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“BE STRAIGHT UP AND SO WILL HE”: EVALUATION OF A NOVEL HIV PREVENTION CONDOM DISTRIBUTION AND HEALTH COMMUNICATION INTERVENTION TARGETING YOUNG AFRICAN AMERICAN FEMALES

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Abstract

This study evaluated a novel 3-month campus-based HIV prevention condom distribution and health communication intervention for African American females attending a historically Black college in North Carolina. The theoretical framework for study incorporated the integrative model of behavioral prediction and the theory of gender and power. The intervention provided free condoms via condom dispensers with point-of-access messaging on the dispensers. We assessed 195 individuals before and 118 three months after the intervention. Almost 90% of participants were exposed to the intervention. Forty-four percent used the dispensers, 70% of whom reported using the condoms for sexual intercourse. Perceptions of condom availability and accessibility increased significantly after the intervention. In a multiple regression analysis controlling for covariates, dispenser use was significantly associated with greater condom use. These findings show the promise of a low-cost, broad-reach HIV/STI prevention intervention for young African American women.

The United States has seen a record number of sexually transmitted disease cases in recent years, with about 20 million new cases per year and 110 million total infections (Centers for Disease Control and Prevention, 2017). The highest rates of infections are among adolescents and young adults, and persons living in the South; sexual health disparities are particularly acute and adolescent girls and young adult women and African Americans (Centers for Disease Control and Prevention, 2017). Male condoms have long been a

primary tool for preventing sexually transmitted infections (STIs), including HIV, among sexually active individuals; however, environmental and psychosocial barriers hinder condom use. Environmental barriers include limited condom availability and accessibility in some settings such as on college campuses; psychosocial barriers include stigma and embarrassment (i.e., condom acceptability) when obtaining and carrying condoms in preparation for condom use (Francis et al., 2016). Obtaining and carrying condoms are key preparatory behaviors necessary for condom use (Bryan, Fisher, & Fisher, 2002).

Condom availability and accessibility may be a particular challenge for young people attending historically Black colleges and universities (HBCUs). Students have described difficulties obtaining condoms on HBCU campuses (Warren-Jeanpiere, Jones, & Sutton, 2011; Warren-Jeanpiere, Sutton, & Jones, 2011; Younge, Corneille, Lyde, & Cannady, 2013). For example, some campuses do not publicize that condoms are available to students (Warren-Jeanpiere, Jones et al., 2011; Warren-Jeanpiere, Sutton et al., 2011). When students are made aware, some schools limit the number of condoms that students can obtain (Warren-Jeanpiere, Sutton et al., 2011). Young women at HBCU campuses have also reported feeling embarrassed, and some feared the lack of confidentiality when obtaining condoms from some distribution sites on campus (such as campus health centers) (Warren-Jeanpiere, Sutton, et al., 2011). Moreover, even when condoms are made available to students anonymously, women are less likely than men take them (Francis et al., 2016), perhaps because of the stigma associated with women who carry condoms (Bell, 2009; Dahl, Gorn, & Weinberg, 1998; Dahl, Manchanda, & Argo, 2001; De Rosa et al., 2012). Consequently, campus-based interventions addressing both environmental and psychosocial barriers are urgently needed. To date, however, strategies addressing those barriers, such as the direct combination of condom distribution programs alongside health messaging, have not been given sufficient attention in the HIV/STI prevention literature, as many interventions have focused primarily on motivating condom use through individual-level behavioral interventions (often with a lack of environmental changes; Noar, 2008a).

Condom distribution can be an effective environmental strategy for changing sexual health outcomes (Charania et al., 2011; Francis et al., 2016). Making condoms more available and accessible is associated with increased condom use among young people (Moore, Dahl, Gorn, & Weinberg, 2006; Sheeran, Abraham, & Orbell, 1999). Becoming aware of condom availability programs (De Rosa et al., 2012) and obtaining condoms in school (De Rosa et al., 2012; Wretzel, Visintainer, & Pinkston Koenigs, 2011) is also associated with increased condom use. In one study, condom use at last intercourse increased among adolescents following the introduction of condom distribution programs at their schools (Blake et al., 2003), and STIs decreased (Wretzel et al., 2011). Furthermore, evaluations of community-based condom distribution programs have shown positive results (Burke et al., 2009, 2011; Des Jarlais et al., 2013; Malekinejad et al., 2017). However, few findings have been reported for condom distribution programs at colleges and universities in the U.S. Nevertheless, extant reports indicate that more schools are implementing condom distribution programs, with the aim of increasing availability and accessibility of condoms (Butler, Black, & Coster, 2011; Butler, Procopio, & Black, 2014).

A growing body of research suggests condom distribution alone may be insufficient to change sexual health outcomes among young women. In a recent study examining a campus-based condom distribution program in the Southern U.S., Francis et al. (2016) found that females were less likely than males to obtain condoms, despite their dispensation in bathrooms, which afford privacy. In that study, females also reported greater embarrassment and stigma about obtaining condoms than males. In prior research, persons embarrassed about obtaining condoms tended to use fewer condoms than those who were not embarrassed (Kelly, 1996; Moore et al., 2008; Ronis & LeBouthillier, 2013).

To address both environmental and psychosocial barriers to condom use, emerging evidence indicates that condom distribution programs combined with health communication strategies may be more successful than condom distribution or communication efforts alone (Robinson et al., 2014). A systematic review found condom use behavior increased by four percentage points when distribution of free products was coupled with health communication strategies (Robinson et al., 2014). However, very few of these combination interventions have been focused on sexual health outcomes (Charania et al., 2011; Robinson et al., 2014).

Consequently, we developed and evaluated a combination condom distribution and health communication intervention targeted at young African American women at an all-female HBCU campus in the southern United States. The intervention combined condom dispensers with free condoms and point-of-access messaging on the dispensers to improve sexual health among the target population. We used the integrative model of behavioral prediction (Fishbein & Cappella, 2006) and the theory of gender and power (Wingood & DiClemente, 2000) to inform the intervention and guide message development and evaluation. The integrative model suggests that if a person has an intention to perform a particular behavior (such as condom use) but encounters environmental constraints (such as lack of access to condoms) then it is highly unlikely that the behavior will be performed. Thus, creating an environment that facilitates the behavior is important. The integrative model also focuses on the influence of attitudinal, normative, and efficacy beliefs on behavior, which may be improved by the presence of condom dispensers with efficacy-enhancing messages. The theory of gender and power posits that negative societal beliefs about young women who acquire condoms put those young women at increased risk for HIV and other STIs (Wingood & DiClemente, 2000). By creating taboos with regard to how young women should express their sexuality, society prevents young women from taking proactive steps—such as engaging in condom preparatory behaviors—to reduce their risk of contracting HIV/STIs (Wingood & DiClemente, 2000). Changing women's environments with the presence of condom dispensers alongside positive messaging about condoms and sex may be one strategy to counteract this taboo and enhance women's power in the relationship to use condoms consistently. Figure 1 shows the conceptual model developed for this study.

The purpose of the current study was to evaluate effectiveness of this condom distribution and health communication intervention. Using a 3-month pretest-post-test design, we examined whether the introduction of the intervention on a historically black college campus reached students and increased condom availability, accessibility, and use.

METHODS

STUDY DESIGN

The study used a one-group, pretest-posttest panel design to evaluate the intervention. Prior to launching the intervention, we conducted focus groups to develop and test the messages. We then collected and analyzed quantitative data before and after the intervention to assess effectiveness. We piloted both surveys prior to data collection with seven similar age students at another university. The institutional review boards at the University of North Carolina at Chapel Hill and the HBCU site approved the study.

FORMATIVE RESEARCH AND MESSAGE DEVELOPMENT

We began by identifying our target audience as African American college women, and the specific site for the intervention—a historically Black college in the Southern United States. To develop and test messages for the dispensers, we conducted six focus groups ($n = 40$) in two phases with HBCU female students. In order to not contaminate the forthcoming study, we conducted this formative work at a different HBCU campus than where we implemented the condom dispensers. The alternate campus was similar in socio-economic status (National Center for Education Statistics, 2016) and both campuses were in North Carolina. The first phase explored perceptions about condom access within the college environment, as well as potential messaging ideas. Drawing from the integrative model of behavioral prediction (Fishbein & Cappella, 2006) and the theory of gender and power (Wingood & DiClemente, 2000), focus group questions also ascertained beliefs and norms related to condom use and obtaining condoms on campus, as well as gendered perceptions of whether females should or should not get condoms and their perceived power in the relationship with regard to condom use. In an iterative analysis process, we identified salient beliefs about condom access, norms, and acceptability. We worked with a creative advertising team at the University of North Carolina at Chapel Hill School of Media and Journalism to draft two message concepts. The first concept used emojis (popular cartoon-like characters and symbols) and a female's hand holding a condom. The second concept presented scripted messages (e.g., "There is nothing like being well packaged") on a chalkboard background.

In the second phase, we conducted two additional focus group discussions to elicit feedback on the draft messages. Participants answered open-ended questions about attention, comprehension, credibility, cognitive and emotional reactions, personal relevance, perceived effectiveness, and overall appeal to HBCU females. In general, the young women preferred the concept with the script on the chalkboard, perceiving it as a message that would catch their attention and encourage them to take condoms, and as something they would remember and share with their friends. Participants further said they would feel comfortable obtaining condoms from the dispensers if the scripted messages were displayed. They perceived the emoji-based concepts as silly, not mature enough and not something that would motivate them to take a condom. Participants suggested ways of enhancing the chalkboard message concept, changing the colors of the posters to be more appealing, and simplifying the call to action. We revised initial messages according to the focus group feedback. Finally, we elicited feedback from key target audience informants (e.g., health education peer leaders) at the intervention college. The final concept included four messages—each representing a

different execution of the same theme—which was an empowering message to protect oneself but delivered in a playful manner (Figure 2). The final messages used humor as a tool to attraction attention, make participants feel comfortable, and persuade them to take a condom (Markiewicz, 1974).

IMPLEMENTING THE INTERVENTION

The intervention began on November 1, 2015 and concluded on January 31, 2016. With our assistance and input, the campus health center staff at the participating school—led by the Health Center Manager—supervised the implementation and dissemination of intervention materials. We provided 10 dispensers, 10 posters with health messages, and a large supply of condoms. The college's staff installed the dispensers on November 1, 2015, mostly in bathrooms around campus. Nine dispensers were placed in bathrooms in four dormitories; one dispenser was placed in the campus health services building. Each dispenser holds about 120 condoms, and dorm resident directors and assistants checked and refilled the dispensers weekly and as needed. At the beginning of the project, the dispensers were filled with various types of condoms based on earlier feedback from the focus groups and target informants. We tracked the number of condoms distributed during the intervention. At the end of the 3-month intervention period, 1,979 condoms had been distributed, or about 164.9 condoms per week.

PARTICIPANTS AND PROCEDURES

Immediately before the intervention, we recruited students to participate in the study at a central campus location (i.e., student union lobby). Prospective participants were told this was a sexual health survey study that involved two surveys about 3 months apart. Six trained graduate research assistants (working in pairs) approached all young women who entered the student union and asked if they wanted to hear about a study opportunity. Persons who said yes were provided a brief description of the study. If those approached were interested in participating, they were screened to assess eligibility. In order to be eligible to participate in the study, participants had to be: (1) currently enrolled at the targeted college, (2) 18 years of age or older, (3) self-identified as Black or African American, and (4) heterosexually active in the past 12 months. Interested and eligible young women were given an iPad to read the informed consent document. After consenting to being in the study, participants then completed the survey. After completing the pretest survey, respondents provided their contact information (name, email address, mailing address, and phone number) so study staff could communicate with them about the posttest survey. Each participant's survey data received a unique identifier to match the pretest and posttest surveys. About three months after the intervention began, we sent emails and text messages (and subsequent reminders) asking participants to complete the post-intervention surveys on their personal computing devices. The duration for both surveys was approximately 15 minutes. Participants received a \$10 gift card for the first survey and \$15 gift card for the second delivered in person and over email or text, respectively.

Of the 327 people approached at the start of the study, 105 were ineligible (one was not currently enrolled at the targeted college, seven were under 18 years of age, two did not identify as Black or African American, and 95 were not sexually active in the past 12

months), and 27 were eligible but chose not to participate. The final sample included 195 individuals enrolled at baseline and 118 who completed the follow-up survey, or a response rate of 88% at baseline and retention rate of 61% at follow-up.

MEASURES

We assessed demographic characteristics in the baseline survey, including age, ethnicity (Hispanic/non-Hispanic), residence (on or off campus), and current year in school. Participants also reported contraceptive use (birth control and emergency contraceptives) and relationship status (main or casual partner) and sex partner characteristics (age, education).

Dispenser Awareness.—Dispenser awareness was measured with the following question: “Have you seen, in person, any of the new condom dispensers?” (1 = Yes, 0 = No). Prior to answering this question, participants viewed a picture of the dispensers.

Dispenser Use.—Dispenser use was measured by asking, “In the past 3 months, did you ever use the condom dispensers?” (1 = Yes, 0 = No). To further examine dispenser use, we asked where they used the dispensers, how many condoms were taken, how comfortable they felt using the dispensers, and whether they used the condoms taken from the dispensers for sexual intercourse.

Obtaining and Carrying Condoms.—To measure carrying condoms we asked, “Are you carrying condoms with you right now (e.g., in your pocket, wallet, or purse)?” (1 = Yes, 0 = No). In the posttest survey, we asked whether participants were carrying condoms that they took from the dispensers. We also assessed whether they obtained condoms by asking about places whether they got condoms. In the posttest survey, participants were asked to indicate places other than the dispensers from which they obtained condoms. We created a dichotomous variable indicating whether participants obtained condoms or not from any source.

Condom Availability.—Overall condom availability was measured by asking, “In your opinion, how available are condoms on (the college) campus?” Scores ranged from 1 (not at all available) to 5 (extremely available). We also asked participants, “How often would you say you pass by a location where you can pick up a condom for free on campus?” measured on a five-point Likert-type scale from 1 (not often at all) to 5 (extremely often) to assess perception of changes to the condom environment on campus. We analyzed each item separately.

Condom Accessibility.—Condom accessibility was measured with three items ($\alpha = .89$): “If you were looking for a condom today on campus, how sure are you that you would know where to go?”; “If you were looking for a condom today on campus, how sure are you that you would be able to get one?” and “If you were looking for a condom today on campus, how difficult or easy would it be to get one?” The first two items were measured on a five-point Likert-type scale from 1 (extremely unsure) to 5 (extremely sure); the third item was also measured on a five-point Likert-type scale from 1 (extremely difficult) to 5 (extremely easy).

Condom Acceptability.—Condom acceptability was measured with six items ($\alpha = .93$) adapted from the UCLA Multidimensional Condom Attitudes Scale (Helweg-Larsen & Collins, 1994): “It is very embarrassing to obtain condoms”; “When I need condoms I often dread having to get them; I think that obtaining condoms is awkward”; “It would be embarrassing to be seen buying condoms in a store”; “It would be embarrassing to be seen picking up free condoms”; “I always feel uncomfortable when I have to get condoms” with responses ranging from 1 (strongly disagree) to 5 (strongly agree). Values were recoded so that higher numbers indicated greater condom acceptability.

Condom Use.—Condom use was measured using a frequency measure, which stated, “Thinking about all sexual behavior (oral, vaginal, or anal sex) in the past 3 months, how often have you used condoms?” Responses included: 1 (never), 2 (rarely), 3 (sometimes), 4 (very often), and 5 (always).

Sexual Behavior.—Sexual behavior was measured by asking participants, “In total, how many sexual partners have you had in the past 3 months?” Any participant who reported having had oral, vaginal, or anal sex with one or more persons in the prior three months was reported as being currently sexually active.

DATA ANALYSES

All analyses were conducted in SPSS version 22 (SPSS Inc., Chicago, IL). Analyses of intervention impact included only 118 participants who completed the follow-up survey. We first performed descriptive analyses on all variables in the study. Paired samples *t*-tests were used to evaluate changes in variables of interest. The paired sample *t*-test compared means for availability, accessibility, acceptability, and condom use before and after the intervention. Correlations and multiple regression analyses were performed to examine associations between key variables and condom use. Condom use frequency served as the dependent variable in the multiple regression analysis. Independent variables were availability, accessibility, and acceptability. In bivariate analysis among this sample, relationship status, but not age, was significantly associated with condom use ($p < .01$). We included age and relationship status in the multiple regression model because they are known correlates of condom use.

RESULTS

Table 1 shows the sample characteristics for the baseline ($n = 195$) and follow-up ($n = 118$) samples. At baseline, mean age was 19.62 ($SD = 1.49$), the majority of participants (92%) had been sexually active in the prior three months ($M = 1.36$, $SD = 1.75$), and many (67%) had a main or steady partner. However, only about a third reported always using condoms. Age ($p < .01$) and education ($p < .01$) differed significantly between the baseline and follow-up samples such that older participants and those in their later years of college were more likely to complete the follow-up survey than younger participants and those in earlier years of college. Participants did not differ significantly on other characteristics ($p > .05$).

DISPENSER AWARENESS AND USE

Dispenser awareness was high among study participants. Eighty-nine percent of participants saw the condom dispensers in person, while 44% used the dispensers (Table 2). The number of condoms young women took each time they used the dispensers ranged from 1 to 12; on average, they took 4.35 ($SD = 2.74$) condoms each time. Among the 52 participants who took condoms from the dispensers, 77% said they were at least somewhat comfortable using the dispensers, with more than half (52%) being extremely comfortable. In addition, more than 70% of those who took condoms from the dispensers reported using them for sexual intercourse.

Of those who used the dispensers, almost all (96%) used dispensers in the dorm bathrooms to obtain condoms, and 81% used the dorm bathrooms only. Overall, a significantly ($p < .001$) greater percentage of young women reported obtaining (70% vs. 50%) and carrying (26% vs. 15%) condoms after the intervention compared to before.

INTERVENTION EFFECTS ON CONDOM ACCESS AND USE

After the intervention, perceptions of overall condom availability increased ($p < .01$), participants reported a greater likelihood of passing by a location with free condoms ($p < .01$), and perceptions of condom accessibility increased ($p < .05$; Table 3). However, the intervention had no effect on perceptions of condom acceptability ($p > .05$).

Among the full sample, results revealed a significant decrease in condom use after the intervention compared to before ($p < .01$). In order to examine whether those who used the dispensers were more likely to engage in condom use, we conducted a multiple regression analysis controlling for demographic, relationship, and condom access variables (Table 4). The analysis was statistically significant, $F(6, 89) = 3.17$, $p = .007$, $R^2 = .18$, $R^2_{\text{Adjusted}} = .12$. Dispenser use, $\beta = .20$, $t(94) = 2.03$, $p = .04$, was significantly associated with condom use after controlling for age, relationship status, and perceptions of condom availability, accessibility and acceptability. Thus, young women who used the dispensers were more likely to have used condoms with their partners than those who did not use the dispensers.

DISCUSSION

We evaluated the effects of a novel condom distribution and point-of-access health messaging intervention designed to address environmental and psychosocial barriers to condom use for young African American females. Overall, the findings support the efficacy of this strategy for young African American women on an HBCU campus. The vast majority of participants reported seeing the condom dispensers on campus, indicating significant reach of the intervention. More than half of those who saw the dispensers obtained condoms from them, and half of those who obtained condoms carried them. Moreover, dispenser use was significantly associated with condom use, suggesting that it may have played a role in condom use behavior for some women.

Perceptions of condom availability and accessibility increased significantly after the intervention. Participants were more likely to report that condoms were more available overall after implementation of the dispensers and were significantly more likely to pass by

a location where condoms were freely available. Although accessibility was relatively high prior to the intervention, the presence of the dispensers further increased participants' access perceptions of where to get condoms on campus and the ease of getting condoms. These findings are consistent with past research showing condom distribution programs increase condom availability and accessibility for young people (Centers for Disease Control and Prevention, 2015; Charania et al., 2011). However, this study adds to this body of literature by showing that these findings extend to HBCU settings serving young African American women.

Contrary to expectations, condom acceptability did not change. Condom acceptability constitutes embarrassment, stigma, discomfort, and awkwardness (or lack thereof) that young women may feel when attempting to access condoms. Evidence does indicate that embarrassment is a factor that prevents some young women from obtaining condoms (Bell, 2009; Brackett, 2004; Dahl et al., 1998; van Teijlingen et al., 2007). Prior to the intervention, young women in this study reported feeling moderate levels of condom acceptability, and this did not improve. Condom acceptability may be difficult to change—i.e., many young women may never feel entirely comfortable obtaining condoms—and yet this combination intervention nevertheless increased perceptions of condom availability and accessibility. The combination of putting condoms in women's bathrooms and the targeted messaging may have been enough to encourage many young women to take condoms.

Some studies suggest that embarrassment may emerge as a result of the social context of condom acquisition (Brackett, 2004; Dahl et al., 2001). That is, the settings where students obtain condoms can sometimes provoke anxiety, stigma, and embarrassment. To counter those negative emotions, young people who are committed to obtaining condoms develop coping and acquisition strategies, including monitoring their environment, moving quickly after obtaining condoms, and concealing the condoms (Brackett, 2004). It is possible that acceptability remained unchanged because young women in this study had already developed strategies—such as monitoring their environment and concealing the condom package—which they used when obtaining condoms from the dispensers. Thus, the program did not affect how they felt about obtaining condoms, but rather simply made obtaining them easier. Understanding how condom acceptability relates to condom use and who is more susceptible to embarrassment about obtaining condoms remains important, as such thoughts and feelings may still serve as a barrier to condom acquisition and carrying for some women.

Although dispenser use was associated with increased condom use, when considering the entire study sample, condom use unexpectedly declined over the 3-month study period. Drawing on past research, there are some possible explanations for this decline. These findings are consistent with past research showing that condom use decreases over the course of a person's time in college (Walsh, Fielder, Carey, & Carey, 2012). In fact, in one study, young women's condom use decreased during their first year of college (Walsh et al., 2012). Among young persons, reasons for not using condoms have included perceptions of partner safety and the belief that sufficient measures were being taken to avoid pregnancy (Civic, 2000; Wingood & DiClemente, 1998). Indeed, it is a well-established finding that as young adults age, they use condoms less over time (Zimmerman et al., 2007). In many cases,

they make the “contraceptive switch” from condoms to hormonal birth control as a relationship progresses, especially in the context of main/steady relationships (Noar, Zimmerman, & Atwood, 2004), which may have been the general dynamic at play in our study. Research should continue to explore ways to promote condom use in the context of main/steady partnerships as well as casual sexual relationships.

Finally, our study underscores the importance of ways to potentially begin to close the intention-behavior gap that is evident with so many behaviors, including condom use (Sheeran, 2002; Sheeran & Orbell, 1998). It is conceivable that as young women increasingly obtain and carry condoms from the dispensers, they will have condoms available when a sexual encounter occurs and may be more likely to use them. It is also possible that once an individual has taken condoms from the dispensers, they may not know how to introduce or re-introduce condoms into their relationship, highlighting the importance of effective partner communication strategies (Noar, 2008b). Future condom distribution interventions could include additional components encouraging young people to not only obtain and carry condoms but also to negotiate condom use with their partners—an especially important topic since women do not actually use condoms themselves. An example of this would be including printed skills-based communication scenarios along with the condoms themselves—these could be attached to the condoms themselves and could feature cartoons of young black women negotiating condom use with their male partner.

CONCLUSIONS

This study adds to the literature on the effectiveness of combining condom distribution with health communication strategies—a low-cost, high-reach approach to preventing new sexually transmitted infections. Our evaluation suggests that the intervention increased perceptions of the availability and accessibility of condoms, and motivated young African American women to obtain and carry condoms. Additionally, obtaining condoms from the dispensers was associated with increased condom use. This study demonstrates the importance of addressing environmental and psychosocial barriers to condom use among young African American females that may ultimately result in improved sexual health.

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FIGURE 1.
Logic model of intervention impact.

FIGURE 2.

The four messages used in the intervention (each condom dispenser had a single message affixed to the front of the dispenser)

TABLE 1.

Participant Demographic and Behavioral Characteristics Among the Pretest and Posttest Samples

Variable	Pre (<i>n</i> = 195)		Post (<i>n</i> = 118)		<i>p</i>
	<i>n</i>	%	<i>n</i>	%	
<i>Gender</i>					—
Female	195	100	118	100	
<i>Age</i>					.01
18	54	28.4	23	19.5	
19	47	24.7	33	28.0	
20	34	17.9	24	20.3	
21	37	19.5	30	25.4	
22	11	5.8	4	3.4	
23	5	2.6	3	2.5	
25	2	1.1	1	0.8	
<i>Race</i>					—
Black or African American	195	100	118	100	
<i>Ethnicity</i>					.50
Hispanic/Latino (a)	9	4.7	5	4.3	
Non-Hispanic/Latino	183	95.3	112	95.7	
<i>Education</i>					.01
1st-year student	70	35.9	31	26.3	
2nd-year student	41	21	29	24.6	
3rd-year student	34	17.4	25	21.2	
4th-year student	42	21.5	29	24.6	
5th-year or beyond	8	4.1	4	3.4	
<i>Residence</i>					.55
On-campus residence hall	156	80	92	78	
Off-campus, alone	34	17.4	22	18.6	
Off-campus, with parents	5	2.6	4	3.4	
<i>Relationship status, current</i>					.43
Main or steady partner	129	66.2	79	66.9	
Casual partner	63	33.8	37	33.1	
<i>Partner type (past 3 mos.)</i>					.37
Males only	179	92.3	108	91.5	
Females only	3	1.5	3	2.5	
Both males and females	12	6.2	7	5.9	
<i>Currently sexually active (past 3 mos.)</i>					.36
Yes	179	92.3	109	92.4	
No	15	7.7	9	7.6	
<i>Condom use frequency (past 3 mos.)</i>					.60
Never	45	23.1	26	22.6	
Rarely	28	14.4	14	12.2	

Variable	Pre (n = 195)		Post (n = 118)		p
	n	%	n	%	
Sometimes	35	17.9	20	17.5	
Very often	25	12.8	17	14.8	
Always	58	29.7	38	33	
<i>Condom use at last sex</i>					.12
Yes	107	55.7	54	46.2	
No	85	44.3	63	53.8	
<i>Partner age</i>					.55
Younger than you	3	1.6	3	2.5	
About the same age	106	54.9	63	53.4	
Older than you	70	36.3	43	36.4	
Much older than you	14	7.3	9	7.6	
<i>Partner education</i>					.49
Student at same school	5	2.6	4	3.4	
Student at different school	99	51	57	48.3	
Not a college student	90	46.4	57	48.3	
<i>Birth control</i>					.42
Yes	75	39.3	44	38.3	
No	116	60.7	71	61.7	
<i>Emergency contraception (ever used)</i>					.22
Yes	39	20.5	21	18.3	
No	151	79.5	94	81.7	
<i>female condoms (ever used)</i>					.58
Yes	15	8	9	7.9	
No	173	92	105	92.1	

Note. Significance indicates differences in the posttest sample compared to the pretest sample. Condom use frequency for past 3 months reported only for those who reported current sexual activity. Condom use at last sex and partner age and education reported for current or last sexual partner.

TABLE 2.Characteristics of Condom Dispenser Use Over the Previous 3 Months ($n = 52$)

	<i>n</i>	%
Used dispensers	52	44
Where did you use dispensers? ^a		
Dorm bathrooms only	42	81
Campus health center only	2	4
Both dorms and campus health center	8	15
What did you do with the condoms you took? ^a		
Gave them away	42	81
Used for sexual intercourse	38	73
Obtained condoms for very first time ^a	5	10
Currently carrying condoms now (at posttest survey) ^a	26	50
Condom preference (of those in dispenser) ^a		
Trojan Magnum	43	83
Trojan Lubricated	9	17

Note.^aReported only among those who had used the dispensers in the past 3 months.

TABLE 3.

Changes in Condom Perceptions and Use Before and After the Condom Distribution and Health Communication Intervention

		Baseline	Follow-up	<i>p</i>
Availability	<i>M</i>	3.54	3.92	.01
	<i>SD</i>	1.74	1.05	
Accessibility	<i>M</i>	3.98	4.25	.03
	<i>SD</i>	1.14	1.04	
Acceptability	<i>M</i>	3.79	3.79	.99
	<i>SD</i>	1.04	.98	
Condom use	<i>M</i>	3.24	2.87	.01
	<i>SD</i>	1.57	1.57	

Note. *M* = mean; *SD* = standard deviation. Availability was assessed using the single-item measure of overall availability of condoms on campus.

TABLE 4.

Multiple Regression Analysis Examining Association Between Dispenser Use and Condom Use in Prior 3 Months

Variables	β (SE)	<i>R</i>	<i>R</i> ²	<i>R</i> ² _{Adjusted}	<i>p</i>
		.42	.18	.12	.01
Age	-.11 (.11)				
Relationship status	-.33 (.33) **				
Availability	.11 (.19)				
Accessibility	.07 (.18)				
Acceptability	-.09 (.16)				
Dispenser use	.20 (.31) *				

Note. Age was measured in the pretest survey, while all other variables were measured in the posttest survey. Relationship status was coded as 0 = casual, 1 = main.

*
p < .05.

**
p < .01.