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ABSTRACT

Objective: Dual use of male condoms and female contraceptives is widely advocated for unplanned pregnancy prevention, yet college students often neglect condoms. This feasibility and acceptability study assessed the efficacy of a self-guided home-based condom-promotion intervention among college students in heterosexual relationships. **Participants:** Fifty-nine couples who had been together at least 30 days and had penile–vaginal sex at least twice weekly. **Methods:** Assessments were done at baseline and 6 months later. Outcomes were frequency of condom-unprotected penile–vaginal sex and four psychosocial mediators of condom use. **Results:** Frequency of unprotected penile–vaginal sex decreased over time. Several corresponding psychosocial mediators showed change, particularly among women. Using actor–partner interdependence modeling, men's increase in condom use was associated with an increase in women's sexual pleasure. **Conclusion:** Findings support implementation of a brief, self-guided, home-based condom-use intervention that could lower incidence of unplanned pregnancy and STIs among heterosexually active college students.

Introduction

In the United States, young adults are substantially affected by unplanned pregnancy and sexually transmitted infections (STIs), with 68% of all pregnancies being unplanned and approximately one-half of all new STI cases occurring among persons 18 to 24 years of age.[1,2] In this regard, college students are an important and unique segment of the young adult population in which to promote condom use. For instance, according to the National Campaign to Prevent Teen and Unplanned Pregnancy, over 60% of community college students who become pregnant and give birth to a child after enrolling do not finish their education. This is significant when compared to the 35% drop-out rate among their peers who did not have a child during their academic career.[3] Additionally, college students receive health care services, which may include prevention-based services, from their college/university. A secondary analysis of contraception usage of female participants in the American College Health Association (ACHA)-National College Health Assessment II for years 2011–2014 found shifts in contraception use among sexually active women.[4]

Though oral contraceptive pills and male condoms remained the most commonly used methods in each of the four years, an increase in condom use at last vaginal sex and a decrease in oral contraceptive use was evident. An increase in the use of long-acting reversible contraception (LARC) was also reported. However, students who reported using LARC at last vaginal sex had lower odds of condom use compared to those who used non-LARC methods. This decrease in condom use may increase risk for STIs among women who participate in sexually risky behavior.

Prior research assessing condom use promotion interventions for this population have illuminated some major barriers to condom use, including physical issues such as fit-and-feel problems and erection difficulties, as well as perceptual changes such as reduced sense of sensation.[5,6] Investigating these perceptual issues is especially important given that many sexually active adults perceive male condoms to lead to a decrease in sexual pleasure,[7–12] and that reduced sexual pleasure is likely a key reason for men to forego condom use.[13] Although the majority of tested interventions have focused on the more tangible problems of fit-and-feel and maintaining erections, or on the potential

consequences of not using condoms,[14] these have insufficiently addressed issues relating to sexual pleasure and arousal.

In two published exceptions, Milhausen et al.[15] and Emetu et al.[16] conducted a brief, self-guided, home-based intervention aimed at young men who have sex with women and young men who have sex with men, respectively—named the *Kinsey Institute Homework Intervention Strategy* (*KI-HIS*)—focusing on condom use skill and self-efficacy but also emphasizing enjoyment and pleasure. In this study, young men were given a study kit including different types of condoms and lubricant and "homework" activities in which participants were instructed to practice using a variety of the condoms and lubricants they had received. These activities were informed by a sex therapy approach designed to increase focus on bodily sensations, taking time to become familiar with the touch, feel, smell, and sight of the condoms. Results found among these two pilot studies were an improvement in condom use experiences, increased condom comfort and confidence in the ability to use condoms, and a reduction in unprotected sex over a 30-day period for those who reported more frequent condom practice sessions. This intervention demonstrated evidence of efficacy in the United States, United Kingdom, and Canada.

Based on the success of *KI-HIS*, a team of researchers developed a similar but modified form of the *KI-HIS* intervention procedure to apply to women—the *Kinsey Institute Home-based Exercises for Responsible Sex (KI-HERS)*.[17] As in *KI-HIS*, the goal of the intervention was to increase women's focus on pleasure while using condoms, and thus decrease the possibility of women having unprotected penile-vaginal sex (UVS). Women who participated in *KI-HERS* reported improved comfort in using condoms and an increase in condom use over a 30-day period, especially for those in the lowest quartile of condom use at baseline testing.

One limitation of the current literature is sampling and measurement. Most condom promotion interventions have been conducted at the level of the individual, with samples of participants reporting on their own—and often their partner's—condom use and experiences.[16–22] Although these interventions have provided evidence of barriers to condom use, targeting only one person within a relationship ignores the social context in which sexual behavior occurs. Romantic and/or sexual partners greatly influence one another's behavior and studies have demonstrated the impact of relationship factors on condom use.[23–29]

Additionally, using one partner's reports of another's experiences may be inaccurate; providing intervention or instruction to only one member of a couple may not have as great an impact as targeting both. In fact, a recent meta-analysis drawing on 21,882 participants from around the world determined that couples-based (HIV) protective behavioral interventions—including condom use promotion—were more effective than those delivered to only one partner,[30] while another meta-analysis and a separate systematic review found that couples-focused HIV prevention interventions consistently showed success in reducing unprotected sex.[31,32] Thus, working to enhance couples'

experiences with and attitudes toward condoms is likely a highly effective strategy and public health advancement.

In the current study, we expand the literature by adapting the self-guided, home-based, condom-promotion intervention that was found to be effective in *KI-HIS*[15,16] and *KI-HERS*,[17] modifying it for use with mixed-gender couples, and examining the intervention's effectiveness over a longer period of time (i.e., six months). In this exploratory study of the Kinsey Institute program, *The Home-Based Exercises for Increasing Responsible Sex (KI-THEIRS)*, we recruited college student couples to participate in a repeated-measures, self-guided study. We provided condoms as well as "homework activities" in which participants were instructed to try a number of different condoms and to direct mindful focus on feelings of sensations and pleasure. We assessed changes in frequency of UVS, condom-related attitudes (e.g., condom use self-efficacy, perceived barriers to condom use, embarrassment about negotiating condoms), and feelings of pleasure.

The primary purpose of this pilot study of *KI-THEIRS* was to determine whether significant declines in UVS would occur over a 6-month period of observation. The secondary purpose was to determine whether significant changes occurred in four selected psychosocial mediators of condom use. Finally, because the intervention emphasized pleasure, and because this study is the first of its kind using mixed-gender couples, we also examined partner effects using actor–partner interdependence modeling to determine whether one partner's decline in reported frequency of unprotected sex was associated with increases in the other's ratings of sexual pleasure.

Methods

Study design

This study used the same repeated measures design from *KI-HIS* and *KI-HERS*, following their methodology closely except for the inclusion of couples instead of individuals, and the focus on assessing effectiveness at six months post-T1 rather than 30 days after. Participants came into the laboratory with their partners to complete their baseline assessment (T1). Here, they met with a research assistant for orientation, then completed their T1 questionnaire and received their study kit containing condoms and lubricant, as well as instructions for the homework-based exercise.

In the thirty days following T1, participants completed paper-and-pencil diary forms each time they used one of the provided condoms, to report on their experiences and attitudes. Approximately thirty days after T1, participants returned to the laboratory for individual interviews on their experiences and to submit their diary forms. Interview and diary data are not presented in this manuscript.

Six months after T1, participants completed an online questionnaire (T2) that was near-identical to the one completed at baseline. In this manuscript, we analyze quantitative data from T1 and T2.

Sample recruitment and eligibility

Couples were recruited from a large Midwestern university via flyers posted around campus and online in the campus' classified advertisements. Eligibility criteria were (1) both members of the couple were between 18 and 24 years old, (2) both were students enrolled at the university, (3) they had been in an established relationship with one another for at least 30 days, (4) they had used a condom at least once in the last 30 days, and (5) they had had penile-vaginal intercourse with one another at least twice a week in the past 30 days. Those with sensitivities and allergies to latex, and those who were pregnant, were ineligible.

Participants

Participants were 59 mixed-gender couples. All participants were between 18 and 24 years old. Most women (85%) identified as white, 7% as Latin American, 7% as Southeast Asian, 3% as Black/African-American, and 2% as American Indian or Alaskan Native. Last, 93% of women indicated that they were seriously dating only one person, while 5% were engaged, 2% were in a "friends with benefits" relationship, and 2% were "hooking up" with the same person regularly.

Similarly, most men (86%) identified as white, 7% as Latin American, 7% as Southeast Asian, 2% as Arab, 3% as American Indian or Alaska Native, and 2% as Black/African American. Most (88%) were seriously dating one person, 5% were engaged, 3% were in a friends with benefits relationship, 2% were hooking up with one person regularly, and 2% were seriously dating more than one person.

Procedure

Participants followed a link provided on the advertisements to the eligibility screener. If both members of the couple were eligible to participate, they were contacted by a research assistant to arrange their in-person baseline (T1) session. At the beginning of the session, each person was given a study information sheet, provided written informed consent, and completed the T1 questionnaire. The institution's internal review board approved all study procedures.

At T1, participants reported their demographic information; attitudes, experiences, and behaviors surrounding condom use; their sexual history and experiences with condoms and lubricant during their most recent sexual event; and measures of sexual communication and relationship satisfaction with their study partner. A similar questionnaire was administered at the 6-month follow-up assessment (T2).

Measures

All correlations, descriptive statistics, and reliability estimates are presented in Table 1.

Unprotected penile–vaginal sex

To assess frequency of UVS, participants reported approximately how many times they had engaged in penile-vaginal sex in the past 30 days (T1), since T1 (T2), and how many of these times involved the use of a condom. We subtracted times that involved a condom from overall number of sexual encounters to create a measure of unprotected sex. For the 6-month measure of UVS, we divided the UVS count by six to create a 30-day average recall period. For all analyses involving the UVS variable, we removed women ($n = 19$) and men ($n = 23$) who, at T1, reported using a condom at every sexual event because the scores of these individuals left no room for improvement in condom use. For our analyses assessing change over time, we did not remove both members of the couple if only one reported consistent condom use at T1, as our analyses were robust against missing data. For our dyadic analyses, we retained 36 complete dyads following the removal of consistent users. Before analyses, we removed outliers ($\pm 1SD$) so as to not skew our pattern of results. We conducted independent samples t-tests to determine whether there were demographic differences between participants with outliers and those without. No differences were found.

Sexual pleasure

To assess sexual pleasure, we used the 5-item Pleasure Associated with Condom Use subscale of the Multidimensional Condom Attitudes Scale (MCAS; e.g., "the use of condoms can make sex more stimulating").[33] Responses were made on a 5-point scale (1 = strongly disagree, 5 = strongly agree). Scores can range from 5 to 25, with higher scores indicating greater pleasure associated with condoms. The scale has demonstrated good reliability and validity.[33]

Condom use self-efficacy

We used a modified 4-item version of the Condom Use Self-Efficacy Scale.[34] Specific items used were, "I feel confident in my ability to put a condom on myself or my partner," "I feel confident in my ability to discuss condom use with any partner I might have," "I feel confident I could suggest using a condom without my partner feeling "diseased," and "I would feel embarrassed to put a condom on myself or my partner." Response options were made on a 5-point scale (1 = strongly disagree, 5 = strongly agree). The range of possible scores is 1–5, with higher scores indicating greater condom use self-efficacy.

Perceived barriers to condom use

We used the 7-item Effect on Sexual Experience subscale of the Condom Barriers Scale[35] to examine perceived barriers to condom use (e.g., "condoms feel unnatural"). Responses were made on a 5-point scale (1 = strongly disagree, 5 = strongly agree). The range of possible scales is 7–35; higher scores indicate higher perceived barriers. The measure has demonstrated sound psychometric properties.[35]

Table 1. Zero-order correlations and descriptive statistics for all measures by participant gender.

Variables	1	2	3	4	5	6	7	8	9	10
Women										
1. UVS T1	–									
2. UVS T2	.80**	–								
3. Sexual pleasure T1	−.48**	−.22	–							
4. Sexual pleasure T2	−.27	−.21	.37**	–						
5. Self-efficacy T1	−.47**	−.30	.33*	.11	–					
6. Self-efficacy T2	−.32	−.24	.19	.18	.75**	–				
7. Barriers T1	.67**	.42*	−.63**	−.14	−.22	−.07	–			
8. Barriers T2	.45**	.29	−.23	−.63**	−.12	−.15	.25	–		
9. Embarrassment T1	.25	.19	−.48**	−.32*	−.48**	−.23	.20	.13	–	
10. Embarrassment T2	.12	.01	−.17	−.24	−.41**	−.45**	.13	.12	.34*	–
Men										
11. UVS T1	.93**	.79**	−.36*	.09	−.34*	−.10	.71**	.13	.19	.03
12. UVS T2	.82**	.65**	−.00	.02	−.12	−.09	.31	.14	−.19	−.05
13. Sexual pleasure T1	−.11	−.06	.14	.32*	.03	−.04	−.19	−.24	.01	.11
14. Sexual pleasure T2	−.02	.10	.33*	.28	−.06	−.05	−.27	−.14	.07	−.05
15. Self-efficacy T1	−.19	.16	.07	−.07	.14	−.07	.06	.07	−.06	−.04
16. Self-efficacy T2	.11	.13	−.13	−.04	.01	.04	.04	.07	.09	−.30*
17. Barriers T1	.08	−.03	−.15	−.18	−.01	.15	.38**	.06	.04	.08
18. Barriers T2	.38*	.29	−.37**	−.39**	−.05	.10	.47**	.36*	.07	.05
19. Embarrassment T1	.15	−.19	−.04	−.07	−.13	−.16	.06	.10	.02	.29*
20. Embarrassment T2	−.01	−.06	.05	−.13	.13	.06	.03	.11	−.21	.34*
Descriptives										
M	3.07	1.51	3.49	3.83	4.37	4.51	2.76	2.49	1.37	1.21
SD	3.13	1.85	0.66	0.59	0.72	0.64	0.64	0.57	0.56	0.36
α	–	–	.74	.65	.82	.88	.73	.71	.75	.85

Note. The shaded area represents correlations between men's and women's scores.
**$p \leq .01$, *$p \leq .05$. M = mean, SD = standard deviation, α = Cronbach's alpha.

Variables	11	12	13	14	15	16	17	18	19	20
Men										
11. UVS T1	–									
12. UVS T3	.82**	–								
13. Sexual pleasure T1	.07	.20	–							
14. Sexual pleasure T3	.08	−.05	.65**	–						
15. Self-efficacy T1	.11	−.01	.06	−.05	–					
16. Self-efficacy T3	.12	−.31	.01	.06	.14	–				
17. Barriers T1	.11	−.12	−.60**	−.63**	.11	.07	–			
18. Barriers T3	.29	.04	−.52**	−.69**	.33*	.07	.70**	–		
19. Embarrassment T1	−.12	−.13	−.10	−.16	−.49**	−.20	−.13	−.11	–	
20. Embarrassment T3	.01	.21	−.02	−.16	.11	−.61**	−.06	.09	.31*	–
Descriptives										
M	3.15	0.78	3.30	3.40	4.59	4.54	2.98	2.89	1.28	1.45
SD	3.40	1.19	0.62	0.69	0.47	0.61	0.58	0.62	0.38	0.61
α	–	–	.62	.72	.71	.73	.69	.71	.80	.70

**$p \leq .01$,
*$p \leq .05$. M = mean, SD = standard deviation, α = Cronbach's alpha.

Embarrassment about negotiating condoms

We used the 5-item embarrassment subscale of the MCAS[33] to examine embarrassment about negotiating condom use (e.g., "when I suggest using condoms, I am almost always embarrassed). Responses were made on a 5-point scale (1 = strongly disagree, 5 = strongly agree). The possible range of scores is 5–25; higher scores indicate greater embarrassment. The subscale has demonstrated good reliability and validity.[33]

Data analysis

Given that the current study included a repeated-measures assessment, we used latent growth curve modeling[36] of the condom promotion intervention to account both for change over time and the non-independence of data associated with dyadic analyses. We designed these models to investigate whether each variable changed from over the six months of observation. The model intercepts and slopes were represented as latent variables. The observed variables in the model were participants' measured scores at baseline and follow-up assessment. Men's and women's scores were modeled simultaneously to account for non-independence of data.

We examined fit indices to evaluate the fit of the models to the data (see Table 2). We include here the most commonly used indices: chi-square, comparative fit index (CFI), and root-mean-square error of approximation (RMSEA). Commonly accepted cutoffs for each are $p > .05$ for chi-square, CFI $\geq .90$, and RMSEA $> .08$.[37]

Lastly, we conducted an actor–partner interdependence model (APIM)[38] to observe dyadic effects. Because we were especially interested in sexual pleasure, we conducted APIM to simultaneously examine actor and partner effects of change in frequency of UVS on change in sexual pleasure (e.g., are changes in women's pleasure as a result of the

intervention and homework assignments impacting their partner's use of condoms?). *Actor effects* describe association between a participant's scores on the independent and outcome variables (e.g., a person's condom use frequency on their own pleasure). *Partner effects* represent the association between a participant's score on the independent variable

Table 2. Coefficients and model fit indices for change from T1 to T2.

	Women b (SE)	Men b (SE)
UVS	−0.71* (0.27)	−0.80** (0.24)
Sexual pleasure	0.25* (0.09)	0.15 (0.08)
Self-efficacy	0.17* (0.07)	0.06 (0.09)
Perceived barriers	−0.26* (0.09)	−0.11 (0.07)
Embarrassment	−0.14 (0.07)	0.21* (0.08)
Model Fit Indices	χ^2	CFI/RMSEA
UVS	25.81**	0.88/0.31
Sexual pleasure	20.31**	0.86/0.27
Self-efficacy	10.53	0.94/0.17
Perceived barriers	8.05	0.97/0.13
Embarrassment	0.07	1.00/0.00

b = unstandardized regression coefficient, SE = standard error, χ^2 = chi square.
**$p \leq .001$, *$p \leq .01$.

and their partner's score on the outcome variable (e.g., a man's change in his frequency of using condoms on his partner's sexual pleasure). To conduct this test, we calculated change scores over the six months of observation for UVS and sexual pleasure. Men's and women's change scores for UVS served as the predictor variable, and change scores for sexual pleasure as the dependent variable. Given the power requirements of this analysis and the small sample size of the exploratory study, alpha was set at $p \leq .10$ for all analyses to protect against Type II error.

Results

All latent growth curve statistics are presented in Table 2, and change over time in all outcomes is presented in Figures 1 and 2. Note that the b regression coefficients in Table 2 should be interpreted such that with each unit increase in the predictor variable (i.e., as we move from T1 to T2), the coefficient represents the amount the dependent variables (i.e, UVS, sexual pleasure, self-efficacy, barriers to condom use, and embarrassment about negotiating
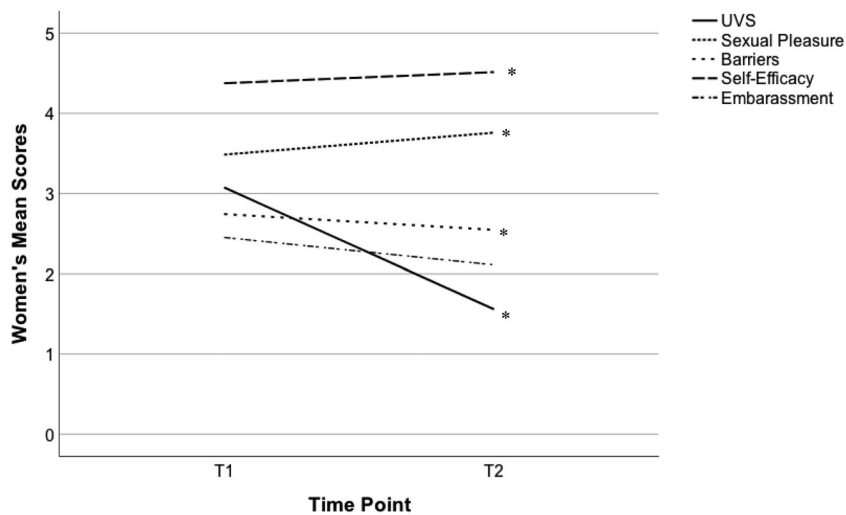
Figure 1. Women's mean scores on all outcome variables at baseline and six months later. *Note.* *indicates a significant change over time, from T1 to T2.
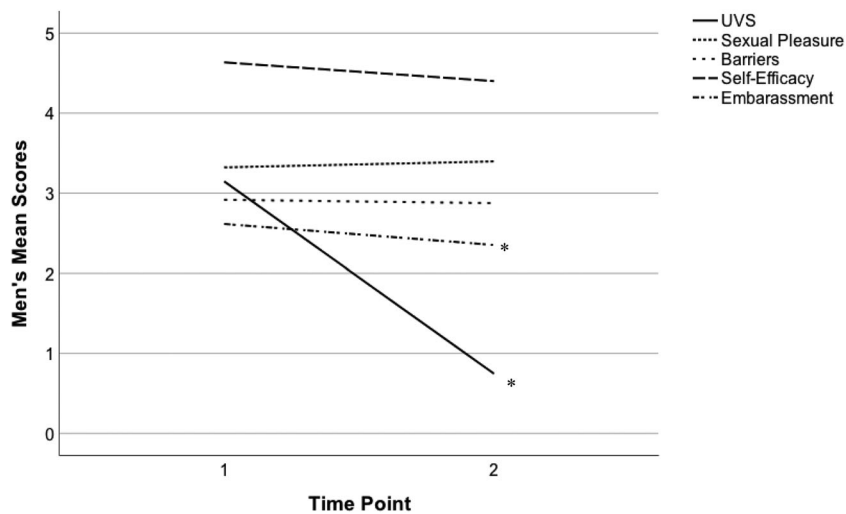
Figure 2. Men's mean scores on all outcome variables at baseline and six months later. *Note.* *indicates a significant change over time, from T1 to T2.

Table 3. APIM results for men's and women's reports of sexual pleasure on unprotected penile–vaginal sex.

	Sexual pleasure					
	Women			Men		
	b	t	SE	b	t	SE
Women's UVS	0.26	1.36	0.19	0.14	0.84	0.17
Men's UVS	−0.33	−1.82*	0.18	−0.12	−0.77	0.16

*$p = .07$.

condoms) are expected to increase or decrease, depending on whether the value is positive or negative. Significant changes correspond with the asterisk-marked lines in Figures 1 and 2.

Latent growth curve modeling

Unprotected penile–vaginal sex
Examining the overall effect of the intervention, both men's and women's frequency of UVS significantly decreased from baseline to the six-month follow-up.

Sexual pleasure
Modeling the overall effect of the intervention, women's pleasure significantly increased. Men's pleasure did not significantly change over time.

Self-efficacy
Women's, but not men's, self-efficacy showed a positive change over the observation period.

Barriers to condom use
Women's perceived barriers to condom use declined during the observation period; men's changes were not significant.

Embarrassment about negotiating use of condoms
Only men's, and not women's, embarrassment showed a significant decline over the observation period.

Actor–partner interdependence modeling

We conducted an APIM to determine whether any partner effects emerged for change in the frequency of UVS on change in sexual pleasure, as well as to examine any actor effects. One significant ($p = .07$) effect emerged: women's reports of sexual pleasure was significantly associated with men's change in UVS, such that as men's frequency of UVS declined, women provided reports of increasing sexual pleasure (Table 3).

Discussion

In this study, we conducted exploratory analyses evaluating a previously published, brief, self-guided, home-based condom promotion intervention,[15–17] initially designed for use with heterosexual men and women, and men who have sex with men, in a sample of young adult heterosexual couples. Through homework activities, we instructed participants to use a variety of different male condoms, and lubricants if they desired, and to specifically focus on sensation and pleasure during their penile–vaginal event—an important emphasis based on previously documented major concerns that lead to forgoing condoms.[13]

Findings suggest that this homework-based intervention program may have the potential to reduce the frequency of UVS among young college students in mixed-gender relationships. As our primary outcome of interest, it was only this measure that yielded significant overall changes over the 6-month period of observation for both women and men. This finding is clearly important to sexual health and relevant to university and college health officials charged with the prevention of pregnancies and STIs among students. Remarkably few multi-session condom use promotion programs have found these promising effects on UVS among college students, and other types of brief programs, such as the multi-session psychotherapy approach taken by Harvey and colleagues,[39] have never been tested with college students. That meaningful reductions in UVS could occur through relatively simple, self-guided, home-based sessions held with mixed-gender couples on college campuses is encouraging and also keeps cost and resource expenditures at a minimum. Moreover, an eloquent advantage of home-based interventions such as this one involves ease of implementation, greater consistency in implementation, and only minimal training requirements for staff. This is an intervention program that can be integrated into college campus health clinics, as part of student care and any mandated prevention programs.

Of great value, women's ratings of their sexual pleasure positively changed over the six-month observation period. Additionally, findings from the APIM advance the possibility that men's use of condoms may enhance women's sexual pleasure. This is a finding that is counter to previous studies suggesting that women's sexual pleasure may be eroded as a consequence of condom use.[40–42] Although we cannot know from the current data, it is plausible that reduced fear of pregnancy and STIs because of condom use might enable women to "let go" sexually, and experience greater sexual pleasure. Thus, women's elevated sexual pleasure may well be the mechanism behind the sustained decline in UVS observed for men, and should be examined in future research.

Further, it is noteworthy that favorable increases were observed for women relative to three psychosocial mediators of condom use (pleasure, self-efficacy, and barriers to use). That the homework-based exercise produced these effects for women but not men is puzzling, but this may be because women may have been relatively less informed about the selection and use of condoms and thus more inclined to benefit from the learning experiences. Regardless, however, of the reason for this gender-based difference one key point remains: women may benefit as much, or more, than men from this homework-based exercise designed for college students.

Finally, it is intriguing to consider that the intervention produced a decline in levels of condom-related embarrassment for men. Although this may seem trivial, it is quite possible that transcending embarrassment related to condoms can lead to lifetime changes in the sexual communications between these men and their future sex partners, with these expanded communications being a basis for more effective condom use.

Limitations

This study has sampling, methodological, and statistical limitations. First, as in prior studies utilizing this intervention, the sample may have been biased because they were a group of men and women who wanted to experiment with different condoms and lubricant, and were not concerned by people outside of their relationship knowing about their sexual activity, even confidentially. The couples in our sample also reported high condom use consistency at baseline, creating difficulty in observing positive change over time. Additionally, the individual interviews conducted 30 days after T1 may have had some influence over participants' condom use behaviors leading up to T2. For instance, talking about their condom experiences, likes, and dislikes may have prompted more or less condom use as a function of focused thinking and more in-depth evaluation. Researchers should consider potential influences such as this in future studies.

Second, future researchers may wish to consider including condoms made from different materials than latex. Doing so would boost sample inclusivity, making the intervention accessible to those with latex allergens and making findings generalizable to a larger portion of the population. These different materials also lead to different textures, which participants may find more pleasurable than latex condoms that they have commonly, and perhaps exclusively, encountered.

Third, some of our models demonstrated less than adequate fit to the data, based on commonly used model fit indices. Because this is an exploratory study, and because modifying a model of change over time would not be appropriate in this context, we have chosen to include and interpret these models, albeit with caution. Additionally, model fit indices are often influenced by sample size, with CFI being more variable with smaller samples and RMSEA tending to be larger with smaller samples.[37] Thus, our small sample (recruited from a single college campus) may have influenced the fit of our models. Relatedly, our statistical power to detect effects was low, as research evaluating the power of latent growth curve models has found that the power to detect change in individual differences is 'low to moderate' unless using a large sample, more than four time-points, and having low residual variance in the data. Future research would benefit from including a larger sample, including more timepoints, and incorporating other research design that would best power their studies. Lastly, although to our knowledge no other condom-related interventions were being conducted on campus or locally, we did not include a control group so no comparisons and no causal interpretations can be made. Because of this, we cannot rule out social desirability biases or expectancy effects.

Conclusion

Findings from this exploratory study provide initial support for the potential implementation of a single-session, brief in-person component, intervention program that could lower the incidence of unplanned pregnancy and STIs among mixed-gender, college student couples. This self-guided homework-based program provides ease of implementation and requires few resources beyond modest training and commitment of staff time, as well as investments in a wide variety of condoms and lubricants that are provided to students at no cost.

Conflict of interest disclosure

The authors have no conflicts of interest to report. The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements, of the United States and received approval from the Indiana University.

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Data availability statement

The data that support the findings of this study are available from the corresponding author, ANG, upon reasonable request.

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