

# Increased Condom Use Among Teenage Males, 1988–1995: The Role of Attitudes

By Joseph J. Murphy and Scott Boggess

**Context:** *Understanding whether and to what degree changes in young men's attitudes explain increases in condom use over time can be useful in developing more effective disease prevention strategies.*

**Methods:** *Data from the 1988 and the 1995 National Survey of Adolescent Males are used to determine changes in attitudes toward condoms, pregnancy prevention and HIV and AIDS. Two-limit tobit models are employed to investigate the association between these attitudes and condom-use behavior and to examine how this relationship may have changed over time.*

**Results:** *Between 1988 and 1995, young men's attitudes toward partner appreciation of condom use, condom-use embarrassment and pleasure reduction from condom use all changed in a direction suggestive of more consistent condom use. However, attitudes related to pregnancy prevention and AIDS avoidance changed in a direction suggestive of less-consistent condom use. Changes over time in the strength of the relationship between three attitude measures (masculinity, pleasure reduction and partner appreciation) and condom use also were predictive of lower levels of condom-use consistency. Only the strength of the relationship between condom-use embarrassment and consistent condom use changed in a direction corresponding to observed increases in rates of condom use among young men.*

**Conclusions:** *Many of the significant changes in young males' attitudes toward condoms do not explain the increase in consistent condom use among adolescent males that occurred between 1988 and 1995. However, increasing male contraceptive responsibility and emphasizing the risks and consequences of contracting HIV appear to be viable routes for policymakers to explore. Efforts particularly need to be targeted toward Hispanics.*

Family Planning Perspectives, 1998, 30(6):276–280 & 303

Unprotected sexual intercourse among American teenagers has many serious public health and societal consequences, particularly the transmission of HIV and other sexually transmitted diseases (STDs). Among the 40,000–80,000 Americans who become infected with HIV each year, one in four are teenagers.<sup>1</sup> In addition, adolescents account for one-third of all chlamydia and gonorrhea cases and one-tenth of all syphilis cases in the United States.<sup>2</sup>

The risk of STD transmission among youths may be reduced by encouraging safer sexual behaviors, such as the use of condoms. Next to abstinence, consistent and correct condom use is the most effective way to prevent the transmission of HIV.<sup>3</sup> Indeed, as part of the U.S. government's Healthy People 2000 initiative, the surgeon general's office has set a goal of increasing teenagers' use of condoms at last intercourse to 75%.<sup>4</sup>

Efforts to increase use of condoms among teenagers appear to have been at least moderately successful. Data from the National Survey of Adolescent Males (NSAM) indicate that between 1988 and

1995, the rate of condom use at last intercourse among 15–19-year-old males increased from 56% to 69%,<sup>5</sup> six percentage points shy of the surgeon general's goal. A similar increase in condom use occurred among adolescent females during the same time period, according to data from the 1988 and 1995 cycles of the National Survey of Family Growth.<sup>6</sup>

However, the majority of adolescent males do not use condoms consistently. Although the percentage of teenage males using condoms at every act of intercourse increased between 1988 and 1995, only 45% of teenage males in the 1995 NSAM sample reported using condoms consistently during the 12 months preceding the survey.<sup>7</sup>

Research indicates that attitudes and beliefs concerning the effectiveness and social consequences of condom use are major determinants of use.<sup>8</sup> One study using 1988 NSAM data found that five factors were associated with consistency of condom use: the belief that males have some responsibility for preventing pregnancy; the frequency of worry about AIDS; anticipation that a partner would appreciate the respondent's willingness to use condoms; the

perception that condoms are embarrassing; and the belief that condoms significantly reduce men's sexual pleasure.<sup>9</sup>

Analysis of data from the 1988 and 1991 waves of the NSAM determined that males aged 17.5–19 in 1991 were more likely than those in 1988 to endorse positive condom-related attitudes, and that these attitudes were significant predictors of young men's use of condoms.<sup>10</sup> The study also found that changes in perceived reduction of sexual pleasure and in the female partner's appreciation of a male's condom use were associated with changes in condom use between the two samples, while multivariate analyses showed that decreased worry about AIDS was associated with decreased condom use.<sup>11</sup>

Using data from the NSAM, we explore the role of attitudes and beliefs in explaining the observed increase in condom use between 1988 and 1995 among males aged 15–19. Given the trends in condom use, we hypothesize that young males in general in the 1995 sample will have adopted stronger attitudes concerning male contraceptive responsibility and will have more favorable attitudes about condoms than those in the earlier sample.

## Methods

### Data

We analyzed data from two independent waves of the NSAM, administered in 1988 and 1995. The NSAM is a nationally representative survey of never-married, non-institutionalized 15–19-year-old men residing in the contiguous United States. Each cohort was drawn as a multistage area-probability sample that overrepresented blacks and Hispanics. The 1988 survey had a sample size of 1,880, with a re-

At the time this article was written, Joseph J. Murphy was a research associate at the Population Studies Center, The Urban Institute, Washington, DC, and is now a survey specialist at the National Opinion Research Center, University of Chicago, Chicago, IL. Scott Boggess is assistant professor in the Department of Demography, Georgetown University, Washington, DC. The research on which this article is based was funded in part by a grant from the Office of Population Affairs, Department of Health and Human Services. The authors wish to thank Laura Duberstein Lindberg, Leighton Ku and Emily Anderson for their valuable comments and suggestions on earlier drafts.

sponse rate of 74% among eligible respondents, while the 1995 survey had a sample size of 1,729 and a response rate of 75%.<sup>12</sup>

Collected data included partner-by-partner sexual and contraceptive histories, demographic and family background variables, and HIV- and pregnancy-related attitudes and knowledge. Postsampling weights were developed in 1988 to match the March 1987 Current Population Survey<sup>13</sup> and in 1995 to match the preliminary census projections of the civilian noninstitutionalized population.<sup>14</sup>

Because the NSAM was designed specifically for the purpose of studying the sexual and contraceptive behavior of adolescent males, it contains a wealth of information about both sexual and contraceptive behaviors and attitudes. However, since all information was collected from males, very little could be ascertained about the attitudes and behaviors of their girlfriends and sexual partners.

The analytic sample in the current study was limited to adolescent males who engaged in sexual intercourse with a female at least once in the 12 months preceding the survey. In 1988, 60% of males were sexually active, compared with 55% in 1995.<sup>15</sup> This decrease in sexual activity is analyzed in-depth elsewhere.<sup>16</sup>

To identify relationships between condom-related attitudes and behaviors and differences by cohort and race, we merged data from the 1988 and 1995 waves into a pooled sample. This sample included all sexually active males aged 15–19 in either of the two waves. The combined sample was composed of 2,295 males, 1,263 of whom were interviewed in 1988 and 1,032 of whom were interviewed in 1995. Postsampling weights were applied to all analyses.

### Measures

• *Condom use.* Consistency of condom use, defined as the percentage of times a respondent used a condom, either alone or in combination with other contraceptive methods, during heterosexual intercourse over the 12 months preceding the survey, was the dependent variable in all analyses. This variable was measured by compiling partner-by-partner data to obtain an estimate of total condom usage over the last year: Respondents reported the percentage of times they had used a condom with each of their last six partners during the previous year. Weighting each partner by the number of times the couple engaged in sexual intercourse resulted in a measure of condom-use consistency for each respondent.<sup>17</sup> Condom-use consistency was coded with values between zero and one,

inclusive (where, for example, 0.40=40%). For partners with whom the respondent reported having intercourse only once, consistency of condom use was coded as either zero or one (0% or 100%).

• *Condom-related attitudes.* Following the approach used in previous analyses,<sup>18</sup> we divided condom-related attitudes into three distinct categories: pregnancy prevention, AIDS avoidance and personal and social consequences.

Pregnancy prevention attitudes included three variables: the perceived likelihood that a female partner would get pregnant if the respondent used a condom (perceived condom ineffectiveness); the degree to which the respondent believes that if he made someone pregnant, he would feel like a “real man”; and a five-item index assessing the degree to which the respondent believes in male contraceptive responsibility.\* The perceived condom ineffectiveness variable is scored on a scale ranging from one (no chance of pregnancy) to five (almost certain chance). The index of male contraceptive responsibility represents the average response to a series of five questions, each measuring a different component of male contraceptive responsibility. Items in this index are scored on a scale ranging from one to four, with higher values denoting more responsible attitudes. The “real man” variable is scored on a scale ranging from one (not at all) to four (a lot).

Three aspects of AIDS avoidance are measured in the NSAM: the frequency with which the respondent worries about AIDS; the respondent’s perceived likelihood of HIV infection within the next five years; and the respondent’s degree of AIDS denial. The first two variables are scored on a scale ranging from one to five, with higher values denoting greater concern about AIDS. The AIDS denial variable is an index composed of two questions that measure the respondent’s views on AIDS prevalence and his perception of the benefit of using a condom to avoid HIV infection. The AIDS denial variable is scored on a scale from one to four, with higher values denoting increased denial.

Attitudes concerning personal and social consequences of condom use include the degree to which the respondent believes his partner would appreciate his use of a condom; the degree to which the respondent believes he would feel less pleasure if he used a condom; and a four-item index of condom-use embarrassment. (The index assesses embarrassment associated with buying, discussing and using condoms.<sup>†</sup>) All three variables are scored on a scale ranging from one to five, with

**Table 1. Among males aged 15–19, mean percentage (and standard deviation) of sexual encounters in which condoms were used during the 12 months preceding interview, by race and ethnicity, National Survey of Adolescent Males, 1988 and 1995**

Race/ethnicity	1988		1995	
	Mean	(SD)	Mean	(SD)
<b>Total</b>	<b>55.5</b>	<b>(39.2)</b>	<b>68.7***</b>	<b>(36.6)</b>
White/other	53.6	(54.4)	70.1***	(55.0)
Black	62.5	(24.2)	72.8***	(24.9)
Hispanic	52.5	(28.5)	58.7	(24.4)

\*\*\*Difference between means is statistically significant at  $p < .001$ .  
Notes: Results are weighted. A sexual encounter is defined as an act of sexual intercourse with a female partner.

higher values corresponding to greater appreciation, less pleasure and increased embarrassment, respectively.

## Results

### Condom-Use Consistency

Overall, according to Table 1, condom-use consistency increased by 24% between 1988 and 1995. Sexually active males in 1988 reported using condoms in 56% of their sexual encounters<sup>‡</sup> in the 12 months prior to the survey, compared with a mean use-consistency rate of 69% in 1995.

The increase in condom-use consistency differed across racial and ethnic groups. The greatest increase occurred among white males. In this group, condom-use consistency increased from 54% in 1988 to 70% in 1995, an increase of 31%. In contrast, condom-use consistency among blacks increased by 17%, from 63% in 1988 to 73% in 1995. While whites had lower levels of condom-use consistency than did blacks in both 1988 and 1995, the difference in the rate of consistency between the two groups decreased over time. The smallest change in condom-use consistency, an increase of 12%, occurred among Hispanics.

### Condom-Related Attitudes and Beliefs

Table 2 (page 278) depicts the distribution of responses to the 17 condom-related attitude questions and the mean response for each question for both the 1988 and the 1995 cohorts. Chi-square tests were used to test for significant changes in the distribution of responses across cohorts.

• *Pregnancy prevention.* Adolescent males in 1995 reported a significantly weaker be-

\*Cronbach’s alpha for this measure was .55, indicating a moderate but not high level of internal reliability.

†Cronbach’s alpha for this measure was .60, indicating a moderate but not high level of internal reliability.

‡ For the purposes of this study, a sexual encounter is defined as an episode of sexual intercourse with a female partner.

**Table 2. Percentage distributions of U.S. males aged 15–19, by numerical score on agreement scale; chi-square p-values for change in distributions between survey years; and mean item scores; all according to questions related to attitudes about condoms, 1988 and 1995**

Attitudes and questions	Year	Agreement scale						p	Mean
		1	2	3	4	5	Total		
<b>PREGNANCY PREVENTION</b>									
<b>Perceived condom ineffectiveness†</b>									
What are the chances that a new female partner will get pregnant if you always use a condom?	1988	13.7	57.1	23.7	4.5	0.9	100.0	.002	2.22
	1995	12.5	51.1	31.9	3.5	0.9	100.0		2.29**
<b>Male contraceptive responsibility‡</b>									
Before a young man has sexual intercourse with someone, he should know or ask whether she is using contraception.	1988	1.2	2.0	21.6	75.3	na	100.0	.001	3.71
	1995	1.0	6.3	32.2	60.5	na	100.0		3.52**
If a young man makes someone pregnant, the child is his responsibility as much as the mother's.	1988	1.3	1.3	8.2	89.2	na	100.0	.010	3.85
	1995	0.1	1.8	7.8	90.3	na	100.0		3.88
If a young man does not want to have a child, he should not have intercourse without contraception.	1988	2.8	3.1	12.8	81.3	na	100.0	.061	3.73
	1995	2.3	5.4	11.9	80.4	na	100.0		3.70
If his girlfriend is using the pill, the young man should help pay for it.	1988	12.7	16.3	32.9	38.1	na	100.0	.001	2.96
	1995	10.5	20.1	38.4	31.0	na	100.0		2.90
If a couple has never discussed contraception, the young man should bring it up.	1988	3.9	11.4	32.4	52.3	na	100.0	.001	3.33
	1995	3.4	12.5	40.7	43.5	na	100.0		3.24**
<b>Feeling like a "real man"§</b>									
If you got a girl pregnant now, how much would it make you feel like you were a real man?	1988	59.6	19.7	16.0	4.7	na	100.0	.031	1.66
	1995	62.4	15.5	15.6	6.5	na	100.0		1.66
<b>AIDS AVOIDANCE</b>									
<b>AIDS worry‡</b>									
I worry about AIDS.	1988	9.5	23.7	28.0	21.5	17.3	100.0	.279	3.13
	1995	10.8	26.7	26.8	18.7	16.9	100.0		3.04*
<b>Perceived AIDS risk†</b>									
What do you think are the chances that you could get the AIDS virus in the next five years?	1988	24.7	38.5	31.2	3.6	2.0	100.0	.201	2.20
	1995	25.9	41.1	29.4	2.2	1.5	100.0		2.11**
<b>AIDS denial‡</b>									
Using condoms to prevent the spread of AIDS is more trouble than it's worth.	1988	78.9	9.1	4.7	7.4	na	100.0	.001	1.41
	1995	74.2	14.2	6.1	5.5	na	100.0		1.42
Even though AIDS is a fatal disease, it is so uncommon that it's not really a big worry.	1988	82.0	11.5	4.0	2.6	na	100.0	.001	1.27
	1995	84.7	12.7	1.4	1.2	na	100.0		1.19**
<b>PERSONAL AND SOCIAL CONSEQUENCES</b>									
<b>Partner appreciation†</b>									
What are the chances that if you used a condom, she would appreciate that?	1988	5.2	8.4	18.3	40.3	27.8	100.0	.001	3.77
	1995	4.8	5.6	12.1	36.4	41.1	100.0		4.03**
<b>Condom-use embarrassment†</b>									
What are the chances that if you bought a condom in a drugstore, you would feel embarrassed?	1988	31.3	26.7	18.5	16.9	6.6	100.0	.001	2.41
	1995	42.1	22.2	13.9	14.1	7.7	100.0		2.23**
What are the chances that if the girl knew you had a condom ready the first time you had sex with her, she would be upset?	1988	19.8	32.5	29.4	15.4	2.9	100.0	.001	2.49
	1995	40.5	31.0	20.0	6.3	2.2	100.0		1.99**
What are the chances that it would be embarrassing for the two of you to discuss using a condom?	1988	28.3	34.8	19.7	13.9	3.4	100.0	.001	2.29
	1995	46.7	29.5	12.8	9.2	1.7	100.0		1.90
What are the chances that it would be embarrassing to put a condom on in front of her?	1988	31.6	32.1	17.2	13.5	5.7	100.0	.001	2.30
	1995	43.4	24.9	17.1	10.5	4.1	100.0		2.07**
<b>Pleasure with condom†</b>									
What are the chances that if you used a condom, you would feel less pleasure?	1988	16.3	28.9	23.6	20.9	10.3	100.0	.001	2.80
	1995	25.8	23.8	25.1	18.3	7.1	100.0		2.58**

\*Difference between means is significant at p<.05. \*\*Difference between means is significant at p<.01. †Scale values are 1=no chance; 2=little chance; 3=50–50 chance; 4=pretty good chance; and 5=all most certain chance. ‡Scale values are 1=disagree a lot; 2=disagree a little; 3=agree a little; and 4=agree a lot. §Scale values are 1=not at all; 2=seldom; 3=occasionally; 4=frequently; and 5=all the time. Note: na=not applicable.

lief in the role of condoms in preventing pregnancy than did those in 1988: The proportion of males who thought there was little or no chance that a new female partner would get pregnant if they always used a condom decreased from 71% in 1988 to 64% in 1995. Overall, adolescent males in 1995 were significantly less likely than their 1988 counterparts to hold attitudes suggesting contraceptive responsibility (mean index scores of 3.45 and 3.52, respectively; p<.01, not shown). Males in 1995 were sig-

nificantly less likely than males in 1988 to "agree a lot" that they should ask whether their partner is practicing contraception, that they should help pay for their partner's pill prescription and that they should bring up the issue of contraception.

While the distribution of responses to the question on the extent to which causing a pregnancy would make the respondent feel like a "real man" changed significantly over time, this was the result of fewer males' choosing the more moderate responses of

"a little" and "somewhat" and more males' choosing the extreme responses of "not at all" and "a lot"; the mean response score did not change between 1988 and 1995.

• *AIDS avoidance.* The mean scores for AIDS worry and perceived AIDS risk among males surveyed in 1995 were significantly lower than the mean scores among males in 1988. However, the distributions of these scores were not significantly different between the two cohorts. Respondents in the 1995 sample were

more likely than those in the earlier wave to disagree that AIDS is so uncommon that it is not a big worry, but there was no significant change in the overall degree of AIDS denial, and mean scores on the index of AIDS denial were not significantly different between males in 1995 and 1988 (1.34 vs. 1.31, not shown). However, the distribution of responses to the two items in this index each changed significantly over time, as respondents tended in 1995 to both agree or disagree less strongly with the item "using condoms to prevent the spread of AIDS is more trouble than it's worth" and to agree more that the disease is uncommon and therefore less worrisome than did respondents in 1988.

• *Personal and social consequences.* Respondents in the 1995 sample were significantly more likely to believe that their partner would appreciate their use of a condom than were respondents in the 1988 sample: The proportion of males believing that there was a greater than 50% chance that their female partner would appreciate their use of a condom increased from 68% in 1988 to 78% in 1995.

Condom-use embarrassment was significantly lower among members of the 1995 cohort than among those in 1988 (mean index score of 2.22 in 1995, compared with 2.41 in 1988,  $p < .01$ , not shown). More than 40% of males in the 1995 sample indicated that there was "no chance" that they would feel embarrassed either buying a condom in a drugstore, discussing condoms with their partner or putting a condom on in front of their partner. Among respondents in 1988, the percent reporting "no chance" of embarrassment to items on this index ranged from 20% to 32%.

Respondents in 1995 were less likely to believe that decreased pleasure would accompany condom use than were 1988 respondents. Nearly 50% of 1995 respondents believed there was little or no chance that they would feel less pleasure using a condom, compared with 45% in 1988.

### Multivariate Models

• *Predictors of condom-use consistency.* Table 3 presents the results of the multivariate models estimating the relationship between condom-related attitudes and condom-use consistency. Because we measured attitudes subsequent to the time period during which condom use was measured, we cannot ascertain the extent to which condom-related attitudes influenced condom use or the extent to which condom use affected condom-related attitudes. While it is likely that attitudes and condom use influence each other, these

**Table 3. Regression coefficients and marginal effects for two-limit tobit models, without and with interaction terms, showing consistency of condom use among adolescent males in the 12 months preceding interview, by condom-related attitudes and control variables**

Attitudes and variables	Without interactions		With interactions	
	Coefficient	Marginal effect†	Coefficient	Marginal effect†
<b>Pregnancy prevention</b>				
Perceived condom ineffectiveness	1.14	0.58	0.99	0.51
Male contraceptive responsibility index	14.05**	7.18	13.75**	7.05
Feel like a "real man" if made someone pregnant	3.82*	1.95	7.08**	3.63
Feel like a "real man" X year	na	na	-6.74	-3.46
<b>AIDS avoidance</b>				
AIDS worry	8.79**	4.50	8.90**	4.56
Perceived AIDS risk	3.52	1.80	3.41	1.75
AIDS denial index	-9.54**	-4.88	-10.21**	-5.24
<b>Personal and social consequences</b>				
Partner would appreciate condom use	8.28**	4.23	10.76**	5.52
Partner would appreciate condom use X year	na	na	-5.30‡	-2.72
Condom-use embarrassment index	-4.63*	-2.36	-8.82**	-4.52
Condom-use embarrassment X year	na	na	9.75*	5.00
Less pleasure felt with condom	-14.12**	-7.22	-11.78**	-6.04
Less pleasure felt with condom X year	na	na	-6.08*,‡	-3.12
<b>Control variables</b>				
Black non-Hispanic	11.61*	5.94	10.55*	5.41
Hispanic	-12.28*	-6.28	-13.36*	-6.85
Age in years	-11.31**	-5.78	-11.13**	-5.71
Parent's education	2.34**	1.20	2.28**	1.17
Parent's education missing	-3.20	-1.64	-1.95	-1.00
Welfare	-2.25	-1.15	-2.47	-1.27
Female-headed household at age 14	-1.18	-0.60	-0.26	-0.14
Age in years at first intercourse	4.88**	2.50	4.68**	2.40
Year of survey§	22.58**	11.54	49.80**	25.53
<b>Scale factor</b>				
Log likelihood	66.95		66.70	
Intercept	-5,952.21		-5,945.62	
	93.83		85.48	

\* $p < .05$ . \*\* $p < .01$ . †Marginal effects represent the percentage-point change in condom-use consistency for every one-unit change in the value of the variable, evaluated at the means of the other independent variables. ‡The 1995 attitude coefficient (the sum of the attitude coefficient and its interaction term) is significantly different from zero at  $p < .10$ . §1988=0; 1995=1. Note: Results are weighted.

models should be interpreted only as depicting the correlation between attitudes at the time of the survey and behavior during the 12 months preceding the survey.

Following the methodology employed in previous studies,<sup>19</sup> we used a two-limit tobit model to analyze the relationship between condom attitudes and condom use. The two-limit tobit is appropriate in this case because of the clustering of the dependent variable at 0% and 100%. The table presents both the tobit coefficients and the marginal effects, which indicate the percentage-point change in condom-use consistency attributable to a one-unit change in the independent variable, evaluated at the means of the other independent variables.

The regression model in the first panel of Table 3 includes all nine measures of condom-related attitudes: six individual items and the three constructed indices. In addition, several independent controls were included in the model to better isolate the effects of these attitudes: the respondent's age and race; the level of education of his more-educated parent;\* whether he receives welfare benefits; whether the respondent lived in a female-

headed household at age 14; his age at first intercourse; and the year in which the respondent was interviewed.

Two pregnancy prevention attitudes were significantly associated with consistent condom use. Males who held a strong belief in male contraceptive responsibility reported significantly higher levels of condom use in the 12 months prior to the interview than did those believing that men do not need to take much responsibility. In addition, there was a small but significant positive correlation between a respondent's feeling like a "real man" by causing a pregnancy and his condom-use consistency, indicating that higher rates of condom use were associated with the belief that causing a pregnancy enhanced masculine feelings. There was no significant association between perceived condom ineffectiveness and consistent condom use in this model.

Two AIDS avoidance attitudes were significantly associated with consistent con-

\*For those respondents with a missing value for parent's education, the mean value was assigned and the respondent was given a value of one for the dummy variable denoting missing parental education.

dom use. The frequency of AIDS worry was positively associated with consistent condom use, while the degree of AIDS denial was negatively correlated with condom-use consistency. Perceived risk of contracting HIV was marginally associated with consistent condom use ( $p < .10$ ).

Attitudes about the personal and social consequences of condom use also were significantly correlated with use consistency. The belief that a sex partner would appreciate condom use was positively associated with consistency, and embarrassment regarding discussing, purchasing or using a condom was negatively associated with consistency of condom use. In addition, the belief that condom use decreases pleasure was associated with less consistent condom use.

Being black, being younger, having a more educated parent, having been older at first intercourse and participating in the 1995 survey all were positively and significantly associated with consistent condom use.

• *Differences over time.* Not all condom-related attitudes shown in Table 2 changed in a direction that corresponds with the increases in condom use depicted in Table 1. One possible explanation is that there was a change in the relationship between condom-related attitudes and condom use between 1988 and 1995.

To test for significant differences between survey years in the relationship between condom-use consistency and condom attitudes, we reestimated the original model and included a series of interaction terms between each attitudinal variable and a dummy variable indicating whether the respondent was part of the 1995 cohort. If there has been a significant change over time in the relationship between a condom-related attitude and condom-use consistency, the coefficient on the interaction term for the attitudinal variable should be significant.

In Table 3, the multivariate model including the significant interaction terms is presented in the second panel. The effect of each attitude on condom-use consistency in 1988 is indicated by the coefficient for that variable alone, while the effect in 1995 is determined by summing the coefficient for that attitude and the coefficient of its interaction term.\* The sign of the coefficient for the interaction terms indicates the direction of change of the relationship between 1988 and 1995.

\*The coefficients for 1995 effects obtained by summing the attitude coefficient and its interaction term are not presented in Table 3; those attitudes demonstrating significant effects on condom use in 1995 are indicated in the table with a footnote symbol.

The interaction terms for condom ineffectiveness, male contraceptive responsibility and all three AIDS avoidance attitudes were not significantly different from zero and were dropped from the final model.

Among variables associated with pregnancy prevention, the interaction term for "feel like a 'real man'" was negative and marginally significant ( $p < .10$ ), indicating that this attitude was somewhat more important in predicting condom use in 1988 than it was in 1995. The change in this relationship suggests that levels of condom-use consistency should be lower in 1995 than in 1988, all other variables being constant.

The interaction term for partner appreciation by survey year also was negative and marginally significant ( $p < .10$ ), indicating that while increased partner appreciation was associated with more consistent condom use in both 1988 and 1995, the relationship was somewhat weaker in 1995. Therefore, although males in the 1995 cohort perceived greater partner appreciation for condom use than did males in the 1988 cohort, this attitude does not explain the observed increase in condom-use consistency between the two cohorts.

The interaction term for condom-use embarrassment by survey year was significant and positive, indicating that while embarrassment was negatively associated with condom use in 1988, there was no significant relationship between these variables in 1995. Given the lower levels of condom-use embarrassment assessed among the 1995 respondents than in the earlier group, this finding predicts higher levels of condom use among 1995 respondents than among those in 1988, all other variables being constant.

Finally, the significant negative coefficient for the interaction between feeling less pleasure when using a condom and survey year indicates that the relationship between this variable and consistent condom use was much stronger in 1988 than it was in 1995. Thus, while pleasure reduction attitudes changed over time in a direction that predicts higher levels of condom use, the change in the relationship between this attitude and condom use actually predicts lower levels of condom-use consistency in 1995 compared with 1988, all other variables being constant.

## Discussion

Three conclusions emerge from this analysis. First, consistent condom use among young, sexually active males increased significantly between 1988 and 1995. Coupled with a 9% decrease in the percentage of adolescent males who were sexually active be-

tween 1988 and 1995,<sup>20</sup> this finding indicates that young men are increasingly taking precautions to avoid unwanted pregnancy and the transmission of HIV and other STDs.

Increases in condom-use consistency differ across racial and ethnic groups, however. Between 1988 and 1995, condom use among non-Hispanic white and non-Hispanic black teenagers increased by 31% and 17%, respectively. However, condom use among sexually active Hispanic male adolescents did not increase significantly over this seven-year period and, at 59% in 1995, remains well below the levels recorded among black and white teenage males.

While Hispanic teenagers may be employing other methods to protect against pregnancy, their low level of consistent condom use and the small increase in this level over time is cause for concern, since they have the highest rates of HIV and STD infection among all racial and ethnic groups studied.<sup>21</sup> This suggests that current programs and policies need to be modified to better serve Hispanic youths.

Second, condom-related attitudes changed significantly between 1988 and 1995. Attitudes about condom ineffectiveness, male contraceptive responsibility, AIDS risk and AIDS worry all changed in a direction suggestive of lower levels of consistent condom use. While it is possible that AIDS concerns are lower because rates of condom use have increased, reduced media coverage of the AIDS epidemic—together with advances in the treatment of infected individuals—also might have convinced adolescents that there is less reason to be concerned about contracting HIV.

On the other hand, attitudes concerning partner appreciation, pleasure and condom-use embarrassment all changed in a direction suggestive of higher levels of consistent condom use. This could be the result of successful education and advertising campaigns, which may have lowered the stigma associated with the discussion, purchase and use of condoms.

Changes in attitudes toward pregnancy prevention and AIDS avoidance in a direction suggestive of lower levels of consistent condom use may be the result of a shift in the composition of the study sample between 1988 and 1995. The concern that previously may have led young males to use condoms now may lead them to choose abstinence instead; consequently, a higher proportion of sexually active youths now are those who are less likely to take precautions. Moreover, youths who are more cautious in their sexual be-

*(continued on page 303)*

## Increased Condom Use...

(continued from page 280)

havior may be those for whom correlations between attitudes and behaviors are the strongest.

Lastly, there were significant changes in the effects of attitudes on condom-use consistency between 1988 and 1995. The most important of these was the change in the impact of condom-use embarrassment. In 1988, there was a significant negative relationship between condom-use embarrassment and consistent condom use; by 1995, this relationship was no longer negative and no longer statistically significant. Thus, embarrassment about using condoms is less likely to be an obstacle than it was in the past.

Overall, our findings indicate that changes in attitudes toward condoms do not explain most of the large increase in condom-use consistency observed between 1988 and 1995. Only the three personal consequence attitudes changed significantly in a direction that predicts higher levels of consistent condom use. However, for two of these measures, the relationship between the attitude and condom-use consistency changed in a direction predicting decreased condom use. Only in the case of condom-use embarrassment did the relationship between attitudes and condom use change in a direction that predicts more consistent condom use over time.

If changes in condom-related attitudes and in the relationship between condom-related attitudes and condom use do not adequately explain the increase in consistent condom use, what might? One possibility is that condom use increased because of changes in the characteristics, attitudes or behaviors of the respondents' female partners. While we have no firsthand in-

formation on these women, we can surmise something about them from their partners. Males in the 1995 cohort were significantly more likely than those in the 1988 sample to report that their female partner would appreciate their use of a condom, and that she would not be upset if she knew her partner had a condom ready.

In addition, the males in the 1995 sample were less likely than those in the 1988 sample to indicate that they would feel embarrassed putting a condom on in front of their partner. Taken together, these findings suggest that the partners of adolescent men are increasingly likely to request or insist on the use of a condom during sexual intercourse. Perhaps those females who appreciate their partner's use of a condom are now saying no to sex without one.

Efforts to further increase the level of consistent condom use among adolescent males should focus on emphasizing that responsibility for discussing, purchasing and using contraceptives rests with both partners. Young males should continue to be educated regarding the risks and consequences of contracting HIV and other STDs. Finally, greater efforts must be made to target programs toward Hispanic youths, both males and females.

## References

1. White House Office of AIDS Policy, *White House Office of AIDS Policy Report*, Washington, DC, 1997.
2. Division of STD Prevention, Centers for Disease Control and Prevention (CDC), *Sexually Transmitted Disease Surveillance 1996*, CDC: Atlanta, 1997.
3. CDC, *HIV/AIDS Surveillance Report*, CDC: Washington, DC, 1995.
4. U.S. Department of Health and Human Services (DHHS), Public Health Service, *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*, DHHS: Washington, DC, 1991.
5. Sonenstein FL et al., Changes in sexual behavior and condom use among teenaged men: 1988 to 1995, *American Journal of Public Health*, 1998, 88(6):956-959; and Abma

JC et al., Fertility, family planning, and women's health: new data from the 1995 National Survey of Family Growth, *Vital and Health Statistics*, 1997, Series 23, No. 19.

6. Baratka TV, Understanding condom use among adolescent males using an integrated social-cognitive model of protective behaviors, Urbana, IL: University of Illinois School of Human and Community Development, 1997; Pleck JH, Sonenstein FL and Ku LC, Changes in adolescent males' use of and attitudes toward condoms, 1988-1991, *Family Planning Perspectives* 1993, 25(3):106-109 & 117; and Azjen I and Fishbein M, *Understanding Attitudes and Predicting Social Behavior*, Prentice-Hall: Englewood Cliffs, NJ, 1980.
7. Pleck JH, Sonenstein FL and Ku LC, Adolescent males' condom use: relationships between perceived cost-benefits and consistency, *Journal of Marriage and the Family*, 1991, 53(4):733-745.
8. Pleck JH, Sonenstein FL and Ku LC, 1993, op. cit. (see reference 6); and Sonenstein FL et al., 1998, op. cit. (see reference 5).
9. Pleck JH, Sonenstein FL and Ku LC, 1993, op. cit. (see reference 6).
10. Sonenstein FL et al., 1998, op. cit. (see reference 5).
11. Ibid.
12. Ibid.
13. Calculations using data from the March 1987 Current Population Surveys, U.S. Bureau of the Census.
14. U.S. Bureau of the Census, *Preliminary Projections: Civilian Noninstitutional Population by Age, Sex, Race and Hispanic Origin*, U.S. Bureau of the Census: Washington, DC, 1995.
15. Sonenstein FL et al., 1998, op. cit. (see reference 5).
16. Ibid.
17. Ku LC, Sonenstein FL and Pleck JH, Patterns of HIV risk and preventive behaviors among teenage men, *Public Health Reports*, 107(2):131-138, 1992.
18. Pleck JH, Sonenstein FL and Ku LC, 1993, op. cit. (see reference 6).
19. Ku LC, Sonenstein FL and Pleck JH, The association of AIDS education and sex education with sexual behavior and condom use among teenage men, *Family Planning Perspectives*, 1992, 24(3):100-106.
20. Sonenstein FL et al., 1998, op. cit. (see reference 5).
21. Marin BV, Gomez CA and Tschann JM, Condom use among Hispanic men with secondary female sexual partners, *Public Health Reports*, 1993, 108(6):742-750.