Health Educ Behav OnlineFirst, published on September 10, 2008 as doi:10.1177/1090198108322821

Effects of a Health Behavior Change Model–Based HIV/STI Prevention Intervention on Condom Use Among Heterosexual Couples: A Randomized Trial

S. Marie Harvey, DrPH
Joan Marie Kraft, PhD
Stephen G. West, PhD
Aaron B. Taylor, PhD
Katina A. Pappas-DeLuca, PhD
Linda J. Beckman, PhD

This study examines an intervention for heterosexual couples to prevent human immunodeficiency virus/sexually transmitted infections. It also evaluates the effect of the intervention, which is based on current models of health behavior change, on intermediate outcomes (individual and relationship factors) and consistency of condom use. Eligible couples were administered a baseline interview and randomized to either a 3-session theory-based intervention or a 1-session standard of care comparison condition. Men and women completed 3-month interviews; only women completed 6-month interviews. No significant intervention effect on condom use was found among couples at 3 months (n = 212) or among women (n = 178) at 6 months. However, condom use increased significantly between baseline and 3 months and baseline and 6 months for participants in both treatment conditions. Intervention effects on condom use self-efficacy were found at 3 months and 6 months and on health-protective communication at 3 months. These findings provide valuable information for the design of future studies to help disentangle the effects of intervening with couples.

Keywords: *HIV prevention; STI prevention; couple-based intervention; health behavior model*

Unprotected sexual intercourse and multiple sexual partners place young women and men at risk for human immunodeficiency virus (HIV) infection, other sexually transmitted infections (STIs), and unintended pregnancy. Although rates of new infections with HIV have been stable in the United States for the past several years (Centers for Disease and Control and Prevention [CDC], 2005, 2006), women remain at risk of HIV

S. Marie Harvey, Department of Public Health, Oregon State University, Corvallis. Joan Marie Kraft, Division of Reproductive Health, U.S. Centers for Disease Control and Prevention, Atlanta, Georgia. Stephen G. West and Aaron B. Taylor, Department of Psychology, Arizona State University, Tempe. Katina A. Pappas-DeLuca, Division of Reproductive Health, U.S. Centers for Disease Control and Prevention, Atlanta, Georgia. Linda J. Beckman, Alliant University, Alhambra, California.

Address correspondence to S. Marie Harvey, Department of Public Health, Corvallis, OR 97331-6406; phone: 541-737-3824; fax: 541-737-4001; e-mail: marie.harvey@oregonstate.edu.

Health Education & Behavior, Vol. XX (X): xx-xx (Month XXXX)
DOI: 10.1177/1090198108322821

infection through heterosexual contact, with Hispanic and African American women at disproportionately higher risk than non-Hispanic white women (CDC, 2005, 2006; Steele, Richmond-Reese, & Lomax, 2006). High rates of other STIs are also common among young adults. For example, estimates suggest that 48% of all new sexually transmitted diseases (STDs) in 2000 (9.1 of 18.9 million new STDs) occurred among 15- to 24-year-olds (Weinstock, Berman, & Cates, 2004). Another consequence of unprotected heterosexual intercourse, unintended pregnancy, is also a public health concern. Despite the availability of highly effective methods of contraception, in 2001 nearly half (49%) of all pregnancies in the United States were unintended (Finer & Henshaw, 2006). The male (latex) condom, when used consistently and correctly, has the potential to provide dual protection against both pregnancy and disease (Stone, Timyan, & Thomas, 1999).

Because behavioral strategies (e.g., abstinence, consistent condom use, or mutual monogamy with an uninfected partner) are the only means to prevent the transmission of HIV and many other STIs, researchers continue to examine ways to increase the effectiveness of behavioral interventions and to better understand determinants of condom use for sexually active persons. Research on the determinants of condom use among heterosexual men and women and prominent theoretical models of behavior change that have been applied to understanding heterosexual condom use (Azjen, 1991; Ajzen & Fishbein, 1980; Ajzen & Madden, 1986; Bandura, 1994; Becker, 1974; Fishbein, 2000; Fishbein & Ajzen, 1975; J. D. Fisher & Fisher, 1992; Rosenstock, Strecher, & Becker, 1994) have shown or theorized that several variables are related to condom use behavior. These factors include attitudes toward condoms, condom use self-efficacy, perceived partner norms for using condoms, perceived vulnerability to HIV/STIs, intentions to use condoms, and HIV information heuristics. HIV information heuristics, a construct unique to the information–motivation–behavior (IMB) skills model (J. D. Fisher & Fisher, 1992; W. A. Fisher & Fisher, 1993; Misovich, Fisher, & Fisher, 1997), are "simple but invalid decision rules that individuals invoke to make rapid but incorrect judgments about whether to practice safer sex" (Misovich, Fisher, & Fisher, 1998, p. 329).

Sexual intercourse and condom use occur within the context of a sexual relationship or an encounter between two people. Most psychosocial models and theories, however, have an individualistic conceptualization of behavior and do not consider the relationship context that is likely to influence safer sex behavior, including condom use (Amaro, 1995). In calling for theoretical frameworks that integrate social–structural factors and cognitive–behavioral factors for HIV prevention, Amaro and Raj (2000) suggested the need to include important individual-based factors (e.g., attitudes toward condoms, condom use self-efficacy, and perceived vulnerability to HIV/STIs) within the context of the larger social dynamics of sexual interactions between women and men. In addition, findings from a growing body of research suggest that relationship factors and dynamics may be important determinants of condom use behavior, includ-

This research was conducted as part of the PARTNERS Project, which was supported by cooperative agreements U30/CCU 915062-1-0 and U30/CCU 615166-1-0 with the U.S. Centers for Disease Control and Prevention (CDC). Members of the PARTNERS Project include S. Marie Harvey, principal investigator for the Los Angeles site; Heather C. Huszti, principal investigator for the Oklahoma City site; and Christine Galavotti, Katina A. Pappas-DeLuca, and Joan Marie Kraft, CDC project officers. Aaron B. Taylor is now in the Psychology Department at Texas A & M University, College Station. The findings and conclusions in this article are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.

ing communication with sexual partners (e.g., Catania et al., 1992; Catania, Kegeles, & Coates, 1990; Dolcini, Coates, Catania, Kegeles, & Hauck, 1995; Sheeran, Abraham, & Orbell, 1999); sexual decision making (e.g., Cabral, Pulley, Artz, Brill, & Macaluso, 1998; Harvey, Bird, De Rosa, Montgomery, & Rohrbach, 2003; Harvey, Bird, Galavotti, Duncan, & Greenberg, 2002; Soler et al., 2000); and partner reactions to condoms (Cabral et al., 1998; Gómez & Marín, 1996).

Despite the fact that both a man and a woman are involved in the heterosexual transmission of HIV and other STIs, prevention efforts among heterosexuals have focused almost exclusively on women. The majority of these interventions were not designed to address issues involving people in relationships or do not include both members of a sexual partnership (Misovich et al., 1997). Moreover, a review of reproductive health interventions found that interventions targeted to couples were more effective in increasing the use of contraception than those targeting only the male or female partner (Becker & Robinson, 1998). These results from reproductive health studies suggest that there may be an advantage to applying a similar couple-based approach to the prevention of HIV and other STIs.

One recent study did specifically evaluate the efficacy of a relationship-based HIV/STI prevention program for heterosexual couples (aged 18-55 years) in primary relationships (El-Bassel et al., 2003; El-Bassel et al., 2001). This intervention was modeled on a psychotherapy counseling approach for couples and assigned couples to one of three treatment groups. In the first group, couples participated in six individual sessions that focused on relationship-based issues. In the second group, only the female partner participated in six individual sessions that focused on relationship-based issues. In the third group, only the female partner participated in one individual HIV education session (educational control condition). El-Bassel and colleagues (2003) found no change in safer sex behaviors for participants in the educational control condition targeted at women only. It is noteworthy, however, that the relationship-based HIV/STI intervention was effective in changing safer sex behavior (unprotected sexual intercourse and an increase in the proportion of protected intercourse) for participants in both the couple condition and the woman-only condition. Although the relationship-based intervention appeared to change risky sexual behaviors, the format for the intervention (individual sessions with each couple) can be time and resource intensive. The development of effective couple-based group interventions potentially could allow community agencies to implement these programs more easily and with fewer resources. In addition, the El-Bassel intervention did not specifically target young couples, who have been shown to be at increased risk for STIs.

Accordingly, we designed, implemented, and evaluated the PARTNERS Project (Partners Against Risk-Taking: A Networking and Evaluation Research Study), a couple-based intervention designed to reduce the risk of STIs, including HIV, and unintended pregnancy among young (aged 18-25) women and their male partners. The intervention was designed to address individual as well as relationship factors that are associated with increased condom use. In addition to targeting both partners in a sexual relationship, the intervention was designed to be presented in a group format. We believed that this format would allow for group interaction that might help modify peer norms and potentially would be more easily replicable in public health settings. This article describes the couple-based intervention and evaluates the effect of the intervention on individual variables, relationship factors, and consistency of condom use at 3 months and 6 months post intervention. The intervention study ran from January 2000, when recruitment began, to the end of 2002, when final outcome data were collected.

METHOD

Overview of Project Design

Participants were recruited from the Los Angeles, California, and Oklahoma City, Oklahoma, areas. Within several weeks of participating in baseline interviews, couples attended a group meeting with up to 12 other couples. All couples had agreed to participate in either a one-session or three-session couple-based program. An equal number of slips of paper indicating assignment to the intervention or the comparison condition had been prepared and placed in a jar. Each couple picked a slip of paper to determine the condition to which they were assigned, a procedure that may enhance treatment adherence (Wortman & Rabinowitz, 1979). Using this procedure, an equal number of couples were randomized to either (a) an intervention condition based on current models of health behavior change in which women and their partners participated in three small-group intervention sessions or (b) a standard of care comparison condition in which women and their partners participated in one small-group educational session. Each couple was introduced to the two facilitators for their condition at the group session.

Both conditions were standardized across the sites with minimal site-specific tailoring (e.g., language; see below). Three-month follow-up interviews were conducted with women and men. Because of cost constraints, 6-month follow-up interviews were conducted with women only.

Participants

Recruitment and Eligibility

We recruited couples through the women, using both active and passive recruitment strategies. Each site selected a variety of community (e.g., colleges, universities, housing projects, malls) and clinic (e.g., general clinics, STI clinics, Planned Parenthood) settings frequented by young women. At these locations, recruiters approached women with information about the project. For passive recruitment, recruiters placed printed materials (e.g., posters) that described the project and listed a toll-free telephone number in community locations; we also advertised in local media. Interested women completed short screening interviews to determine eligibility.

Women were eligible if they were 18 to 25 years old, had a male sex partner aged 18 or older, had sex without a condom at least once in the past 3 months, and met one or more of the following criteria: (a) engaged in risky behavior (e.g., had another partner in the past year, ever used intravenous drugs); (b) knew or thought their partners were at risk (e.g., had an STD); or (c) thought they or their partners would have sex with someone else in the next year while they were still together. Women who were pregnant, intended to become pregnant within the year, or reported being HIV positive were not eligible. Women in Los Angeles had to self-identify as Latina or Hispanic; women in Oklahoma could be of any race/ethnicity. Hispanic women were specifically targeted in the Los Angeles area because Hispanics are heavily affected by AIDS, accounting for more than one fourth of the county's AIDS cases (Los Angeles County Department of Health Services, 2004). Eligible women were asked to invite their primary partner (i.e., someone like a spouse or steady boyfriend) to participate. Both partners had to agree to enroll in the study before the couple could complete baseline interviews.

Participant Flow

Of women screened, approximately one half (49% in Oklahoma City, 51% in Los Angeles) were eligible. Although most eligible women agreed to participate, fewer than half of the women and their partners completed baseline interviews (26% in Oklahoma City, 41% in Los Angeles). Of the 435 couples who completed baseline interviews, 301 (69.2%) returned to the group session to be randomized to a condition. There were minimal differences by site in the number of couples who completed baseline interviews and enrolled in the intervention study (i.e., 67% in Oklahoma City and 72% in Los Angeles). The overwhelming majority (all in the comparison group and just over 90% in the intervention group) completed all sessions. Couples who missed sessions were given a makeup session prior to the beginning of the next session. A total of 249 women and 237 men completed 3-month follow-up interviews (83% of women and 79% of men who were randomized). Two hundred thirty-four (77.7%) of the 301 women completed 6-month interviews. Women in both conditions were equally likely to complete 6-month interviews.

Those who participated in either the intervention condition or the comparison condition did not differ significantly from nonparticipants (i.e., those who completed a baseline interview but were not randomized to a condition) on age, months in the relationship, location, race, or consistency of condom use. Participants in the intervention study, however, reported higher rates of cohabitation (women, $\chi^2 = 5.79$, $\Phi = .14$, $p = .016$; men, $\chi^2 = 3.90$, $\Phi = .11$, $p = .049$).

Intervention

Implementation

Each session had a male and female facilitator and a facilitator assistant; this team facilitated all sessions for a particular group of couples. All facilitators had experience providing services to the target population. To ensure that the intervention and comparison sessions were conducted systematically and consistently across all groups and at both sites, facilitators participated in training workshops, used structured protocols including a manual with standardized scripts, and had regular supervisory sessions with principal investigators. At the Los Angeles site, all facilitators were of Latino/Latina descent and were bilingual. The intervention sessions in Los Angeles underwent only minimal site-specific tailoring in content and activities but were conducted in both English and Spanish. In addition, all intervention scripts, handouts, and interview guides were available in both English and Spanish. The Spanish versions were created by translating the English versions into Spanish and back-translating to English, and then they were reviewed by a native Spanish speaker for accuracy (Foster & Martinez, 1995). At the Oklahoma City site, facilitators were from culturally diverse backgrounds that matched the range of participants' backgrounds.

Standard of Care Comparison Condition

The couple-based comparison condition presented a best-practice community educational standard of care for the prevention of HIV/STIs and unintended pregnancy. After conducting a review of high-quality programs in community health centers in Oklahoma City and Los Angeles, we designed a program to represent the best-practice standard of care. Couples in the comparison condition attended one 2-hour session.

Facilitators began the session by providing basic information about the prevalence and incidence of HIV and other STIs, prevention methods, and the names and locations of HIV testing and counseling facilities in the area. Information also included the types of contraception available and the efficacy of each method for the prevention of pregnancy and STIs. Additional information was provided through videos and brochures. At the end of the session, facilitators led a question-and-answer session. Participants were given condoms, lubricants, and referrals (names, addresses, and telephone numbers of sites) for HIV counseling and testing.

Theory-Based Intervention Condition

Participants in the couple-based intervention condition participated in three weekly sessions, each lasting 2.5 hours. At each session, facilitators provided information and involved participants in discussions to address key individual and relationship factors that influence increased use of preventive behaviors (such as condom use or mutual monogamy) (Fishbein, 2000; Misovich et al., 1997; Stark et al., 1998). In addition, the curriculum involved skill training in risk reduction (e.g., condom use, mutual monogamy, use of effective contraception) as well as interactive skill-based activities such as behavior modeling, video watching, role playing, and interactive games. Individuals practiced these skill-building activities and received feedback from facilitators.

To inform the content of the intervention, we drew from two conceptual models of HIV risk reduction (Harvey et al., 2006): (a) Fishbein's integrated behavior change model (Fishbein, 2000), which combines the psychological theories of behavior change; and (b) the IMB model of HIV/AIDS risk reduction (Fisher & Fisher, 1992). The first session focused on increasing perceived vulnerability for HIV, STIs, and unplanned pregnancy and increasing motivation to avoid HIV, other STIs, and unintended pregnancy. In addition to receiving the same information on HIV and STIs as did the comparison group, the intervention group participated in activities to demonstrate how HIV and other STIs spread throughout the community. Safer sex strategies introduced in this session consisted of abstinence, consistent condom use, mutual monogamy, and HIV and STI testing. Education about each strategy included discussion about how to practice the strategy correctly. The advantages and disadvantages of condom use were also discussed.

The second session was designed to provide more detailed information about the safer sex strategies introduced in the first session and to focus on the individual and relationship factors that motivate use of each strategy. For example, to increase condom use, the session addressed common perceptions of condoms (e.g., positive expectations), encouraged participants to discuss others' beliefs about condoms (e.g., norms), and encouraged couples to talk about how to use condoms together. Participants practiced putting condoms on models to build skills and self-efficacy.

The third session addressed reproductive intentions and focused on communication strategies to support the continued use of safer sex strategies. Couples received the same information about contraceptives as did those in the comparison condition. Discussion centered on the variety of contraceptive options available to prevent unintended pregnancies, and this information allowed couples to choose a method that suited them. Activities included a communication enhancement exercise whereby couples were introduced to assertive communication strategies (via video) and practiced using these strategies. Couples also considered a scenario in which unsafe sex occurred within a relationship, identified the triggers to relapse, and discussed ways to control those triggers. Following these activities, partners worked together to complete a structured

worksheet designed to lead them to a personalized plan for protecting against unintended pregnancy, HIV, and other STIs.[1]

At the conclusion of each session, couples received a bag with items that reflected the content of that week's session. At the final session, couples received a bag of items that was matched to their personalized plan for safer sex. Each bag included condoms, and the total number of condoms received across all three sessions was equivalent to those given to participants in the comparison condition.

Evaluation

Data Collection

Baseline interviews were conducted between January 2000 and June 2002. Baseline and 3-month follow-up interviews were approximately 60 minutes long; members of each couple were interviewed separately but concurrently. The 6-month follow-up interviews with women were approximately 60 minutes long. Participants received $30, $40, and $50 for their participation in the baseline, 3-month, and 6-month interviews, respectively, and they were compensated for travel and child care costs. This research was approved by the institutional review boards of the institutions responsible for each site and by the CDC. Written informed consent was obtained from all participants.

Participants and interviewers were matched by gender at both sites and by race/ethnicity in Los Angeles. Although at the Los Angeles site participants could choose to have the interview conducted in Spanish or English, only 8% were interviewed in Spanish. Interviewers were trained in the administration of audio computer-assisted interviewing (CASI), confidentiality measures, and methods to handle adverse events. In addition, interviewers were instructed about the meaning of questions, the concepts underlying them, and how to maintain rapport while recording essential information. Culturally appropriate interviewing techniques and the possible effects of social class differences on interviewer–interviewee rapport were addressed through lecture–discussion and practice interviewing.

At both sites, trained interviewers used a CASI system and entered participants' responses directly into a computer. For the most sensitive sexual and risk behavior questions, participants were given the option of entering their responses directly into the computer so that their responses would be masked to the interviewer. Voice recordings were used so that the participants heard (through headphones) and saw (on the screen) each question and response option. The CASI administration allowed for the insertion of participant-specific data (such as the name of a partner or a calendar date).

Measures

The interview guide assessed background characteristics, condom use intentions and behaviors, individual factors, and relationship characteristics and dynamics. Separate confirmatory factor analysis was conducted on each construct with more than three items to assess whether each scale represented a unidimensional trait. As recommended by Hu and Bentler (1998), model fit was assessed with the standardized root-mean-square residual (SRMR) and the comparative fit index (CFI). SRMR values less than .08 indicate adequate fit. CFI values range from 0 to 1, with values greater than .95 indicative of adequate fit. All scales met both of these criteria.

The primary outcome measure for this article was consistency of condom use for vaginal sex with a main partner. Secondary outcomes included individual and relationship

factors associated with condom use that were addressed in the intervention. Specifically, we hypothesized that couples (at 3 months) and women (at 6 months) in the intervention group would show greater improvement in consistency of condom use than couples and women in the comparison group. We hypothesized that couples and women in the intervention group would also show greater improvement on individual measures related to condom use as well as relationship measures.

Outcome Measure. Consistency of condom use was the outcome measure. We asked participants how many times in the past 90 days they had had vaginal sex with their primary partner and how many times they used a condom when they had vaginal sex. We constructed a proportional measure of consistency of condom use by dividing the number of times condoms were used for vaginal sex in the past 90 days with the main partner by the number of times the interviewee had vaginal sex with that partner. If either partner reported no vaginal sex at either baseline or 3 months, the couple was excluded from the analyses for consistency of condom use for the 3-month outcome evaluation. If a woman reported no vaginal sex with her primary partner at baseline or at 6 months, she was excluded from the analyses for consistency of condom use for the 6-month outcome evaluation (n = 10). We chose to emphasize condom use with respect to vaginal sex because vaginal sex was reported by 100% of the couples at baseline. In contrast, the reports of anal sex in our sample were low, with 70% to 80% of the couples reporting no anal sex at all. Although we recognize the higher risk of anal sex, the small sample size precluded any separate analyses.

Individual Measures. Attitudes toward condoms were assessed with four items adapted from Misovich et al. (1998). Attitudes represent part of the motivation component of the IMB model of AIDS risk behavior (Fisher & Fisher, 1992). Responses for each item ranged from 1 (*a very good idea*) to 5 (*a very bad idea*). We created a scale score by taking the average of the items (coefficient alpha = .84).

Condom use self-efficacy was assessed with 15 items adapted from the condom use self-efficacy scale developed by Brafford and Beck (1991). Participants' condom use self-efficacy (i.e., their confidence in their ability to use condoms) was assessed in five domains: dissatisfying their partner by suggesting condom use, condom use negotiation, condom use mechanics, ability to obtain condoms, and ability to use condoms when using substances. Items were rated on a 5-point response scale that ranged from 1 (*not at all confident*) to 5 (*extremely confident*). We created a scale score by taking an average of the 15 items that made up the scale (coefficient alpha = .92).

Partner-specific perceived vulnerability measured perceptions of risk for HIV/STIs from having sex with one's partner without using a condom (Reisen & Poppen, 1999). Two items were rated on a 5-point response scale ranging from 1 (*not at all likely*) to 5 (*extremely likely*). We created a scale score by taking the average of the items (coefficient alpha = .92).

HIV information heuristics were assessed with eight items adapted from the IMB model (Misovich et al., 1998). HIV information heuristics reflect misconceptions often held about the type of people with whom it is safe to have unprotected sex (e.g., if you know a person very well, you don't have to use condoms to protect against getting HIV from that person). Items were rated on a 5-point response scale ranging from 1 (*definitely false*) to 5 (*definitely true*). We created a scale score by averaging the responses across the items (coefficient alpha = .77).

Intentions to use condoms in the next month were assessed with four items based on the IMB model of HIV/AIDS risk reduction (Misovich et al., 1998). Items were rated

on a 5-point response scale ranging from 1 (*not at all likely*) to 5 (*extremely likely*). We created a scale score by taking the average of the items (coefficient alpha = .94).

Relationship Characteristics and Dynamics. We adapted the general condom norms items from Misovich et al. (1998) to measure partner-specific perceived partner norms for using condoms. Three items assessed the importance of condom use perceived to be held by partners and were rated on a 5-point response scale ranging from 1 (*not important*) to 5 (*extremely important*). We created a scale score by averaging the items (coefficient alpha = .96).

We adapted two items from Harvey, Beckman, and Doty (1999) to measure *decision making about condom use and preventing pregnancy*. Participants were asked to what extent they took part in making decisions about condom use and pregnancy prevention with their partners. Items were rated on a 5-point response scale ranging from 1 (*not at all*) to 5 (*a great deal*). We created a scale score by averaging the items (coefficient alpha = .74).

Health-protective sexual communication assessed whether people had ever discussed issues related to safer sex with their partners (e.g., attitudes toward condoms, sexual history, HIV/STI testing history). We used 15 dichotomous items (0 = *no*, 1 = *yes*) adapted from van der Straten, Catania, and Pollack (1998). We created a scale score by summing the responses so that higher scores corresponded to communication on a greater number of health-protective sexual communication topics (coefficient alpha = .85).

Data Analysis

We report two sets of analyses: One set evaluates 3-month outcomes for couples, and the other set evaluates 6-month outcomes for women. Analyses for 3-month outcomes are based on the 212 intact couples who completed the 3-month interview. Intact couples are couples in which the woman reported that she and the partner who participated in the intervention (or comparison session) were still primary partners. The final sample of 212 represented 86% of all completed 3-month interviews and 70% of all randomized couples. Data from intact couples were used to focus on outcomes for couples who participated together in the intervention.

The data from the 212 intact couples were separately analyzed for the behavioral outcome and each individual and relationship variable. Mixed between–within analysis of variance (ANOVA) models were estimated to examine intervention effects on reported condom use and secondary outcomes (i.e., individual and relationship factors) while taking into account the dyadic structure of the data. The approach allows for differential effects of treatment conditions on the male and female members of couples and also allows a main effect of time to be tested. The mixed ANOVA models were 2 (condition: intervention vs. comparison) × 2 (time: baseline vs. 3 months) × 2 (gender of partner) ANOVAs, with time and gender treated as within-couples factors and condition treated as a between-couples factor. The presence of a significant Condition × Time effect was of primary interest because it indicated that participants in the intervention and comparison groups changed differently over time. A significant main effect of time in the absence of a significant Condition × Time interaction indicated changes from baseline to 3 months for participants in both study conditions.

Analyses for 6-month outcomes are based on the 178 women who remained in intact couples at both 3- and 6-month interviews. To evaluate the effectiveness of the intervention on condom use and the individual and relationship factors, we used a series of 2 (condition: intervention vs. comparison) × 2 (time: baseline vs. 6 months) mixed ANOVA models, with time treated as a within-couples factor and condition treated as a

between-couples factor. A main effect of time would indicate that change occurred in both groups. A Treatment Condition × Time interaction would indicate more change in one treatment group than the other. With alpha = .05 and power = .80, our design could detect a small to moderate effect size (Cohen, 1988), corresponding to a difference between the intervention and control groups in their change in the proportion of condom use of .13 at 3 months and .15 at 6 months.

RESULTS

Sample Characteristics

In the sample at baseline, about half of the members of the intact couples ($N = 212$ couples, 212 men and 212 women) were Hispanic (55% of women, 56% of men), more than one fourth were non-Hispanic white (27% of women, 26% of men), and the remainder were either African American (11% of women, 10% of men) or another race/ethnicity (7% of women, 8% of men). The majority (84.1%) of Hispanic participants from the Los Angeles site were of Mexican descent, defined as being born in or having a parent born in Mexico. Approximately 19% of the women reported that they were married to their primary partner. In addition, 57% of the women reported that they lived with their primary partner. Nearly a third (32% of women, 29% of men) stated that they had been in their relationship less than 12 months. About one fourth of the participants (23% of women, 26% of men) had less than 12 years of education. More than half of all participants (56% of women, 80% of men) were employed outside the home.

Three-Month Outcomes for Intact Couples

Baseline and 3-month means for the behavioral outcome (condom use) and each individual and relationship variable for members of intact couples are shown in Table 1.

Marginal means of each variable, by condition and time, estimated based on the ANOVA models, are presented in Table 2. This table also indicates which of the variables had effects of time or Treatment × Time (i.e., an effect of the treatment). In the results, we focus on treatment and time effects. Although gender was associated with several of the individual and relationship factors (e.g., motivation, decision making), it was not associated with consistency of condom use and there were no statistically significant interactions involving gender (i.e., Gender × Treatment or Gender × Treatment × Time), indicating that the members of the couples did not respond differentially to the treatment.

Consistency of Condom Use

The Time × Treatment Condition interaction for consistency of condom use was not statistically significant, indicating that the intervention and comparison groups did not differ significantly in the extent to which condom use changed between baseline and the 3-month follow-up. We found, however, a significant increase in the proportion of protected sexual acts among participants in both groups as indicated by a significant main effect of time, $F(1, 199) = 16.10$, $p < .001$. Specifically, the mean value for consistency of condom use increased from .27 at baseline to .36 at 3 months.[2]

Intermediate Outcomes

Treatment Condition Effects. We found significant Time × Treatment Condition interactions for two of the eight intermediate outcomes, an indication that the treatment

Table 1. Means of Outcome Variables, by Condition and Gender, at Baseline and 3-Month Follow-Up

	Comparison Group				Intervention Group			
	Women		Men		Women		Men	
Variable	Baseline	3 Months	Baseline	3 Months	Baseline	3 Months	Baseline	3 Months
Consistent condom use	0.26	0.36	0.26	0.38	0.27	0.39	0.29	0.38
Decision making	3.79	4.01	3.46	3.68	3.54	4.18	3.50	3.77
Heuristics	1.52	1.33	1.78	1.70	1.44	1.28	1.73	1.50
Vulnerability from partner	1.67	1.81	1.44	1.54	1.74	1.85	1.63	1.74
Motivation	1.88	1.86	1.93	2.01	1.80	1.79	1.99	2.04
Partner condom norms	2.39	2.30	2.64	2.53	2.24	2.35	2.75	2.66
Condom use intentions	2.88	3.08	2.79	2.97	3.05	3.06	2.78	2.74
Condom use self-efficacy	3.96	4.10	4.02	4.11	3.78	4.16	3.90	4.16
Health-protective communication	0.75	0.55	0.69	0.44	0.72	0.56	0.67	0.49

NOTE: Consistent condom use is the proportion of times using a condom when having vaginal sex.

Table 2. Model Estimated Means and Results of Tests of Time and Condition × Time Effects for Baseline and 3-Month Follow-Up Data

	Comparison Group		Intervention Group		Significant Effects, *F* Value and *p* Value	
Variable	Baseline	3 Months	Baseline	3 Months	Time	Condition × Time
Consistent condom use	0.26	0.35	0.28	0.38	16.10, .001	NS
Decision making	3.62	3.85	3.51	3.97	28.13, .001	NS
Heuristics	1.66	1.51	1.59	1.39	36.06, .001	NS
Vulnerability from partner	1.56	1.67	1.68	1.80	4.50, .035	NS
Motivation	1.91	1.94	1.90	1.92	NS	NS
Partner condom norms	2.49	2.41	2.48	2.51	NS	NS
Condom use intentions	2.82	3.03	2.92	2.90	NS	NS
Condom use self-efficacy	3.98	4.11	3.84	4.16	35.13, .001	6.91, .009
Health-protective communication	0.72	0.49	0.69	0.52	143.44, .001	4.14, .043

NOTE: NS = not significant at $p < .05$. Consistent condom use is the proportion of times using a condom when having vaginal sex.

condition (intervention vs. comparison group) had a differential effect on participants from baseline to the 3-month follow-up. First, a significant Treatment Condition × Time effect was found for mean overall condom use self-efficacy, $F(1, 209) = 6.91$, $p = .009$. Perceived condom use self-efficacy increased more in the intervention than in the comparison condition (change in the intervention condition was +0.32; change in the comparison condition was +0.12). Second, a significant Treatment Condition × Time effect was found for health-protective communication, $F(1, 206) = 4.14$, $p = .043$. Reported health-protective communication decreased less in the intervention than in the comparison condition (change in the intervention condition was –0.17; change in the comparison condition was –0.23). Nonsignificant treatment effects were found for perceived vulnerability from partner, HIV information heuristics, attitudes toward condoms, condom use intentions, perceived partner norms, and condom use decision

making. No significant Intervention Condition × Gender × Time interactions were obtained for any intermediate outcome.

Changes Over Time. In addition to the significant differences discussed above, we found significant differences between baseline and 3-month follow-up for participants in both the intervention and comparison conditions on five of the eight measures. Time was associated with higher mean scores at the 3-month follow-up on condom use decision making, $F(1, 208) = 28.13$, $p < .001$; perceived vulnerability from partner, $F(1, 209) = 4.50$, $p = .035$; and condom use self-efficacy, $F(1, 209) = 35.13$, $p < .001$. Over the 3-month follow-up period, couples in both conditions showed significant gains in these intermediate variables. Time was associated with lower mean scores on HIV information heuristics, $F(1, 209) = 36.06$, $p < .001$, and health-protective communication, $F(1, 206) = 143.44$, $p < .001$. We found no significant differences between baseline and 3-month follow-up on motivation, attitudes toward condoms, or condom use intentions.

6-Month Outcomes for Women

Consistency of Condom Use

With a few notable differences, baseline to 6-month changes among women were similar to baseline to 3-month changes for couples. The Time × Treatment Condition interaction for consistency of condom use was not statistically significant, indicating that changes in this outcome were not significantly larger for women in the intervention condition than for women in the comparison condition. We found, however, a significant increase in the proportion of protected sexual acts among women in both groups, as indicated by a significant main effect of time, $F(1,166) = 7.98$, $p < .01$. Specifically, the mean value for consistency of condom use increased from .27 at baseline to .34 at 6 months and from .28 at baseline to .37 at 6 months for the intervention group and the comparison group, respectively (Table 3).

Intermediate Outcomes

Treatment Condition Effects. We found only one significant Time × Treatment Condition interaction for the intermediate outcomes at the 6-month follow-up. A significant Treatment Condition × Time effect was found for mean overall condom use self-efficacy, $F(1,175) = 4.11$, $p = .040$. As was the case at 3 months for couples, perceived condom use self-efficacy increased more in the intervention than in the comparison condition (change in the intervention condition was +0.34; change in the comparison condition was +0.14).

Changes Over Time. We found significant differences between baseline and 6-month follow-up for women in both the intervention and comparison conditions on five of the eight measures. Time was associated with higher mean scores at the 6-month follow-up on condom use decision making, $F(1, 175) = 27.98$, $p < .001$; perceived condom use self-efficacy, $F(1, 175) = 23.23$, $p < .001$; and intentions to use condoms, $F(1, 175) = 5.61$, $p < .05$. Over the 6-month follow-up period, women in both conditions showed significant gains in these intermediate variables. Time was associated with lower mean scores on HIV information heuristics, $F(1, 175) = 27.81$, $p < .001$, and health-protective sexual communication, $F(1, 175) = 161.91$, $p < .001$.

Table 3. Model Estimated Means and Results of Tests of Time and Condition × Time Effects for Baseline and 6-Month Follow-Up Data (Women Only)

	Comparison Group		Intervention Group		Significant Effects, *F* Value and *p* Value	
Variable	Baseline	6 Months	Baseline	6 Months	Time	Condition × Time
Consistent condom use	0.28	0.37	0.27	0.34	7.98, .005	NS
Decision making	3.85	4.16	3.56	4.23	27.98, .001	NS
Heuristics	1.52	1.30	1.47	1.25	27.81, .001	NS
Vulnerability from partner	1.73	1.95	1.74	1.85	NS	NS
Motivation	1.85	1.81	1.83	1.82	NS	NS
Partner condom norms	2.38	2.46	2.22	2.40	NS	NS
Condom use intentions	2.92	3.14	2.98	3.22	5.61, .019	NS
Condom use self-efficacy	3.96	4.10	3.73	4.07	23.23, .001	4.11, .040
Health-protective communication	0.76	0.46	0.73	0.43	161.91, .001	NS

NOTE: NS = not significant at $p < .05$. Consistent condom use is the proportion of times using a condom when having vaginal sex.

DISCUSSION

We designed the PARTNERS Project to evaluate an intervention for couples based on models of health behavior change that focused on specific individual and relationship factors in order to modify sexual behaviors and reduce the risk of unintended pregnancy and STIs among young women and their primary male partners. We conducted a 3-month and 6-month evaluation of intermediate (i.e., individual and relationship factors) and behavioral (i.e., consistency of condom use) outcomes to compare participants in the one-session standard of care comparison condition with those in the three-session theory-based intervention condition. In our 3-month and 6-month evaluations, we did not find significant intervention effects for consistent condom use between the two conditions. Instead, we found that reports of condom use significantly increased between baseline and 3-month follow-up for couples and between baseline and 6-month follow-up for women in both the intervention and comparison conditions. We also found significant interaction effects at the 3-month follow-up for perceived condom use self-efficacy and health-protective sexual communication and for perceived condom use self-efficacy at the 6-month evaluation. In addition, many of the individual and relationship factors significantly changed for couples and women in both the intervention and comparison conditions from baseline to the 3-month and 6-month follow-ups.

Significant increases in condom use self-efficacy that lasted at least 6 months suggest that some components of the intervention were effective. For instance, conducting condom use skill-building activities, distributing condoms, and encouraging couples to use them may have led participants to focus on positive aspects of condom use. In addition, these activities resulted in the participants having increased confidence in their ability to use condoms. That said, our findings suggest that these changes did not lead to greater increases in consistency of actual condom use among participants in the intervention condition compared with those in the comparison session over the 3- and 6-month follow-up periods. The link between condom use self-efficacy and consistency of actual condom use was apparently not fully made.

The finding that health-protective sexual communication decreased for participants in the intervention condition was unexpected. The three-session intervention encouraged

couples to communicate more openly about risk for STIs and methods for pregnancy and disease prevention. One possible explanation for a decrease in communication among these couples is that having participated in the three-session intervention they felt that they had fully discussed the issues and no longer needed to communicate.

Despite the strengths of the evaluation design for the PARTNERS Project, we cannot determine what was responsible for the significant changes in reported consistency of condom use and many of the individual and relationship factors among participants in *both* the intervention group and the comparison group. Both treatment conditions may have led to behavior change. The difference in the strength of treatment of a three-session theory-based program and a one-session standard of care program with overlapping content may not have been sufficient to produce differential treatment effects (Sechrest, West, Phillips, Redner, & Yeaton, 1979). However, we cannot rule out the possibility that other threats to internal validity, such as history or exposure to other national health promotion programs, may explain our findings (Shadish, Cook, & Campbell, 2002). In addition, other aspects of our procedure may have contributed to change in both groups. Identical community-based recruitment sites, procedures, facilitators, and interviewers were used for both conditions. The enormous effort by the field staff to recruit and retain participants (e.g., maintaining personal contact, providing incentives) may have contributed to observed changes over time in both groups. Another possibility is that the face-to-face interviews conducted by individuals of the same gender (and ethnicity in Los Angeles) may have prompted self-evaluation and, thus, enhanced motivation to change behavior.

As with any randomized trial, aspects of our procedures may reduce the generalizability of the findings from this study. Because we recruited through women, women had to convince their male partners to participate in the study. The large number of eligible women who did not participate suggests that some women would not or could not encourage their partners to join the study. Couples who were not motivated to change their behaviors may have decided not to participate. Alternatively, women in new or less stable relationships may have been more hesitant to talk to their partners about the study or may have been unable to persuade them to participate. Moreover, couples who were living together were more likely to participate in the intervention than those not living together. Thus, our results may be limited to more stable couples in which both members have some commitment to the continuation of the relationship.

As is true for most research on sexual behavior, our behavioral outcome is self-reported. To minimize underreporting of behaviors that may be stigmatized, interviewers and participants were matched by gender (and by ethnicity in Los Angeles), and questions about sexual and risk behaviors were strategically placed in the interview so that interviewers could build rapport before broaching sensitive topics. In addition, before asking sensitive questions, interviewers reminded participants that their responses were confidential and participants had the option of entering their own responses directly into the computer for these sensitive questions. Interviewers were not present at intervention or comparison sessions in an effort to minimize socially desirable responses to interview questions. If these precautions were not sufficient, however, some participants in both conditions may have given socially desirable answers, especially after learning more about the benefit of condoms for disease and pregnancy prevention as described in both the intervention and comparison conditions.

We believe that the most plausible theoretical explanation for our findings is that bringing couples together for education about the prevention of HIV/STIs and unintended pregnancy may have been sufficient to prompt individual and relationship changes that led to increased condom use. The fact that both conditions were implemented with couples may have been more important than the specific content (i.e.,

education only vs. education and attention to psychosocial and relationship factors) or format (e.g., skill-building activities, homework) of each condition. Unfortunately, we did not have the resources to include additional conditions in the intervention design to address the contribution of each component of the intervention to the outcome (West & Aiken, 1997). Thus, we cannot answer questions about whether the observed changes in variables over time were attributable to the inclusion of both partners, to specific content features of the intervention and comparison conditions, to the format of the intervention condition, or to some combination of these factors.

Implications for Practice

Our findings together with other published results suggest the need to better understand the importance of (a) including both members of a sexually active couple in intervention efforts, (b) focusing on the relationship context in interventions, and (c) using a true comparison program condition in line with community standards rather than a no-treatment control. Specifically, future studies should consider which individual and relationship factors to address and whether to deliver interventions to one partner or to couples. For some couples, for instance, participating together in even a short intervention that addresses fewer intermediate factors may be sufficient to prompt more discussion and joint decision making regarding disease-prevention strategies. Other couples, perhaps less stable couples than we may have reached, may need more attention to their relationship dynamics. Given the seriousness of the HIV epidemic among young women and their male partners, more research that builds on existing findings is needed.

Notes

1. A previously published article assessed the contraceptive outcomes of the PARTNERS Project (Kraft et al., 2007).

2. We conducted parallel ANOVAs with a measure of the proportion of times a condom was used when participants were having either vaginal or anal sex with their partner. The pattern of significant results was identical to that obtained using the proportion of condom use with vaginal sex only. The effect sizes also did not materially differ.

References

Amaro, H. (1995). Love, sex, and power: Considering women's realities in HIV prevention. *American Psychologist*, *50*, 437-443.

Amaro, H., & Raj, A. (2000). On the margin: Power and women's HIV risk reduction strategies. *Sex Roles*, *42*, 723-749.

Azjen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*, 179-211.

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior.* Englewood Cliffs, NJ: Prentice Hall.

Ajzen, I., & Madden, T. J. (1986). Prediction of goal-directed behavior: Attitudes, intentions and perceived behavioral control. *Journal of Experimental Social Psychology*, *42*, 426-435.

Bandura, A. (1994). Social cognitive theory and exercise of control over HIV infection. In R. J. DiClemente & J. Peterson (Eds.), *Preventing AIDS: Theories and methods of behavioral interventions* (pp. 25-29). New York: Plenum.

Becker, M. H. (1974). The health belief model and personal health behavior. *Health Education Quarterly*, *2*, 324-508.

Becker, S., & Robinson, C. (1998). Reproductive health care: Services oriented to couples. *International Journal of Gynecology and Obstetrics*, *61*, 275-281.

Brafford, L. J., & Beck, K. H. (1991). Development and validation of a condom self-efficacy scale for college students. *College Health*, *39*, 219-225.

Cabral, R. J., Pulley, L., Artz, L. M., Brill, I., & Macaluso, M. (1998). Women at risk of HIV/STD: The importance of male partners as barriers to condom use. *AIDS and Behavior*, *2*, 75-85.

Catania, J. A., Coates, T. J., Kegeles, S., Fullilove, M. T., Peterson, J., Marin, B., et al. (1992). Condom use in multiethnic neighborhoods of San Francisco: The population-based AMEN (AIDS in Multi-Ethnic Neighborhoods) Study. *American Journal of Public Health*, *82*, 284-287.

Catania, J. A., Kegeles, S. M., & Coates, T. J. (1990). Towards an understanding of risk behavior: An AIDS Risk Reduction Model (ARRM). *Health Education Quarterly*, *17*, 53-72.

Centers for Disease Control and Prevention. (2005). Trends in HIV/AIDS diagnoses—33 states, 2001-2004. *Mortality and Morbidity Weekly Report*, *54*, 1149-1153.

Centers for Disease Control and Prevention. (2006). Epidemiology of HIV/AIDS—United States, 1981-2005. *Mortality and Morbidity Weekly Report*, *55*, 589-592.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.

Dolcini, M. M., Coates, T. J., Catania, J. A., Kegeles, S. M., & Hauck, W. (1995). Multiple sexual partners and their psychosocial correlates: The population-based AIDS in Multiethnic Neighborhoods (AMEN) Study. *Health Psychology*, *14*, 22-31.

El-Bassel, N., Witte, S. S., Gilbert, L., Elwin, W., Chang, M., Hill, J., et al. (2003). The efficacy of a relationship-based HIV/STD prevention program for heterosexual couples. *American Journal of Public Health*, *93*, 963-969.

El-Bassel, N., Witte, S. S., Gilbert, L., Sormanti, M., Moreno, C., Pereira, L., et al. (2001). HIV prevention for intimate couples: A relationship-based model. *Families*, *Systems & Health*, *19*, 379-395.

Finer, L. B., & Henshaw, S. K. (2006). Disparities in rates of unintended pregnancy in the United States, 1994 and 2001. *Perspectives on Sexual and Reproductive Health*, *38*, 90-96.

Fishbein, M. (2000). The role of theory in HIV prevention. *AIDS Care*, *12*, 273-278.

Fishbein, M., & Ajzen, I. (1975). *Belief*, *attitude*, *intention and behavior: An introduction to theory and research.* Reading, MA: Addison-Wesley.

Fisher, J. D., & Fisher, W. A. (1992). Changing AIDS-risk behavior. *Psychological Bulletin*, *111*, 455-474.

Fisher, W. A., & Fisher, J. D. (1993). A general social psychological model for changing AIDS risk behavior. In J. Pryor & G. Reeder (Eds.), *The social psychology of HIV infection* (pp. 127-153). Hillsdale, NJ: Lawrence Erlbaum.

Foster, S., & Martinez, C. R. (1995). Ethnicity: Conceptual and methodological issues in child clinical research. *Journal of Clinical Child Psychology*, *24*, 214-226.

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

Harvey, S. M., Beckman, L. J., & Doty, M. (1999). Couple dynamics in sexual and reproductive decision-making among Mexican immigrants. In L. J. Severy & W. Miller (Eds.), *Advances in population: Psychosocial perspectives* (Vol. 3, pp. 251-279). London: Jessica Kingsley.

Harvey, S. M., Bird, S. T., De Rosa, C. J., Montgomery, S. B., & Rohrbach, L. A. (2003). Sexual decision-making and safer sex behavior among young female injection drug users and female partners of IDUs. *Journal of Sex Research*, *40*, 50-60.

Harvey, S. M., Bird, S. T., Galavotti, C., Duncan, E. A. W., & Greenberg, D. (2002). Relationship power, sexual decision-making and condom use among women at risk for HIV/STDs. *Women & Health*, *36*, 69-84.

Harvey, S. M., Beckman, L. J., Gerend, M. A., Bird, S. T., Posner, S., Huszti, H. C., et al. (2006). A conceptual model of women's condom use intentions: Integrating intrapersonal and relationship factors. *AIDS Care*, *18*, 698-709.

Hu, L., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods*, *3*, 424-453.

Kraft, J. M., Harvey, S. M., Thorburn, S., Hederson, J. T., Posner, S. F., & Galavotti, C. (2007). Intervening with couples: Assessing contraceptive outcomes in a randomized pregnancy and HIV/STD risk reduction intervention trial. *Women's Health Issues*, *17*, 52-60.

Los Angeles County Department of Health Services, HIV Epidemiology Program. (2004, July). *HIV/AIDS surveillance summary.* Los Angeles: Author.

Misovich, S. J., Fisher, J. D., & Fisher, W. A. (1997). Close relationships and elevated HIV risk behavior: Evidence and possible underlying psychological processes. *Review of General Psychology*, *1*, 72-107.

Misovich, S. J., Fisher, W. A., & Fisher, J. D. (1998). A measure of AIDS prevention information, motivation, behavioral skills, and behavior. In C. M. Davis, W. L. Yarber, R. Bauserman, G. Scheer, & S. L. Davis (Eds.), *Handbook of sexuality-related measures* (pp. 328-337). Thousand Oaks, CA: Sage.

Reisen, C. A., & Poppen, P. J. (1999). Partner-specific risk perception: A new conceptualization of perceived vulnerability to STDs. *Journal of Applied Social Psychology*, *29*, 667-684.

Rosenstock, I. M., Strecher, V. J., & Becker, M. J. (1994). The health belief model and HIV risk behaviour change. In R. J. DiClemente & J. L. Peterson (Eds.), *Preventing AIDS: Theories and methods of behavioral interventions* (pp. 5-24). New York: Plenum.

Sechrest, L., West, S. G., Phillips, M. A., Redner, R., & Yeaton, W. (1979). Some neglected problems in evaluation research: Strength and integrity of treatments. In L. Sechrest & Associates (Eds.), *Evaluation studies review annual* (Vol. 4, pp. 15-35). Beverly Hills, CA: Sage.

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference.* Boston: Houghton Mifflin.

Sheeran, P., Abraham, C., & Orbell, S. (1999). Psychosocial correlates of heterosexual condom use: A meta-analysis. *Psychological Bulletin*, *125*, 90-132.

Soler, H., Quadagno, D., Sly, D. F., Riehman, K. S., Eberstein, I. W., & Harrison, D. F. (2000). Relationship dynamics, ethnicity and condom use among low-income women. *Family Planning Perspectives*, *32*, 82-88, 101.

Stark, M. J., Tesselaar, H. M., O'Connell, A. A., Person, B., Galavotti, C., Cohen, A., et al. (1998). Psychosocial factors associated with the stages of change for condom use among women at risk for HIV and STDs: Implications for intervention development. *Journal of Consulting & Clinical Psychology*, *66*, 967-978.

Steele, C. B., Richmond-Reese, V., & Lomax, S. (2006). Racial and ethnic disparities in HIV/AIDS, sexually transmitted disease, and tuberculosis among women. *Journal of Women's Health*, *15*, 116-122.

Stone, K. M., Timyan, J., & Thomas, E. L. (1999). Barrier methods for the prevention of sexually transmitted diseases. In K. K. Holmes, P. Mardh, P. F. Sparling, S. M. Lemon, W. E. Stamm, P. Piot, & J. N. Wasserheit (Eds.), *Sexually transmitted diseases* (pp. 1307-1321). New York: McGraw-Hill.

van der Straten, A., Catania, J. A., & Pollack, L. (1998). Psychosocial correlates of health-protective sexual communication with new sexual partners: The national AIDS behavioral survey. *AIDS and Behavior*, *2*, 213-227.

Weinstock, H., Berman, S., & Cates, W. (2004). Sexually transmitted diseases among American youth: Incidence and prevalence estimates, 2000. *Perspectives on Sexual and Reproductive Health*, *36*, 6-10.

West, S. G., & Aiken, L. S. (1997). Towards understanding individual effects in multicomponent prevention programs: Design and analysis strategies. In K. J. Bryant, M. Windle, & S. G. West (Eds.), *The science of prevention: Methodological advances from alcohol and substance abuse research* (pp. 167-209). Washington, DC: American Psychological Association.

Wortman, C. B., & Rabinowitz, V. C. (1979). Random assignment: The fairest of them all. In L. Sechrest, S. G. West, M. Phillips, R. Redner, & W. Yeaton (Eds.), *Evaluation studies review annual* (Vol. 4, pp. 177-184). Beverly Hills, CA: Sage.