soet et al., 1998; Treise & Weigold, 2001). Therefore, gender differences in condom use self-efficacy may reflect divergent perceptions of condom use during a sexual encounter (Cecil & Pinkerton, 2001; Juran, 1995). It is doubtful that these gender differences are accounted for by STI- or pregnancy-related concerns within specific sexual encounters, which have shown little relation to condom use (de Visser & Smith, 2001). Potential gender differences in perception of, and meaning attributed to, condom use self-efficacy have important implications for sexual health research. Traditional indices of condom use self-efficacy may not be sensitive to *how* self-efficacy is differentially expressed in men and women. The differences in how men and women perceive condom use warrant further investigation of gender differences in condom use self-efficacy.

Self-efficacy predicted extent of communication about STI prevention (Hale & Trumbetta, 1996), indicating one method by which self-efficacy may directly impact the negotiation of condom use in a sexual situation. Women typically assume a more proactive role in these negotiations (Carter et al., 1999). The increased likelihood of women to communicate with their partners about safer sex behaviors may also enhance their confidence in requesting condoms, thus resulting in increased condom use (Allen et al., 2002). Indeed, better sexual communication predicted condom use self-efficacy in a sample of women (Sterk et al., 2003). The relationship between communication and condom use self-efficacy is supported by past literature but has not consistently received attention.

Ethnic differences in condom use behavior have been noted in women (Gomez & Marin, 1996; Hale & Trumbetta, 1996; Soet et al., 1998). Latinas reported significantly less condom use self-efficacy than Caucasian women, although ethnic differences in actual condom use with a steady sexual partner were not substantial. Of Latinas who had previously used contraceptives, approximately 10% always used condoms and 58% never used condoms, and of Caucasians, approximately 17% always used condoms and 48% never used condoms (Gomez & Marin, 1996). In a sample of Caucasian and African American women, condom use self-efficacy was only a significant predictor of condom use for Caucasian women (Soet et al., 1998). The reverse was found in a sample of low socioeconomic status, young, African American women, who reported higher condom use self-efficacy than older women and nonminority women (Sterk et al., 2003). Faryna and Morales (2000) reported the intriguing finding that ethnicity predicted sexual risk behavior, independently of gender, condom use self-efficacy, attitudes, and beliefs. Whereas condom use self-efficacy was negatively correlated with increased lifetime sexual activity, ethnicity consistently explained the most variance in sexual risk behaviors: African American ethnicity accounted for the most variance in sexual activity, followed by Hispanic ethnicity. Asian and Pacific Islander ethnicities reported the least amount of sexual activity (Faryna & Morales, 2000). Faryna and Morales (2000) provided limited speculation of this finding, and the role of ethnicity in sexual risk behavior clearly needs to be pursued to clarify these results. Taken as a whole, this research supports continued investigation into the role of ethnicity in condom use self-efficacy.

Despite the promising findings that link condom use self-efficacy to behavior across ethnicity and gender, interventions aimed specifically at increasing condom use self-efficacy have yielded mixed results in the promotion of higher condom use (for a review, see Mize, Robinson, Bockting, & Scheltema, 2002). Multiple limitations of this research have complicated our understanding of condom use self-efficacy, including inconsistent measures, cross-sectional designs, and poor integration of past findings into current research. Changing generational and cultural values regarding condom use and sexuality may also contribute to the inconsistent results. The implications of this disjointed research are twofold. First, the lack of continuity in the research may prevent a more accurate understanding of the variables that influence condom use self-efficacy. Second, the limited success of previous self-efficacy interventions may reflect the failure to adequately measure the construct they are designed to impact. A

thorough evaluation of condom use self-efficacy is critical for the design of effective interventions.

To elucidate further the nature of condom use self-efficacy, the current study was designed with three primary aims: (1) to assess gender and ethnicity differences in condom use self-efficacy; (2) to systematically examine a number of predictors of condom use self-efficacy previously evidenced in the literature; and (3) to examine these relations among sexually active individuals who used condoms during their most recent sexual encounter.

METHOD

Participants

Participants were enrolled in a large university during the 2000–2002 years ($N = 665$) and received course credit in Introductory Psychology classes in exchange for participation. Nonvirgin status was the primary inclusion criterion. The sample consisted of men ($n = 208$, mean age = 18.9, $SD = 1.29$) and women ($n = 457$, mean age = 18.7, $SD = 1.16$) with an age range of 16–26. The ethnic composition of the final nonvirgin sample consisted of 72% Caucasian (148 men, 328 women), 16% Hispanic (34 men, 75 women), and 12% Asian American (26 men, 54 women) participants. The majority of the sample was currently sexually active (83%), with 76% of men and 86% of women reporting sexual activity. Fifty-four percent of participants were currently in relationships, with a mean duration of 10.23 weeks ($SD = 10.60$).

Measures

Condom Use Self-Efficacy, Attitudes, and Barriers

The Sexual Risk Behavior Beliefs and Self-Efficacy Scales (SRBBS; Basen-Engquist et al., 1996) taps into major constructs addressed within condom use theory (health belief model, theory of reasoned action, and social learning theory), and thus the current study results would easily extend to multiple theoretical approaches. The SRBBS contains 22 self-report, Likert-type items that assess five subscales of interest: condom use attitudes (e.g., *I believe condoms should always be used if a person my age has sex*), self-efficacy in using and obtaining condoms (e.g., *How sure are you that you could use a condom correctly or explain to your partner how to use a condom correctly?*), and barriers to condom use (e.g., *I would feel uncomfortable carrying condoms with me*). SRBBS self-efficacy items reflected a communication-centered interpretation of condom use self-efficacy, wherein the partner communicates the desire to use condoms in various sexual circumstances. This intrapersonal emphasis of self-efficacy may more readily tap into constructs that affect the woman's perception of condom use self-efficacy, rather than the mechanically-oriented measures of self-efficacy that may reflect greater male control (e.g., Soet et al., 1998). The SRBBS was validated on a large, ethnically diverse sample and has acceptable internal consistency reliability (Cronbach's $\alpha = .61–.87$) and construct validity. Subscales were scored by averaging the items within each scale to obtain an index number for each subscale. Higher scores reflect strong attitudes supporting condom use and higher condom use self-efficacy. For condom use barriers, lower scores reflect increased perception of barriers to condom use. The SRBBS showed acceptable reliability (Cronbach's $\alpha = .87$ and .77 for women and men, respectively).

Two additional items were included to ask whether participants had ever refused to use condoms and if they used condoms during their most recent sexual encounter. Additionally, two items assessed the percentage of participants who had previously been tested for HIV or diagnosed with a STI.

Sexual Satisfaction

The Sexual Communication subscale of the Sexual Satisfaction Scale for Women (SSS-W; Meston & Trapnell, 2005) measured self-reported sexual satisfaction using six Likert-type items. The Sexual Communication subscale included items such as "*My partner and I do not discuss sex openly enough with each other, or do not discuss sex often enough*." Higher scores represent greater satisfaction. The SSS-W has excellent internal consistency (Cronbach's $\alpha = .91$ and .92 for women and men, respectively), and the current sample demonstrated acceptable reliability (Cronbach's $\alpha = .84$ and .80 for women and men, respectively).

Unrestricted Sexual Behavior

Three items from the Sociosexuality Inventory (SOI; Simpson & Gangestad, 1991) and two non-SOI items were used to assess unrestricted sexual behavior. SOI questions included estimations of frequency of one-time sexual intercourse, frequency of sexual intercourse partners within the previous year, and anticipated number of sexual intercourse partners for the following 5 years. Two non-SOI items assessed the estimated lifetime number of sexual intercourse partners and the number of sexual intercourse partners within the month prior to testing. Intercourse was defined as sexual intercourse

(with vaginal penetration) or oral sex, because of the common health risks of these sexual behaviors. These items tapped into the number and type of sexual partners that may influence condom use self-efficacy.

Sexual Behavior

The Experience Scale from the Derogatis Sexual Functioning Index (DSFI; Derogatis, 1976) was used to evaluate extent of previous sexual experience. Participants were asked to indicate their experience of the following sexual behaviors using a yes/no response format: light petting (two items), heavy petting (four items), oral sex (five items), intercourse (four items), and masturbation (one item). Sexual behavior subscales reflect whether an individual had ever experienced the behavior, with the value 0 assigned for *no experience with the behavior* and 1 assigned for *experience with the behavior*. For instance, if an individual reported experience in at least one type of heavy petting, the value 1 would be coded in the Heavy Petting Experience Subscale. The DSFI Experience Scale demonstrated adequate reliability in this sample, with reliability coefficients (Cronbach's alpha) of .81 and .78 for women and men, respectively.

Additional measures of sexual behavior evaluated nonvirgin status, current sexual activity, and age of first intercourse. Nonvirgin status was assigned if participants indicated (1) an age of first intercourse and/or (2) intercourse experience in the DSFI Experience Scale. Participants were coded for current sexual activity (sexual intercourse within the previous month) if they indicated (1) current sexual activity and/or (2) DSFI scores denoting sexual activity in the past 4 weeks. The item about age of first sexual intercourse allowed participants to write in the appropriate age.

In summary, these measures were selected to address the numerous factors that impact condom use self-efficacy. The hypothesized model of factors includes basic demographic information (age, gender, ethnicity) and variables that have been addressed in the condom use self-efficacy literature: condom use attitudes, condom use barriers, condom use in the past month, sexual experience (including sexual behaviors), number of sexual partners (in lifetime, previous year, previous month, and projected over the next 5 years), type of sexual partners (one-time sexual encounters), relationship duration, and sexual communication.

Procedure

All participants were informed of the sexual nature of questionnaire material previous to volunteering and participation. Same-sex researchers gave a thorough explanation of test material and participants signed a consent document if they felt comfortable continuing. Participants were told that were they to experience any distress during the testing session, they could choose to stop participation. Only two of the 665 individuals chose not to participate. Questionnaires were administered in one-to-five person groups in a large testing room, and participants were provided with sufficient space to maintain privacy. All participants received a code number to ensure anonymity. Upon completion, participants inserted questionnaire packets into a large "drop box" as they exited the testing room. Every participant received a debriefing form with laboratory telephone numbers so that any discomfort resulting from participation could be addressed by trained clinical students. No participants contacted the laboratory for this reason. The questionnaire material was approved by the Institutional Review Board.

RESULTS

Means and correlations were computed between all variables for use in later regression analyses (see Table I). These categories of variables reflect the key factors linked to condom use and condom use self-efficacy in past literature. Of 66 correlations that were calculated, 14 were statistically significant. Notably, condom use within the past month was not associated with condom use self-efficacy.

For the purpose of presentation, data on condom use and sexuality variables were then organized into three broad categories: condom use behavior and cognitions (Table II), sexual experience (Table III), and sexual communication satisfaction (Table IV). The condom use category included condom use self-efficacy, condom use attitudes, and condom use barriers. Additional items not included in regressions include condom use at last sexual encounter, refusal to use condoms, HIV testing frequency, and STI diagnosis frequency. The sexual experience category (as measured by the DSFI Experience Scale) was included due to the strong relation between condom use self-efficacy and history of sexual activity. For this reason, total sexual experience (from the DSFI Sexual Experience scale), number of lifetime sexual partners, number of one-time sexual partners, number of anticipated sexual partners over the next 5 years, and number of sexual encounters within the previous month were selected as indices of sexual experience. The sexual communication satisfaction category only included communication variables.

Table I. Means and Correlations of Condom Use Related Variables

Variables	Population mean (*SD*)	Correlations											
		1	2	3	4	5	6	7	8	9	10	11	12
1. Condom use self-efficacy	2.12 (.63)	—											
2. Condom use attitudes	2.83 (.78)	.56*	—										
3. Condom use barriers	2.63 (.99)	.35*	.08	—									
4. No. of one-time sexual partners	1.52 (2.65)	−.10	−.07	−.03	—								
5. Relationship duration	10.20 (10.60)	−.09	−.07	−.01	.06	—							
6. No. lifetime sexual partners	4.79 (4.59)	−.04	−.02	.03	.62*	−.08	—						
7. Sexual communication	23.50 (5.49)	−.06	−.07	−.06	−.04	.13	−.09	—					
8. Total sexual experience	8.46 (2.63)	−.03	−.14	.00	.18*	.13	.30*	.23*	—				
9. No. condom use in last month	3.45 (6.29)	−.03	.11	.06	.04	−.04	−.03	−.01	.03	—			
10. No. sexual partners in 5 yrs	4.37 (5.04)	.05	.04	.01	.03	−.14	.08	−.04	−.03	.21*	—		
11. No. sexual encounters in past month	9.46 (9.19)	.06	−.19*	.22*	.01	.00	.01	.13	.25*	.66*	.20*	—	
12. Age	18.80 (1.20)	−.01	−.02	.04	.13	.20*	−.02	−.03	.19*	.04	−.02	−.01	—

*$p < .01$.

Table II. Mean (*SD*) Gender and Ethnic Differences in Condom Use Behavior and Cognitions

Item	Men			Women			*F* ratio		
	Caucasian	Hispanic	Asian	Caucasian	Hispanic	Asian	G	E	E × G
Condom use self-efficacy[a]	2.43 (.42)	2.29 (.50)	2.34 (.38)	2.00 (.66)	1.90 (.67)	2.03 (.65)	32.22*	1.50	.31
Not ready to have sex (casual partner)	2.09 (.85)	1.91 (.71)	1.92 (.69)	2.00 (.88)	2.04 (.88)	2.13 (.90)	.74	.28	1.31
Not ready to have sex (regular partner)	2.09 (.80)	1.82 (.72)	1.88 (.65)	2.02 (.78)	1.95 (.75)	1.92 (.78)	.12	2.45	.69
Want a condom and partner does not	2.34 (.76)	2.12 (.84)	2.35 (.78)	2.01 (.90)	1.95 (.88)	2.15 (.86)	6.11	1.50	.45
Start using condoms with partner	2.59 (.71)	2.56 (.70)	2.54 (.58)	1.97 (.91)	1.88 (.93)	1.93 (.93)	45.50*	.22	.06
Using condoms with casual partner	2.68 (.65)	2.53 (.83)	2.50 (.71)	1.98 (.94)	1.88 (.96)	2.06 (.96)	38.15*	.77	.62
Using condoms to prevent STIs	2.50 (.62)	2.52 (.80)	2.46 (.76)	2.04 (.86)	1.87 (.89)	1.94 (.86)	36.54*	.49	.51
Correct use of condom	2.66 (.63)	2.50 (.79)	2.69 (.47)	1.97 (.87)	1.92 (.90)	2.00 (.82)	54.50*	.78	.19
Purchase of a condom	2.68 (.66)	2.53 (.71)	2.69 (.55)	1.96 (.89)	1.84 (.86)	2.06 (.90)	55.83*	1.29	.07
Availability of condoms	2.24 (.76)	2.18 (.80)	2.00 (.80)	2.06 (.77)	1.79 (.78)	2.11 (.84)	3.21	2.05	2.09
Condom use attitudes[b]	3.04 (.59)	3.09 (.58)	3.17 (.50)	2.74 (.80)	2.63 (.94)	2.78 (.84)	20.30*	.47	.44
Wait to have sex	2.32 (.88)	2.56 (.99)	2.69 (.84)	2.58 (.99)	2.45 (.90)	2.64 (.98)	.09	1.53	1.86
Sex with steady boyfriend/girlfriend	3.34 (.90)	3.10 (.99)	3.00 (.89)	2.87 (1.14)	2.56 (1.13)	2.70 (1.14)	12.15*	3.19	.24
Always use condoms	3.40 (.86)	3.48 (.81)	3.64 (.57)	2.96 (1.15)	3.35 (.99)	3.21 (1.06)	7.30*	2.67	.65
Always use condoms (with BCP)	3.04 (.98)	3.10 (.91)	3.24 (.78)	2.79 (.99)	2.98 (.98)	3.05 (.99)	2.26	1.62	.13
Always use condoms (partner)	3.26 (.93)	3.34 (.91)	3.48 (.69)	2.94 (1.10)	3.22 (.99)	3.10 (1.09)	5.20	1.72	.34
Condom use barriers[c]	2.90 (.80)	2.97 (.91)	2.60 (.69)	2.51 (1.04)	2.40 (1.12)	2.72 (1.06)	6.90	.07	2.65
Embarrassing to buy condoms	2.72 (1.03)	2.71 (1.14)	2.53 (.94)	2.48 (1.24)	2.50 (1.34)	2.59 (1.27)	1.49	.11	1.40
Uncomfortable carrying condoms	2.90 (1.02)	3.06 (1.01)	2.58 (.88)	2.56 (1.31)	2.40 (1.45)	2.75 (1.36)	4.52	.09	3.00
Wrong to carry condoms because it means I am planning to have sex	3.05 (1.12)	2.94 (.98)	2.77 (.92)	2.47 (1.30)	2.45 (1.29)	2.65 (1.33)	9.11*	.06	1.36
	% Yes	% Yes	% Yes	% Yes	% Yes	% Yes			
Condom use at last sexual encounter?	47	55	41	47	51	50	.09	.58	.32
Ever refused to use condoms?	5	13	13	3	14	11	.10	5.87*	.07
Tested for HIV?	18	18	4	11	11	6	1.22	2.67	.51
Ever diagnosed with an STI?	1	6	4	2	4	0	.84	1.54	.98
N	129–148	30–34	22–26	153–328	29–75	27–54			

Note. *G* = Gender, *E* = Ethnicity, E × G = Ethnicity by Gender interaction.

[a]Item response format of *not sure at all* (1), *kind of sure* (2), and *totally sure* (3), with higher numbers denoting more condom use self-efficacy.

[b]Item response format of *definitely no* (1), *probably no* (2), *probably yes* (3), *definitely yes* (4), with higher numbers indicating more positive condom use attitudes.

[c]Item response format of *strongly agree* (1), *kind of agree* (2), *kind of disagree* (3), and *strongly disagree* (4), with higher numbers indicating fewer perceived condom use barriers.

*$p \leq .007$ (.05/7), using self-efficacy, attitudes, and barriers subscales.

Table III. Mean (*SD*) Gender and Ethnic Differences in Sexual Experience

Item	Men			Women			*F* ratio		
	Caucasian	Hispanic	Asian	Caucasian	Hispanic	Asian	G	E	E × G
Total sexual experience[a]	8.56 (2.28)	8.50 (2.09)	6.77 (3.08)	8.71 (2.64)	8.25 (2.80)	7.76 (2.92)	1.08	8.36*	1.17
Light petting (0–2)	1.04 (.20)	1.09 (.29)	.96 (.20)	1.12 (.39)	1.15 (.39)	1.04 (.33)			
Heavy petting (0–4)	2.09 (.58)	2.03 (.58)	1.54 (1.14)	2.02 (.60)	2.01 (.60)	1.81 (.73)			
Oral sex (0–5)	2.46 (.88)	2.35 (.88)	2.00 (1.17)	2.60 (.84)	2.59 (1.05)	2.28 (1.02)			
Intercourse (0–4)	2.05 (1.26)	2.09 (1.33)	1.38 (1.36)	2.27 (1.38)	1.89 (1.41)	2.00 (1.47)			
Masturbation (0–1)	.93 (.26)	.94 (.24)	.88 (.33)	.72 (.45)	.61 (.49)	.63 (.49)			
Number lifetime partners?	5.60 (5.47)	6.15 (5.28)	3.65 (4.58)	4.65 (4.16)	5.00 (4.90)	2.96 (2.56)	3.41	5.72*	.05
Number one-time partners?	1.75 (2.91)	2.12 (3.01)	.96 (2.44)	1.46 (2.01)	1.92 (4.50)	.61 (1.22)	.89	4.40*	.02
Anticipated partners in next 5 years?	6.36 (6.21)	6.84 (7.75)	3.68 (4.06)	3.77 (4.17)	3.88 (5.11)	2.56 (2.44)	16.58*	4.97*	1.05
Number sexual encounters in the previous month?	7.33 (7.66)	14.58 (13.55)	6.82 (8.18)	10.23 (8.30)	9.11 (9.02)	11.42 (12.44)	.03	2.31	4.36

Note. G = Gender, E = Ethnicity, E × G = Ethnicity by Gender interaction.
[a]Subscale ranges indicated in parentheses.
*$p \leq .01$ (.05/5).

Gender and ethnic differences in endorsement of condom use category variables are shown in columns 1–6 of Table II. The last three columns list the effects of gender, ethnic status, and the interaction between ethnicity and gender. To minimize Type 1 error in these comparisons, statistical significance was defined as $p < .007$ ($p < .05/7$). Main effects for gender were found in condom use self-efficacy, condom use attitudes, and condom use barriers. Men endorsed significantly higher condom use self-efficacy scores, $F(5, 664) = 32.22$, $p < .007$, higher condom use attitude scores, $F(5, 664) = 20.30$, $p < .007$, and higher condom use barrier scores, $F(5, 664) = 6.90$, $p < .007$, compared to women. Therefore, the men in this sample reported a greater perceived ability to control future condom use, more positive condom use attitudes, and fewer perceived barriers to condom use. No ethnic differences were found for self-efficacy, attitudes, or barrier scores. A main effect for ethnicity, but not gender, emerged on the item, "Have you ever refused to use condoms?" Endorsement of this item was significantly lower for Caucasian men (5%) and women (3%), compared to endorsement by Hispanic men (13%) and women (14%) and Asian men (13%) and women (11%). No additional gender or ethnic differences were indicated for the items regarding condom use at last sexual encounter, percentage of participants tested for HIV, or percentage of participants diagnosed with an STI.

In Table III, the sexual behavior means, gender differences, and ethnic differences are presented ($p < .05/5$). A main effect for ethnicity was found for the sexual experience composite, $F(5, 664) = 8.36$, $p < .01$, indicating that Caucasians and Hispanics reported a significantly wider range of sexual experience than Asians. No gender differences were found for the total range of sexual

Table IV. Mean (*SD*) Gender and Ethnic Differences in Sexual Communication Satisfaction Among Sexually Active Individuals

Item[a]	Men			Women			*F* ratio		
	Caucasian	Hispanic	Asian	Caucasian	Hispanic	Asian	G	E	E × G
Sexual communication sum	21.79 (5.30)	22.03 (5.42)	20.91 (4.77)	23.48 (5.62)	23.54 (5.83)	23.27 (4.87)	9.19*	.06	.01
Partner gets defensive when I talk sex	3.90 (1.09)	3.76 (1.12)	3.72 (.97)	4.22 (1.10)	4.39 (1.05)	4.25 (.90)	13.40*	.13	.61
Don't discuss sex enough	3.00 (1.40)	2.48 (1.35)	3.20 (1.29)	3.88 (1.33)	4.01 (1.32)	3.75 (1.33)	13.00*	.03	.05
Comfortable talking about sex (*R*)	3.92 (1.15)	4.06 (1.22)	3.45 (1.30)	4.04 (1.22)	3.99 (1.28)	3.97 (1.15)	2.68	1.32	1.83
Partner feels comfortable talking (*R*)	3.57 (1.20)	3.67 (1.36)	3.32 (1.25)	4.01 (1.20)	4.04 (1.24)	4.11 (1.06)	11.76*	.23	.20
Can talk about my deepest feelings (*R*)	3.41 (1.29)	3.70 (1.38)	3.75 (1.13)	3.80 (1.27)	3.61 (1.53)	3.70 (1.31)	.23	.37	1.87
Partner can talk about deepest feelings (*R*)	3.49 (1.22)	3.36 (1.27)	3.48 (1.15)	3.53 (1.32)	3.66 (1.31)	3.43 (1.28)	.39	.05	.44

Note. G = Gender, E = Ethnicity, E × G = Ethnicity by Gender interaction.
[a]Scores are based on a Likert scale response format of 1 to 5, with higher scores indicating greater satisfaction/less concern.
*$p \leq .008$ (.05/6).

experience, indicating that men and women generally experienced similar ranges of sexual behavior (e.g., light and heavy petting, oral sex, and intercourse). A significant gender difference for masturbation was found, but this difference did not affect gender differences in range of sexual experience. There were significant effects of ethnicity on lifetime number of sexual partners, number of one-time sexual partners, and anticipated number of sexual partners over the next 5 years. For these categories of sexual behavior, Asians reported fewer sexual partners. A main effect for gender on the anticipated number of sexual partners over the next 5 years indicated that men anticipated more future sexual encounters than women.

Multiple main effects emerged in sexual communication satisfaction, $F(5, 661) = 9.19$, $p < .01$. To clarify these findings, individual questions were analyzed for gender differences. Woman-endorsed sexual communication satisfaction emphasized on the ease of communication within the relationship, whereas men's satisfaction was directed at the woman partner during sexual communication. Women reported feeling greater satisfaction with the level of partner defensiveness during sexual conversation and frequency of sexual conversation, whereas men indicated high satisfaction with how comfortable their sexual partners felt when talking about sex (see Table IV).

Hierarchical Linear Regression Analyses

Three sets of hierarchical linear regressions were performed to investigate the predictors of condom use self-efficacy within the complete nonvirgin sample ($n = 665$), within a currently sexually active subsample ($n = 221$), and within a subsample that reported condom use at last sexual encounter ($n = 303$). In each regression analysis, condom use self-efficacy was entered as the dependent variable, with the hypothesized model of sexual variables as the independent variables. Independent variables included in the regression analyses reflect the constructs explicitly addressed in the literature review which have been shown to be related to or predict condom use self-efficacy. Specifically, the regressions included the independent variables: age, gender, ethnicity, condom use attitudes, condom use barriers, condom use in the past month, sexual experience (including sexual behaviors), number of sexual partners (in lifetime, previous year, previous month, and projected over the next 5 years), type of sexual partners (one-time sexual encounters), relationship duration, and sexual communication.

The hypothesized model included four steps: Step 1, condom use attitudes and condom use barriers; Step 2, current relationship duration, lifetime number of sexual partners, and number of "one time" sexual partners; Step 3, sexual experience, satisfaction with sexual communication, age, gender, and two ethnicity dummy variables (Hispanic and Asian); and Step 4, number of condom use with regular partners within the previous month, number of sexual encounters with regular partners within the previous month, and anticipated number of sexual partners over the next 5 years. Unique contributions ascribed to these sexual variables were calculated to explain levels of condom use self-efficacy. Once the hypothesized model was tested in each of the three subsamples, the regression data were analyzed for individual variables that accounted for the greatest variance in condom use self-efficacy. Variables were sequentially removed based on the highest, nonsignificant ($p > .05$) t-values until all variables in the regression were statistically significant ($p < .05$). The remaining significant predictors were assumed to be key variables in condom use self-efficacy. Beta values indicate the estimated amount of variance in condom use self-efficacy which can be accounted for by the given variable.

The first set of regressions examined the relation between condom use self-efficacy and sexual predictors in the nonvirgin sample. The hypothesized model, $F(2, 151) = 3.51$, $p < .01$, accounted for 19% of variance in condom use self-efficacy (see Table V for beta weights).

Additional analyses indicated that a modified model, $F(2, 212) = 9.02$, $p < .01$, accounted for 16% of variance in condom use self-efficacy. This modified model included condom use attitudes ($\beta = .20$, $t = 3.05$, $p < .01$), condom use barriers ($\beta = .17$, $t = 2.63$, $p < .01$), sexual communication ($\beta = .28$, $t = 4.36$, $p < .01$), and anticipated number of sexual partners in the next 5 years ($\beta = -.18$, $t = -2.82$, $p < .01$). In summary, nonvirgins with higher condom use self-efficacy will likely exhibit more positive condom use attitudes, fewer perceived condom use barriers, greater satisfaction with sexual communication, and anticipate fewer sexual partners over the next 5 years.

The next set of linear regressions was conducted on currently sexually active men and women. The hypothesized model, $F(14, 147) = 3.29$, $p < .01$, explained 18% of the variance in condom use self-efficacy (see Table VI for beta weights). Subsequent regressions indicated that a modified model, $F(6, 221) = 10.49$, $p < .01$, which included condom use attitudes ($\beta = .22$, $t = 3.60$, $p < .01$), condom use barriers ($\beta = .27$, $t = 4.32$, $p < .01$), number of "one time" intercourse partners ($\beta = -.13$, $t = -2.12$, $p < .05$), sexual communication satisfaction ($\beta = .24$, $t = 3.87$, $p < .01$), Hispanic ethnicity ($\beta = -.13$, $t = -2.17$, $p < .05$), and anticipated number of sexual partners over the next 5 years ($\beta = -.15$, $t = -2.38$, $p < .05$). These findings suggest that sexually

Table V. Linear and Backwards Regression on Nonvirgins: Predictors of Condom Use Self-Efficacy

Predictor variables	Adj. R^2	F	β	t	p
Hypothesized model	.19	3.51**			
Condom use attitudes			.28	3.37	.001
Condom use barriers			.18	2.27	.025
No. of one-time sexual partners			−.28	−2.92	.004
Relationship duration			.10	1.19	*ns*
No. lifetime sexual partners			.11	1.04	*ns*
Sex			.04	.44	*ns*
Asian ethnicity			.00	.05	*ns*
Hispanic ethnicity			−.11	−1.44	*ns*
Sexual communication			.16	1.92	.06
Conservative sexual attitudes			.03	.39	*ns*
Total sexual experience			.00	−.04	*ns*
No. condom use in last month			.02	.19	*ns*
No. sexual partners in 5 years			−.20	−2.18	.031
No. sexual encounters prior month			.17	1.81	.072
Modified model	.16	9.02**			
Condom use attitudes			.20	3.05	.003
Condom use barriers			.17	2.63	.009
Sexual communication			.28	4.36	.001
No. sexual partners in 5 years			−.18	−2.82	.005

active individuals with high condom use self-efficacy had more positive condom use attitudes, fewer perceived barriers to condom use, more satisfaction with sexual communication, fewer anticipated sexual partners over the next 5 years, and less likely to identify as Hispanic.

In the subsample that reported condom use at last sexual encounter, the hypothesized model, $F(2, 61) = 4.70$, $p < .01$, accounted for a significant amount of variance in condom use self-efficacy (beta weights reported in Table VII). The modified model, $F(3, 303) = 82.38$,

Table VI. Linear and Backwards Regression on Currently Sexually Active Individuals: Predictors of Condom Use Self-Efficacy

Predictor Variables	Adj. R^2	F	β	t	p
Hypothesized model	.18	3.29**			
Condom use attitudes			.28	3.29	.001
Condom use barriers			.18	2.26	.025
No. of one-time sexual partners			−.27	−2.85	.005
Relationship duration			.10	1.23	*ns*
No. lifetime sexual partners			.11	.97	*ns*
Sex			.03	.36	*ns*
Asian ethnicity			.00	.05	*ns*
Hispanic ethnicity			−.11	−1.45	*ns*
Sexual communication			.17	2.01	.047
Conservative sexual attitudes			.06	.66	*ns*
Total sexual experience			−.01	−.08	*ns*
No. condom use in last month			.00	.05	*ns*
No. sexual partners in 5 years			−.17	−1.86	.065
No. sexual encounters in last month			.17	1.76	.080
Modified model	.21	10.49**			
Condom use attitudes			.22	3.60	.001
Condom use barriers			.27	1.32	.001
No. of one-time sexual partners			−.13	−2.12	.035
Sexual communication			.24	3.87	.001
Hispanic (dummy variable)			−.13	−2.17	.031
No. sexual partner 5 years			−.15	−2.38	.018

Table VII. Linear and Backwards Regression on Last-Time Condom Users: Predictors of Condom Use Self-Efficacy

Predictor variables	Adj. R^2	F	β	t	p
Hypothesized model	.45	5.08**			
Condom use attitudes			.31	3.03	.004
Condom use barriers			.26	2.69	.010
No. of one-time sexual partners			−.47	−3.55	.001
Relationship duration			.14	1.40	*ns*
No. lifetime sexual partners			.25	1.65	*ns*
Sex			.13	1.28	*ns*
Asian ethnicity			.04	.36	*ns*
Hispanic ethnicity			−.33	−3.33	.002
Sexual communication			.23	2.05	.046
Conservative sexual attitude			.04	.39	*ns*
Total sexual experience			.06	.55	*ns*
No. condom use in last month			−.37	−1.87	.068
No. sexual partners in 5 years			−.12	−.99	*ns*
No. sexual encounters in last month			.44	2.17	.034
Modified model	.45	82.38**			
Condom use attitudes			.55	12.69	.001
Condom use barriers			.29	6.67	.001

$p < .01$, explained 45% of variance in condom use self-efficacy and suggested that condom use attitudes ($\beta = .55$, $t = 12.69$, $p < .01$) and condom use barriers ($\beta = .29$, $t = 6.67$, $p < .01$) had a unique contribution to the explanation of condom use self-efficacy. Although the beta weight for number of one-time sexual partners was significant in the initial model, it was no longer significant after condom use attitudes and barriers were entered in the modified model (Table VII). Therefore, of the individuals who used a condom during their most recent sexual experience, greater condom use self-efficacy likely co-occurs with more positive condom use attitudes and fewer perceived condom use barriers.

Each set of regressions was subjected to diagnostic analyses, including a check of collinearity, leverage, and PP Plots. According to the plots of leverage, no outliers biased the regression slopes. PP Plots exhibited a normal distribution of residuals along the lines of regression. To evaluate collinearity, the variance inflation factors (VIFs) for each variable within the hypothesized model were examined in each regression. Each variable demonstrated low VIF (VIF < 2), thereby indicating the stability of β and beta coefficients. Analyses reinforced the accuracy of the linear relationship between condom use self-efficacy and the proposed model of sexual predictors.

DISCUSSION

Findings on condom use variables indicated significant gender differences in condom use self-efficacy, attitudes, and barriers. Men reported higher condom use self-efficacy and condom use attitudes, as well as fewer perceived condom use barriers. Although this finding differs from previous reports of women with greater condom use self-efficacy (Dekin, 1996; Fisher, 1996; Ransom, 1998), it does support the gender difference in perceived control during a sexual encounter (Bryan et al., 1997; Gerteisen, 1998). Specifically, the lack of perceived control over a sexual encounter may explain the lower condom use self-efficacy reported and higher perceived condom use barriers reported by women in this sample. The lack of perceived condom use barriers in men may reflect the disparate social appraisal of men and women in sexual encounters. Whereas women carrying condoms may be stigmatized as "sexually permissive" (Hynie, Schuller, & Couperthwaite, 2003), such behavior among males may be perceived as indicative of "sexual success."

Interestingly, many of the condom use self-efficacy items for which men scored higher reflected communication and practical aspects of condom use self-efficacy. Men were more likely to endorse the self-efficacy items that assumed sexual intercourse would occur. For instance, these scenarios involved previous sexual intercourse, assured sexual intercourse with a new casual partner, or sexual intercourse with no risk of pregnancy. In contrast, men and women did not significantly differ on items that emphasized refraining from sexual intercourse completely. In other words, men and women were similar in their confidence of condom use with the possibility of sexual intercourse. Men were more confident in their

ability to request condom use during an actual sexual encounter.

Different patterns of condom use self-efficacy predictors emerged for each subsample. Condom use self-efficacy of nonvirgin participants was best explained by levels of positive condom use attitudes, perceived condom use barriers, satisfaction with sexual communication, and anticipated number of partners over the next 5 years. In short, nonvirgin individuals with high condom self-efficacy were more likely to endorse sexual communication and positive condom attitudes, perceive fewer obstacles to condom use, and expect to engage in intercourse with fewer people over the next 5 years. Their global view of condoms was that they can and would use protection during a sexual encounter. Nonvirgins with higher condom use self-efficacy may also understand the benefit of communication within the context of a sexual relationship from experience. Condom use self-efficacy of currently sexually active participants was also predicted by the number of one-time sexual encounters and Hispanic ethnicity. Sexually active individuals with higher condom use self-efficacy were more likely to perceive condoms as accessible and positive, have more one-time sexual partners, and less likely to identify as Hispanic. For these individuals, condoms were an available commodity easily incorporated into sexual encounters. Experience from negotiating condom use with one-time sexual partners may provide sexually active individuals with the necessary practice needed to build confidence in future condom use. The contrasting predictors of self-efficacy between nonvirgin and currently sexually active participants supports past research on sample-specific condom use self-efficacy (Maibach & Murphy, 1995). Research on target populations (e.g., currently sexually active individuals) can clarify the predictive value of condom use self-efficacy specific to a given population.

Of participants who used condoms at their most recent sexual encounter, condom use attitudes and condom use barriers predicted 45% of variance in condom use self-efficacy. This relationship is well documented (Basen-Engquist & Parcel, 1992) and supports the centrality of these constructs in the development and design of condom use interventions. A focus on the benefits and availability of condoms will impact the expectations of sexual encounters with condoms. Notably, predictors in the nonvirgin and sexually active target populations accounted for only a moderate amount of variance in condom use self-efficacy. Two possibilities may account for the lack of variance explained by the hypothesized model of sexual variables. It is possible that in past studies, the sexual variables related to condom use self-efficacy were specific to unique populations. If this were the case, the findings of the current study may not parallel those of past studies because different sexual predictors characterize the current target population. Although this is a plausible explanation, it is more likely that these variables have not been evaluated with consistent measures which can be generalized across studies. In this case, attention to how sexual variables are operationalized throughout studies may improve the valid measurement of sexual constructs in research of this nature.

The only ethnic variable that predicted condom use self-efficacy was Hispanic ethnicity in the currently sexually active population. Hispanic participants reported lower condom use self-efficacy than Caucasian and Asian participants. Lower condom use self-efficacy in Hispanic populations may help account for the role of Hispanic ethnicity in predicting sexual risk behavior (Faryna & Morales, 2000; Gomez & Marin, 1996). The traditional gender expectations of Latino cultures may influence how much control an individual perceives and expects in a sexual situation. In *machismo* cultures women are not taught to be assertive in sexual situations. The social pressure for Latinas to exhibit less control over a sexual situation may explain lower condom use self-efficacy in women (but see Fernandez-Esquer, Atkinson, Diamond, Useche, & Mendiola, 2004). In line with this theory, Murphy (1999) found that women who endorsed traditional stereotypes of male sexual dominance were more likely to score lower on this measure. The lack of control over a sexual encounter experienced by Hispanic women has been reported elsewhere and may attenuate perceived STI risks (Mays & Cochran, 1988).

In addition to the predictive role of Hispanic ethnicity, ethnic differences emerged in sexual behavior. In support of past research (Meston, Trapnell, & Gorzalka, 1996, 1998), Asians reported more conservative sexual attitudes, less sexual experience, and fewer sexual partners compared to Caucasian and Hispanic participants. Interestingly, in this study, Hispanic and Asian participants were more likely to refuse to use a condom. The issue of condom refusal and nonuse is problematic and may depend on a number of factors, such as perceived condom use barriers, concurrent contraceptive use, and perceived health risk of a partner (Green, Fulop, & Kocsis, 2000). Almost half of sexual encounters with new partners are not expected and even if condom use is considered, both men and women may rationalize condom nonuse. Condom nonuse of both genders may result from the lack of perceived health risk, other contraceptive use, or inconvenience (Carter et al., 1999). Contraceptives are notorious barriers to condom use because they decrease the threat of pregnancy and, thus, reduce sexual inhibition (Dekin, 1996; Green et al., 2000). The higher tendency of

Hispanic and Asian participants to refuse to use condoms may reflect any one or more of these reasons.

The analyses of gender differences offer further insight into the factors which impact condom use self-efficacy in nonvirgin and sexually active participants. Gender differences played a prominent role in sexual communication satisfaction, as illustrated in Table IV. The relational emphasis of female communication satisfaction and the women's emphasis of male communication satisfaction points to a mutual perception of sexual satisfaction wherein the women play a strong role in facilitating dialogue. In comparison to men, the tendency for women to communicate more about sexual issues may contribute to the woman-focused perception of sexual communication (Allen et al., 2002; Carter et al., 1999). The significance of gender differences in sexual communication is underlined by evidence that self-efficacy for communicating about sexual history is a predictor of responsible sex behaviors (Ransom, 1998). The importance of sexual communication in influencing condom use reiterates the gender-specific perception of condom use self efficacy. Specifically, a woman's perception of condom use self-efficacy may rely more on her ability to gain partner cooperation within a specific sexual situation. In support of this view, empirical studies show that women are more likely to convince an unwilling partner to use condoms, and men are more likely to report being convinced to use a condom (Carter et al., 1999). The characteristics of women who report higher perceived self-efficacy for condom use suggest that partner cooperation is gained by being assertive and communicative (Sterk et al., 2003; Uddin, 1996). Communication is a key strategy in exercising this partner-oriented type of condom use self-efficacy (Soet et al., 1998).

Through the evaluation of factors closely related with condom use self-efficacy, the current study provided critical clarification of past findings. A primary aim of this research has to evaluate the statistical predictors of condom use self-efficacy which have varied so widely in past work. The significance of these past disparate findings is clouded by a set of methodological complications, including different types of samples, varying measures of condom use self-efficacy, and an inconsistent set of predicting factors. In turn, this dissonant research prevents the design and development of efficacious intervention programs aimed at enhancing condom use self-efficacy. The current study attempted to address some of these complications by clarifying which factors supported by past research predict condom use self-efficacy in at-risk college students. In addition to advancing the understanding of specific aspects of condom use self-efficacy, future research to this end should incorporate related past work to determine how previously indicated factors fit with our current knowledge. The conditions in which young adults explore sexuality can change just as quickly as our evolving understanding of condom use behavior. Indeed, the benefits of interventions rely on their relevance to the lives of adolescents and young adults.

A major limitation of this research is also a strength: the design of the study was devised to emphasize condom use self-efficacy, rather than condom use, and so thorough measures of condom use were not primary to our research goals. Therefore, we omitted traditional measures of condom use frequency prior to the month preceding testing. Furthermore, the variables examined in our analyses reflected well-supported influences on condom use self-efficacy. We encourage others to build on our findings by investigating additional factors linked to condom use self-efficacy.

The sample had limitations common in sex research, such as potential volunteer bias and an age range that may prevent extension to other populations. Sexual risk behavior research is highly relevant in college populations, however, the limited age and sexual experience range represented in this sample may limit the generalizability of these findings. The ethnic representation was limited by convenience, and it did not include African Americans, Native Americans, and other ethnic groups. The current study's focus on nonvirgins, currently sexually active, and recent condom users was based on a convenience sample, and ideally, a variety of populations could be examined for predictors of condom use self-efficacy.

The findings from this investigation have implications for the design of interventions to enhance condom use self-efficacy. A common theme of these findings is the importance of gearing self-efficacy interventions toward specific contexts and situations. Specificity is needed in sexual communication training. The demands of sexual communication may vary across sexual encounters based on the partner, the intimacy level, and a host of other situational factors. Because condom use self-efficacy is aimed at a behavioral interaction between two sexual partners, communication is a crucial step in coordinating condom use expectations and actions. Interventions can build on women's communication strengths and help cultivate similar skills in men. Situation-specific rehearsal of sexual communication may enhance condom use self-efficacy (Orbell, Hodgkins, & Sheeran, 1997). A potential intervention strategy to enhance sexual communication in women may focus on assertiveness in sexual communication (Uddin, 1996), which may then encourage responsible sexual behaviors of both partners.

Specificity is also needed to adjust condom use self-efficacy interventions to different cultural backgrounds.

Cultures vary across multiple social dimensions (Hofstede, 1991), and the articulation and discussion of cross-cultural sex role norms may inform individuals and their partners of underlying social influences that impact how each person approaches sexuality. The ability to tease apart cultural and social bias from personal choice may dramatically impact condom use self-efficacy (Luszczynska, Gutierrez-Dona, & Schwarzer, in press).

Furthermore, specificity is needed to scrutinize the types of possible sexual encounters an individual may experience. Condom use self-efficacy depends heavily on whether one believes he or she will use a condom in a sexual situation, whether it be a one-time sexual encounter, a monogamous relationship, or one's projected sexual activity. Condom use self-efficacy interventions can benefit from this facet of self-efficacy through discussion of potential sexual encounters. By stimulating a dialogue about which situations may require condom use negotiation and how these situations would be handled, such interventions can help shape the beliefs that will guide future condom use, not by telling young people what to think, but rather encouraging them to explore what they think. In turn, this exercise may promote the formation of intention, which has been shown to greatly impact the act of raising the issue of condom use with new sexual partners (Yzer, Siero, & Buunk, 2001). This approach may be particularly appropriate for nonhabitual condom users, who may benefit more from explicit analysis of condom use intentions compared to consistent condom users (Trafimow, 2000).

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REFERENCES

Abraham, C., Sheeran, P., Norman, P., Conner, M., de Vries, N., & Otten, W. (1999). When good intentions are not enough: Modeling postdecisional cognitive correlates of condom use. *Journal of Applied Social Psychology*, *29,* 2591–2612.

Allen, M., Emmers-Sommer, T. M., & Crowell, T. L. (2002). Couples negotiating safer sex behaviors: A meta-analysis of the impact of conversation and gender. In M. Allen, R. W. Priess, B. M. Gayle, & N. Burrell (Eds.), *Interpersonal communication research: Advances through meta-analysis* (pp. 263–279). Mahwah, NJ: Erlbaum.

Baele, J., Dusseldorp, E., & Maes, S. (2001). Condom use self-efficacy: Effect on intended and actual condom use in adolescents. *Journal of Adolescent Health*, *28,* 421–431.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood, NJ: Prentice-Hall.

Basen-Engquist, K., Edmundson, E. W., & Parcel, G. S. (1996). Structure of health risk behavior among high school students. *Journal of Consulting and Clinical Psychology*, *64,* 764–775.

Basen-Engquist, K., Masse, L. C., Coyle, K., Kirby, D., Parcel, G. S., Banspach, S., et al. (1999). Validity of scales measuring the psychosocial determinants of HIV/STI-related risk behavior in adolescents. *Health Education Research*, *14,* 25–38.

Basen-Engquist, K., & Parcel, G. S. (1992). Attitudes, norms, and self-efficacy: A model of adolscents' HIV-related sexual risk behavior. *Health Education Quarterly*, *19,* 263–277.

Bryan, A. D., Aiken, L. S., & West, S. G. (1997). Young women's condom use: The influence of acceptance of sexuality, control over the sexual encounter, and perceived susceptibility to common STIs. *Health Psychology*, *16,* 468–479.

Carroll, L. (1991). Gender, knowledge about AIDS, reported behavioral change, and the sexual behavior of college students. *College Health*, *40,* 5–12.

Carter, J. A., McNair, L. D., Corbin, W. R., & Williams, M. (1999). Gender differences related to heterosexual condom use: The influence of negotiation styles. *Journal of Sex and Marital Therapy*, *25,* 217–225.

Cecil, H., & Pinkerton, S. D. (2001). Magnitude: An important dimension of self-efficacy. *Journal of Applied Social Psychology*, *30,* 1243–1267.

Crosby, R., DiClemente, R. J., Wingood, G. M., Sionean, C., Cobb, B. K., Harrington, K., et al. (2001). Correct condom application among African-American adolescent females: The relationship to perceived self-efficacy and the association to confirmed STDs. *Journal of Adolescent Health*, 29, 194–199.

Dekin, B. (1996). Gender differences in HIV-related self-reported knowledge, attitudes, and behaviors among college students. *American Journal of Preventative Medicine*, *12,* 61–66.

Derogatis, L. R. (1976). The DSFI: A multidimensional measure of sexual functioning. *Journal of Sex and Marital Therapy*, *5,* 244–281.

de Visser, R. O., & Smith, A. M. A. (2001). Inconsistent users of condoms: A challenge to traditional models of health behaviour. *Psychology and Health Medicine*, *6,* 41–46.

Faryna, E. L., & Morales, E. (2000). Self-efficacy and HIV-related risk behaviors among multiethnic adolescents. *Cultural Diversity and Ethnic Minority Psychology*, *6,* 42–56.

Fernandez-Esquer, M. E., Atkinson, J., Diamond, P., Useche, B., & Mendiola, R. (2004). Condom use self-efficacy among U.S.- and foreign-born Latinos in Texas. *Journal of Sex Research*, *41,* 390–399.

Fisher, J. L. (1996). Gender issues with condom use self-efficacy beliefs (Immune deficiency). *Dissertation Abstracts International*, *56*(10), 5754.

Gerteisen, G. M. (1998). HIV/AIDS risk perceptions, health beliefs, perceived self-efficacy and sexual issues related to young women's condom use behavior. *Dissertation Abstracts International*, *58*(11-B), 5913.

Glaser, A. L. (1997). AIDS health locus of control and condom use self-efficacy as predictors of condom use in college students. *Dissertation Abstracts International*, *57*(9), 5901.

Goldstein, A. B. (1997). Predictors of condom use self-efficacy in women at risk for HIV/AIDS. *Dissertation Abstracts International*, *58*(5), 2660.

Gomez, C. A., & Marin, B. V. O. (1996). Gender, culture, and power: Barriers to HIV-prevention strategies for women. *Journal of Sex Research*, *33,* 355–362.

Green, J., Fulop, N., & Kocsis, A. (2000). Determinants of unsafe sex in women. *International Journal of STI and AIDS*, *11,* 777–783.

Hale, P. J., & Trumbetta, S. L. (1996). Women's self-efficacy and sexually transmitted disease preventative behaviors. *Research in Nursing & Health*, *19,* 101–110.

Heinrich, L. B. (1993). Contraceptive self-efficacy in college women. *Journal of Adolescent Health*, *14,* 269–276.

Hofstede, G. H. (1991). *Cultures and organizations: Software of the mind*. London: McGraw-Hill.

Hynie, M., Schuller, R. A., & Couperthwaite, L. (2003). Perceptions of sexual intent: The impact of condom possession. *Psychology of Women Quarterly*, *27,* 75–79.

Juran, S. (1995). The 90's: Gender differences in AIDS-related sexual concerns and behaviors, condom use and subjective condom experiences. *Journal of Psychology and Human Sexuality*, *7,* 39–60.

Langer, L. M., Zimmerman, R. S., & Cabral, R. J. (1994). Perceived versus actual condom skills among clients at sexually transmitted disease clinics. *Public Health Reports*, *109,* 683–687.

Lauby, J. L., Semaan, S., O'Connell, A., Person, B., & Vogel, A. (2001). Factors related to self-efficacy for use of condoms and birth control among women at risk for HIV infection. *Women and Health*, *34,* 71–91.

Luszczynska, A., Gutierrez-Dona, B., & Schwarzer, R. (in press). General self-efficacy in various domains of human functioning: Evidence from five countries. *International Journal of Psychology*.

Magoun, M., & Alison, M. (2000). The impact of security of attachment to mothers, communication with mothers, and contraceptive self-efficacy upon female college students' contraceptive use. *Dissertation Abstracts International*, *61*(3), 1642.

Maibach, E., & Murphy, D. A. (1995). Self-efficacy in health promotion research and practice: Conceptualization and measurement. *Health Education Research*, *10,* 37–50.

Mays, V., & Cochran, S. (1988). Issues in the perception of AIDS risk and risk reduction activities by Black and Hispanic/Latina women. *American Psychologist*, *43,* 949–957.

Meston, C. M., & Trapnell, P. D. (2005). Development and validation of a five factor sexual satisfaction and distress scale: The Sexual Satisfaction Scale for Women (SSS-W). *Journal of Sexual Medicine*, *2,* 66–81.

Meston, C. M., Trapnell, P. D., & Gorzalka, B. B. (1996). Ethnic and gender differences in sexuality: Variations in sexual behavior between Asian and non-Asian university students. *Archives of Sexual Behavior*, *25,* 33–71.

Meston, C. M., Trapnell, P. D., & Gorzalka, B. B. (1998). Ethnic, gender, and length-of-residency influences on sexual knowledge and attitudes. *Journal of Sex Research*, *35,* 176–188.

Mize, S. J. S., Robinson, B. E., Bockting, W. O., & Scheltema, K. E. (2002). Meta-analysis of the effectiveness of HIV prevention interventions for women. *AIDS Care*, *14,* 163–180.

Murphy, C. A. (1999). Condom use and qualities of women's dating and family relationships: HIV and pregnancy prevention. *Dissertation Abstracts International*, *59*(9), 5101.

Murphy, D. A., Stein, J. A., Schlenger, W., Maibach, E., & The National Institute of Mental Health Multisite HIV Prevention Trial Group. (2001). Conceptualizing the multidimensional nature of self-efficacy: Assessment of situational context and level of behavioral challenge to maintain safer sex. *Health Psychology*, *20,* 281–290.

O'Leary, A., Goodhart, F., Jemmott, S., & Boccher-Lattimore, D. (1992). Predictors of safer sex on the college campus: A social cognitive theory analysis. *Journal of American College Health*, *40,* 254–263.

O'Leary, A., Maibach, E., Ambrose, T. K., Jemmott, J. B., & Celentano, D. D. (2000). Social cognitive predictors of sexual risk behavior change among STI clinic patients. *AIDS and Behavior*, *4,* 309–316.

Orbell, S., Hodgkins, S., & Sheeran, P. (1997). Implementation intentions and the theory of planned behavior. *Personality and Social Psychology Bulletin*, *23,* 945–954.

Parsons, J. T., Halkitis, P. N., Bimbi, D., & Borkowski, T. (2000). Perceptions of the benefits and costs associated with condom use and unprotected sex among late adolescent college students. *Journal of Adolescence*, *23,* 377–391.

Quatrella, L. A. (2000). Predictors of condom use self-efficacy and perceptions of responsibilities of safer sex behaviors among college students. *Dissertation Abstracts International*, *61*(4), 2275.

Raj, A., & Pollack, R. H. (1995). Factors predicting high-risk sexual behavior in heterosexual college females. *Journal of Sex and Marital Therapy*, *21,* 213–224.

Ransom, J. E. (1998). Factors related to safer sex behaviors in young college students. *Dissertation Abstracts International*, *59*(5), 2126.

Redding, C. A., & Rossi, J. S. (1999). Testing a model of situational self-efficacy for safer sex among college students: State and gender-based differences. *Psychology and Health*, *14,* 467–486.

Reis, J., & Stephens, Y. D. (1998). A discriminant analysis of young adults' knowledge of the human papillomavirus and self-efficacy of condom use. *Journal of Psychology and Human Sexuality*, *10,* 71–91.

Richard, R., & van der Pligt, J. (1991). Factors affecting condom use among adolescents. *Journal of Community & Applied Social Psychology*, *1,* 105–116.

Salina, D. D., Razzano, L., & Lesondak, L. (2000). Influence of health beliefs, attitudes and concern about HIV/AIDS on condom use in college women. *Journal of Prevention and Intervention in the Community*, *19,* 41–53.

Simpson, J. A., & Gangestad, S. W. (1991). Individual differences in sociosexuality: Evidence for convergent and discriminant validity. *Journal of Personality and Social Psychology*, *60,* 870–883.

Soet, J. E., Dilorio, C., & Dudley, W. N. (1998). Women's self-reported condom use: Intra and interpersonal factors. *Women & Health*, *27,* 19–32.

Sterk, C. E., Klein, H., & Elifson, K. W. (2003). Perceived condom use self-efficacy among at-risk women. *AIDS and Behavior*, *7,* 175–182.

Svenson, G. R., Oestergren, P., Merlo, J., & Rastam, L. (2002). Action control and situational risks in the prevention of HIV and STIs: Individual, dyadic, and social influences on consistent condom use in a university population. *AIDS Education and Prevention*, *14,* 515–531.

Trafimow, D. (2000). Habit as both a direct cause of intention to use a condom and as a moderator of the attitude-intention and subjective norm-intention relations. *Psychology and Health*, *15,* 383–393.

Treise, D., & Weigold, M. F. (2001). AIDS public service announcements: Effects of fear and repetition on predictors of condom use. *Health Marketing Quarterly*, *18,* 39–61.

Uddin, M. (1996). College women's sexuality in an era of AIDS. *Journal of American College Health*, *44,* 252–261.

Wulfert, E., & Wan, C. K. (1993). Condom use: A self-efficacy model. *Health Psychology*, *12,* 346–353.

Yzer, M. C., Siero, F. W., & Buunk, B. P. (2001). Bringing up condom use and using condoms with new sexual partners: Intentional or habitual? *Psychology and Health*, *16,* 409–421.