

Running Head: ENROLLMENT IN HIV PREVENTION PROGRAMS

**Beyond the Most Willing Audiences:
A Meta-Intervention to Increase Exposure to
HIV-Prevention Programs by Vulnerable Populations**

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Abstract

Objective. Enrollment in HIV-prevention interventions is more likely when the audience has safer rather than riskier HIV-relevant behavior. Thus, a meta-intervention was designed to increase participation by an audience of infrequent condom users in Florida (US).

Design. Participants ($N = 400$) were randomly assigned to one of four conditions varying the introduction to a counseling program. In the experimental condition, participants were told that the intervention gave participants options but might not change their behavior. In a standard-introduction condition, participants were told that the program was highly effective at changing participants' behaviors. There were also an information-control group containing a description of the program, and a no-information-control group solely containing an invitation.

Main outcome measures. The outcome measure was actual participation in the offered counseling.

Results. Findings indicated that the experimental introduction was the most successful at yielding participation in the counseling program when the audience had low intentions to use condoms in the future.

Conclusion. Intervention introductions countering participants' resistance to change increase participation in HIV-prevention counseling among reluctant clients. Other meta-interventions may be explored to systematically augment the effectiveness of evidence-based health-promotion interventions.

Keywords: HIV prevention, intervention, selective exposure, health behavior, participation in health promotion programs

**Beyond the Most Willing Audiences:
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A number of interventions have been produced to change behaviors that put people at risk for HIV (Albarracin et al., 2005; Centers for Diseases Control and Prevention, 2001). These interventions are typically tested under conditions that ensure the validity of the outcome assessments (Cook & Campbell, 1979). Thus, researchers try to involve community members to see if a particular intervention works for them. Social networks are called upon to recruit these participants and numerous incentives and facilitators are used to ensure the desired sample of exposed participants (Erhardt et al., 2002; Rabinowitz, 2002; Raj et al. 2001; Tobias, Wood & Drainoni, 2006). Although these procedures are necessary to determine if a program works for an exposed population, they remove the reluctance to participate present when the intervention is implemented (Catania, Gibson, Chitwood, & Coates, 1990; Lauby, Kotranski, Feighan, & Collier, 1996).

Despite the dominant approach to intervention research, in real-world conditions, people *choose* to take part in preventive interventions (DiFrancesco, Kelly, Sikkema, Somlai, Murphy, & Stevenson, 1998; Hennessy, Mercier, Williams, & Arno, 2002; Veach, Ramley, Kippers, & Sorg, 2000). Given limited time and interest, clients of health facilities can accept or refuse to take part in an HIV-prevention counseling session (Grady, Kegeles, Lund, Wolk, & Farbe, 1983; Minder, Müller, Gillmann, Beck, & Stuck, 2002). Moreover, some of the audiences most vulnerable to HIV are the least likely to enroll in HIV-prevention interventions (Noguchi et al., 2006; Yancey, Ortega, & Kumanyika, 2006). In particular, frequent condom users are more

likely to enroll in pro-condom-use interventions than infrequent ones (Noguchi et al., 2006). Thus, efficacious interventions may never reach these vulnerable audiences.

Given that interventions need to reach vulnerable audiences – not just willing ones –, it is imperative to develop and test procedures that increase participation by these populations. Procedures can be designed to change an audience's behavior with respect to the preventive interventions themselves, including participation in them. These procedures, hereafter termed *meta-interventions*, entail a standardized introduction or context change (e.g., delivery setting) intended to increase exposure to a behavioral intervention. In the present study, participants with prior infrequent condom use were offered an HIV-counseling session using one of four scripted introductions to the program. A randomly-assigned meta-intervention conveying that counseling participants are free to not change was expected to be more effective than other introductions (one promising change and another providing basic information about the counseling) or no introduction (just an offer to take part). Unobtrusive observers recorded the extent to which participants agreed to the counseling when asked, and also collected supplementary data on participants reading of brochures and viewing of videos. The present paper focuses on acceptance of the counseling as a function of the meta-intervention.

Defining meta-interventions opens the door to a systematic empirical analysis of how to increase the effectiveness of available programs. To our knowledge, no program introduction has ever been validated to increase participation in health-promotion interventions. Nonetheless, if simple meta-interventions, such as the introduction to the program, are developed, there will be more tools to promote behavior change in vulnerable populations. These tools may significantly advance public health towards the use of inexpensive devices that augment the effectiveness of

existing interventions. One such device was designed in this research, and tested using a randomized-controlled trial.

A Meta-Intervention to Increase Participation in HIV-Risk-Reduction Counseling

Any intervention to change behavior faces resistance on the part of participants (Albarracin & Mitchell, 2004; Canon, 1964; Watzlawick, Weakland, & Fisch, 1974). This resistance is expressed at many levels, including refusal to participate, lack of attention to the program, drop out, and reactance against the program recommendation. Given that participation is the first roadblock on the way to intervention effectiveness, having a technique to increase enrollment in HIV-prevention interventions is key.

When practitioners want a client to enroll in an HIV-prevention program, how should they issue this invitation? When an outreach worker wants to issue an invitation to an upcoming counseling session to neighbors taking part in a community activity, how should she approach them? Clinical observations suggest that a common strategy is to support the program offer with a justification about the appropriateness of the *program* to solve a particular problem (Donawa, 2004; Stewart-Williams & Podd, 2004). Nonetheless, theories about behavior change and social communication principles imply potential problems for this approach. On the one hand, this meta-intervention may be received with relief that the public health system can provide a solution to the problems of community members. It may also increase recipients' efficacy in their own ability to change (Bandura, 1989; Fisher & Fisher, 1992). On the other hand, this meta-intervention does not empower the audience because the *program* is described as responsible for the change. Moreover, describing interventions as effective obscures the fact that not all HIV-intervention recipients change (Albarracin et al., 2005; Herbst et al., 2005; W.D. Johnson et al.,

2002; Weindhart, Carey, & Johnson, 1999;). From this point of view, a different meta-intervention may have greater credibility.

A more empowering meta-intervention consistent with extant evidence on behavior change entails presenting the *recipient* as the motor of the behavior change. One such strategy is to emphasize that the program cannot change behavior unless the person does so. First, this type of meta-intervention may yield a more active role on the part of recipients by placing the burden of change upon them (Amaro, 1995, 2000; Freire, 1972; Putnam, 1911). That is, people who are told that change is up to them may be encouraged to seek ways to change. Second, people are more likely to expose themselves to persuasive communications if they believe that they can resist their influence (Albarracin & Mitchell, 2004; Brehm, 1972; Brehm & Cohen, 1962; Watzlawick, 1978). As infrequent condom users often do not want to use condoms (Albarracin, Johnson, Fishbein, & Muellerleile, 2001), highlighting the option of resistance may increase exposure among these participants.

The Present Research

A sample of sexually active men and women with infrequent past condom use was recruited for a health interview. Halfway through the interview, the interviewer paused the administration, announcing a 30-minute break. At this point, an observer/counselor entered the room to do work unrelated to the interview, and unobtrusively observed the participant's exposure to the available intervention (Webb, Campbell, Schwartz, & Sechrest, 1966). Of interest in this paper, participants had the opportunity to participate in a brief HIV-risk-reduction counseling session. Thus, the participation behavior could be recorded and analyzed as a function of a scripted introduction accompanying the counseling offer. The key meta-intervention consisted of offering the counseling in a way that emphasized that the participant

was free to not change (experimental condition). The other three conditions entailed stating that the counseling was successful at inducing condom use (standard), simply describing the counseling (information control), or simply offering the counseling (no information control). Analyses were conducted for the overall sample as well as for breakdowns of condom-use intenders and non-intenders.

Method

Participants and Design

Participants were 400 community members (295 females and 105 males) from the Gainesville (FL) area. They were paid \$5 for the eligibility screening and \$40 for participation in the main study if eligible. Non-eligible participants were paid a total of \$5, and completers were paid a total of \$45. The design was a randomized-controlled trial with four meta-intervention conditions (experimental, standard, information control, and no-information control).

Procedures

Recruitment. Patients were either recruited by flyers placed in the community and around the Health Department, or through a personal referral from members of the community or the staff of clinics of the health department. To prevent contamination and reduce self-selection, the flyer and instructions for referrals described the study as a “general health study;” there was no mention of HIV or condom use in either the flyer or the referral instructions.

To make an appointment, participants called a designated number. During this phone call, a brief eligibility pre-screening (ages 18 to 50) was conducted. Participants had to be sexually active, not be pregnant or be trying to get pregnant, and report using condoms “never,” “almost never,” or “sometimes” during the last six months. Individuals reporting to be sexually inactive, pregnant, trying to get pregnant, or using condoms “almost always” or “always” were excluded.

Re-screening, procedures, and measures. The random assignment of participants was done using a random number generator and assigning time slots to conditions. When participants arrived for their interview, they checked in at the front desk of the Alachua County Health Department and waited to be seen. When the interviewer was ready, the participant was taken to the interview room where s/he was re-screened for eligibility using the brief phone questionnaire. If the participant was still eligible, the interview began.

An interviewer and a counselor were involved during each session. The interviewer recorded gender, age, past condom use, presence of a main sexual partner, years of education, income, and ethnicity. There were also general health questions (e.g., “Do you feel tightness in your chest? YES/NO,” “On average, how many cigarettes do you smoke per day?”), including number of past STD/STIs (“In the past year, how many times have you had a sexually transmitted disease such as Syphilis, Gonorrhea, Herpes, and Chlamydia?”) and questions about condom use. The questions about condom use included items measuring intentions to use condoms with main and occasional partners, with the partner types defined subjectively by the participants (M number of months of relationship with main partner = 83 months, $SD = 87$). These two measures were averaged in analysis. Specifically, using 1-7 scales, participants answered to the questions: “How likely is it that, for the next six months, you and your main (occasional) partner will use a condom every time you have vaginal sex?,” “How strong are your intentions to use condoms with your main (occasional) partner in the next six months?,” and “How motivated are you to use condoms with your main (occasional) partner in the next six months?” The six intention items had a Cronbach’s α of .80 and were averaged as a measure of intentions to use condoms at baseline.

After approximately 30 minutes elapsed, and while the first part of the interview was being completed, the counselor knocked on the door of the interview room and requested to use the space to do some work. The interviewer responded that they were in the middle of the interview, but that s/he would call the counselor during the break. Subsequently, when the first half of the questionnaire was complete, the interviewer called the counselor and excused her/himself from the room.

This break provided opportunities for measuring exposure to various materials and the counseling itself. While the counselor was in the room, the participant had ten minutes to peruse the six brochures sitting on the table. After 10 minutes elapsed, the interviewer knocked on the door and offered the participant a ten-minute video about HIV. The client could either accept or decline to watch the video. Next, the interviewer returned and offered the participant the option of undergoing an HIV-risk-reduction counseling session. If the participant previously accepted the video, the interviewer waited 10 minutes before returning to offer the counseling. In contrast, if the participant declined to watch the video, the interviewer would only wait 5 minutes before returning to the room to offer the counseling to the participant. After the interviewer offered the counseling, if the participant accepted, the counselor was asked to administer the counseling session and call the interviewer afterwards. If the participant declined, the interviewer exited the room and returned 5 minutes later to administer the remainder of the questionnaire. Our key outcome measure was acceptance of this counseling session. The measures of exposure to the brochures and video are of concern in other reports. After these opportunities to observe exposure, participants responded to another set of questions, including their intentions to use condoms in the future. These immediate follow-up measures were used for supplementary analyses of change.

The counseling session was adapted from Project Respect (see Kamb et al., 1998), and focused on condom use behavioral skills, condom use negotiation skills, and self-management skills -- skills to promote perceived behavioral control over condom use despite unfavorable mood or circumstances (Kelly, St. Lawrence, Betts, Brasfield, & Hood, 1990). The counseling session also served to correct misconceptions about HIV and HIV transmission, as well as to foster positive attitudes toward condom use (Fisher & Fisher, 1992, 2000). Nonetheless, we were interested in acceptance of the counseling and not on the counseling session itself.

Checks for potential contamination, sensitivity of the exposure measure, and debriefing.

A naïve sample unaware of the observation is necessary for this type of study. Thus, during the prescreening, participants were asked what they had heard about the study. Participants who mentioned condoms, HIV, brochures, videos, or counseling were excluded from participation. At the end of the study, participants were asked whether they had an appointment for HIV counseling and testing, which could reduce the sensitivity of our counseling-exposure measure. Finally, participants were fully debriefed by reading them an extended explanation of the study, the objectives, and the need for the unobtrusive observation without their knowledge. No participant reported suspecting that they were being observed.

Meta-Intervention Conditions

Two years of pilot work with community members and professionals provided the qualitative and quantitative data to develop the meta-intervention. The final pilot work indicated that all introductions were clear, and the experimental manipulation in fact produced greater perceptions of freedom than the other conditions.

Attempts were made to vary the introductions of the brochures and the video. With this objective, small signs were posted next to the brochures and a scripted introduction for the video

was attempted. In practice, however, participants paid no attention to the signs and the introduction of the video was frequently interrupted because most participants readily accepted the video. In contrast, the introduction to the counseling could be fully delivered and evaluated. Depending on experimental conditions, at the moment the counseling session was offered to the participant, the interviewer could give one of the following introductions:

Experimental meta-intervention. While you are waiting, you have the choice to speak with a certified HIV-prevention counselor. The counseling session provides information about HIV and condom use. It will also help you figure out your risk for HIV infection. The point of the counseling session is to provide you with the most current information, not to influence your opinion or make you use condoms if you don't want to. [Would you be interested?]

Standard meta-intervention. While you are waiting, you have the choice to speak with a certified HIV-prevention counselor. The counseling session provides information about HIV and condom use. It will also help you figure out your risk for HIV infection. A counselor can show you ways to help you make your behavior safer. Most of the people who participate in counseling said that it improved their lives and they wished they had participated sooner. [Would you be interested?]

Information-only control. While you are waiting, you have the choice to speak with a certified HIV-prevention counselor. The counseling session provides information about HIV and condom use. It will also help you figure out your risk for HIV infection. [Would you be interested?]

No information control. While you are waiting, would you be interested in taking part in a counseling session?

Results

Preliminary Analyses

Description of Sample

Participants were 400 community members living in Alachua County (FL). Eighty percent of the participants were recruited through flyers placed in the community and the remaining 20% were referred from the clinics of the Alachua County Health Department. Seventy-four percent of the participants were female, the *M* age was 33.73 (*SD* = 10.41), and the sample was ethnically diverse (59% African-American, 34% European-American, 4% Latino-American, 1% American Indian, 1% Asian-American, 3% other ethnicities). Fifty-four percent of the sample had an income of less than \$10,000 a year, and 78% graduated from high school, with an average of 12.77 (*SD* = 2.45) years of school. Ninety-five percent of the sample reported having a main partner, and 19% of the participants reported having an STD/STI in the previous year. In terms of reported condom use in the previous six months, 46% of the participants never used them, 36% used them sometimes, and 19% almost never used them.

With respect to the behavior during the interview, participants read an average of 1.76 brochures (*SD* = 1.85). In addition, 84% accepted to watch the video and 52% accepted the counseling. Only 3 participants had appointments to obtain HIV counseling and testing in the appropriate clinic, but excluding them did not alter the study findings. Reactions to the debriefing were favorable in all cases. Representative comments were “Wow, this is really interesting!” “Keep up the good work;” “Can I sign my brother/sister/daughter/son up for this?”.

Correlates of Exposure to the Counseling

Exposure to the counseling (1 = yes, 0 = no) was analyzed in relation to gender, age, years of education, income, ethnicity, number of past STD/STIs, and having a main partner. Due

to the exploratory nature of these analyses, these predictors were introduced in a forward logistic regression that used Likelihood Ratios to identify the most critical predictors. Age, income, years of education, and number of past STDs were continuous predictors, whereas gender, race, and having a main partner were categorical predictors. This analysis only retained ethnicity as a significant predictor of participation in counseling. In particular, African-Americans participated in counseling more than European-Americans (59 vs. 29%). Given its influence, this predictor was used in the main analyses.

Ruling Out Differences across Experimental Conditions

We also analyzed gender, age, years of education, income, race, past condom use, number of past STD/STIs, and presence of a main partner as a function of experimental condition. These analyses entailed ANOVA for continuous dependent measures (including the average of condom use scales across main and occasional partners) and chi-squares for discrete dependent measures, and are summarized in Table 1. We found a significant difference between the number of reported STD/STIs between the information only and no-information control conditions, for contrast: $F(1, 396) = 6.2, p < .001$. In addition, there were marginal differences in the presence of main partners as well as education (see Table 1). These three variables were controlled for in the main analysis of the effect of the meta-intervention.

Test of Hypothesis

Overall Effect of Meta-Intervention

We hypothesized that the experimental introduction to the program would be the most effective. The relevant percentages of participation are depicted in Figure 1A (experimental = 59%, standard = 54%, information only = 51%, and no-information = 45%). Statistical analyses were conducted using logistic regressions that compared each condition with each other, as well

as (a) the experimental and standard conditions with the information-only and no-information control and (b) the experimental condition with all other conditions. Condom use intentions as reported at baseline were also included in the model as they have been shown to influence participation in interventions (Noguchi et al., 2007). The results from these analyses revealed that even when the experimental condition had the highest percentage of acceptance, it did not differ significantly from the standard condition. Both conditions, however, significantly differed from the information-only and no-information controls, whereas these two controls did not differ from each other. The results from this comparison appear in the top panel of Table 2.

Effects of Meta-Intervention among Participants with Low Intentions to Use Condoms at Baseline

Ideally, interventions should reach vulnerable audiences that are not considering change, not simply willing audiences. Thus, it was important to verify that our meta-intervention increased participation even when participants had low intentions to use condoms, based on a median split for baseline intentions. Raw percentages for the low-intention group appear in Figure 1B (experimental = 60%, standard = 45%, information only = 42%, and no-information = 41%). Logistic regression analyses for this group of participants revealed no significant differences across the standard, information-only, and no information conditions. However, according to expectations, the experimental meta-intervention significantly differed from the other three conditions. This analysis suggests that the meta-intervention was in fact effective for the population that has the highest need for it.¹

One potential concern, however, might be that the meta-intervention might attract low intenders, yet these participants may not change when exposed to the intervention. To examine this possibility, we analyzed the effect of the counseling on change in intentions as a function of

initial intentions. Specifically, intentions at baseline were subtracted from intentions at the end of the study and these scores were regressed on a dummy variable for presence or absence of counseling, initial intentions, and the interaction between the two. Results revealed a significant interaction between initial intentions and reception of counseling ($\beta_{\text{intentions}} = -0.10$, *ns*, $\beta_{\text{counseling}} = 1.05$, $p < .001$, $\beta_{\text{interaction}} = -0.86$, $p < .001$). This pattern underlying this interaction was such that for the counseling had a more positive effect among low than high intenders ($\beta_{\text{counseling}} = 0.39$, $p < .001$, vs. 0.11 , *ns*).

Discussion

Several decades of HIV-prevention-intervention research have yielded ample knowledge of how interventions change the behavior of the targets (for a review, see e.g., Albarracin et al., 2005). This sophisticated body of knowledge has also provided the tools to reduce HIV infection among the most vulnerable populations in the world (Albarracin et al., 2005; Herbst et al., 2005; W.D. Johnson et al., 2002; Weinhardt et al., 1999). Nonetheless, existing interventions have not been designed to influence participants' participation, just behavior change when participation is a given. In this context, this study's contribution is to validate the first meta-intervention to increase participation.

In this study, a randomized-controlled-trial with a high-risk sample of people from the South East of the US confirmed that the counseling introduction determines participation by vulnerable audiences. Specifically, a counseling program attracted most participants when the offer highlighted the audience's options rather than behavior change. Importantly, this program was superior to all the controls when the audience did not intend to use condoms in the future (see Figure 2).

As a result of this work, a seconds-long meta-intervention is available that adds little or

no cost to the existing HIV-prevention programs but can multiply its effectiveness. Moreover, our meta-intervention may also amplify intervention efficacy, by making participants more sensitive to the contents of upcoming interventions. For example, future research may determine whether the program introduction influences involvement with and corresponding attention to the counseling program. Likewise, people may be better retained by multi-session HIV-prevention programs when they are open to start the intervention. This hypothesis may also be examined by future work.

Some limitations must be noted, however. First, not all populations may react equally well to the validated meta-intervention. Our technique was tested with a predominantly female and African American sample, and power was insufficient to look at effectiveness across demographic groups. Hence, the generalizability of this meta-intervention across populations needs to be established in the future. Second, the meta-intervention was designed for recruitment in contexts of a relatively anonymous target audience (i.e., a waiting room). Although similar techniques may be developed for a close professional-patient interaction, this adaptation has not yet been conducted. Similarly, the same program may be adapted for wide-reaching promotion of HIV-prevention programs, including counseling and testing. For example, videos with messages that convey the audience's freedom may be developed for use in the media or large-scale health facilities, but this approach would require further research work.

In closing, other systematic meta-interventions could be designed to more effectively deliver and target the arsenal of successful programs currently available. For example, simple devices to increase systematic attention to the counseling program are likely to increase behavioral impact. Similarly, specific procedures may increase later recall of behavioral commitments made during a counseling session, thus enhancing the behavioral-change impact of

commonly-used behavioral-skills training. We hope that this work will stimulate such developments to reduce infection with HIV.

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Table 1

Differences in Intentions, Past Condom Use, and Demographic Variables Across Experimental Conditions

Variable	Experimental meta-intervention (N = 112)	Standard (N = 111)	Information control (N = 117)	No information control (N = 60)	Comparison across all conditions	Comparison across experimental vs. control conditions
Intentions to use condoms	4.43	4.51	4.53	4.43	F(3, 393) = 0.14	F(1, 395) = 0.22
Past condom use	2.10	2.06	1.88	1.96	F(3, 393) = 0.95	F(1, 395) = 1.36
Age	34.27	33.69	33.55	33.15	F(3, 393) = 0.17	F(1, 395) = 0.42
Gender					χ^2 (3) = 5.57	χ^2 (1) = 0
Female	75%	80%	67%	75%		
Male	25%	20%	33%	25%		
Income level	16,850	18,270	17,010	18,310	F(3, 393) = 0.55	F(1, 395) = 0.62
Number of STIs in past year	0.24	0.18	0.09	0.29	F(3, 393) = 2.89*	F(1, 395) = 1.97
Has a main partner					χ^2 (3) = 7.02+	χ^2 (1) = 1.92
Yes	92%	93%	99%	93%		
No	8%	7%	1%	7%		
Years of education	12.51	13.26	12.67	12.53	F(3, 393) = 2.19+	F(1, 395) = 1.77
Ethnicity					χ^2 (6) = 6.62	χ^2 (1) = 2.32
African American	63%	51%	60%	55%		
European American	29%	37%	34%	40%		
Other	8%	12%	6%	5%		

Note. Unless otherwise indicated, all entries are means. Income was coded from 1 = 0 to 9,999 to 8 = 80-89,999. *: $p < .05$. +: $p < .10$

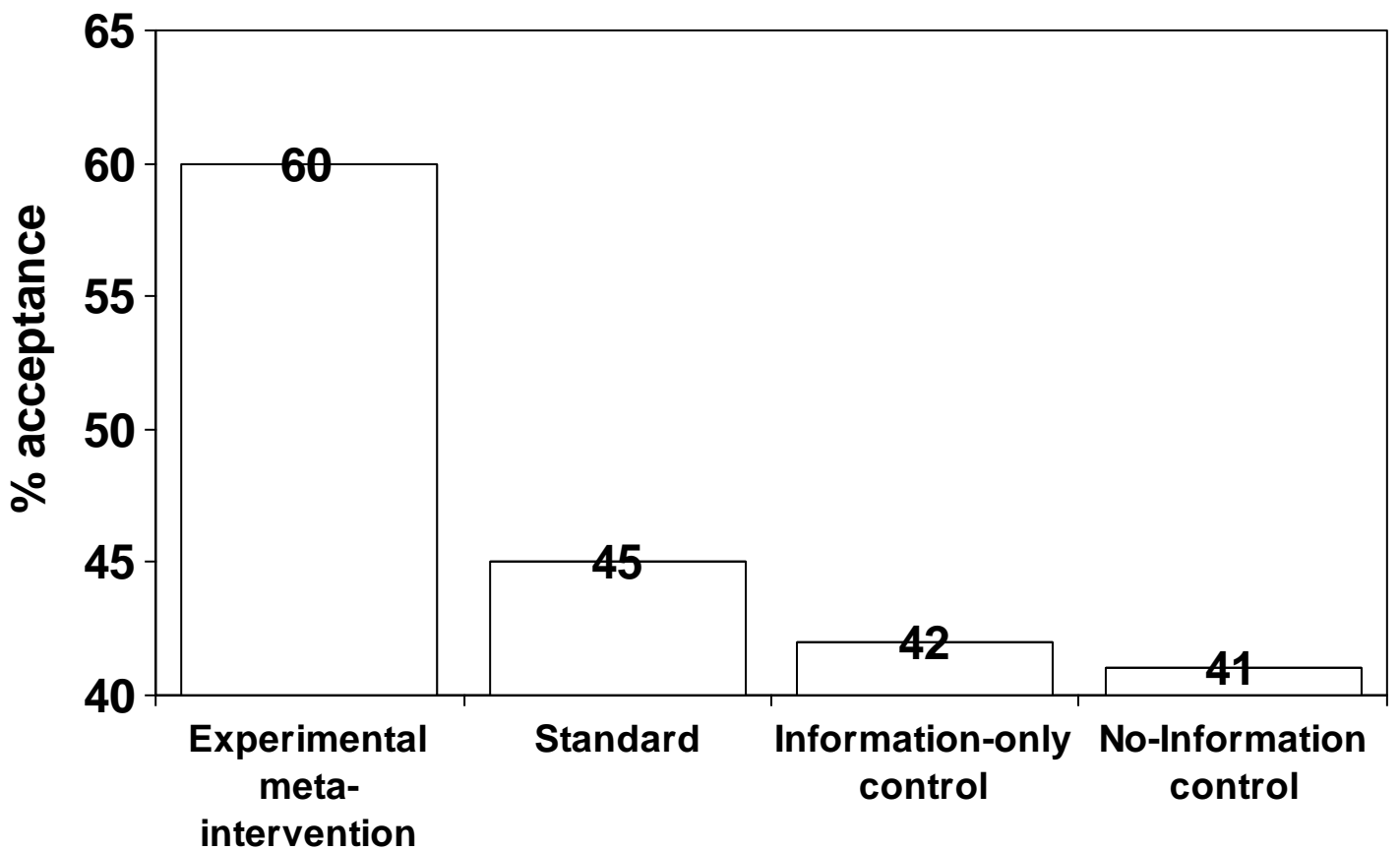
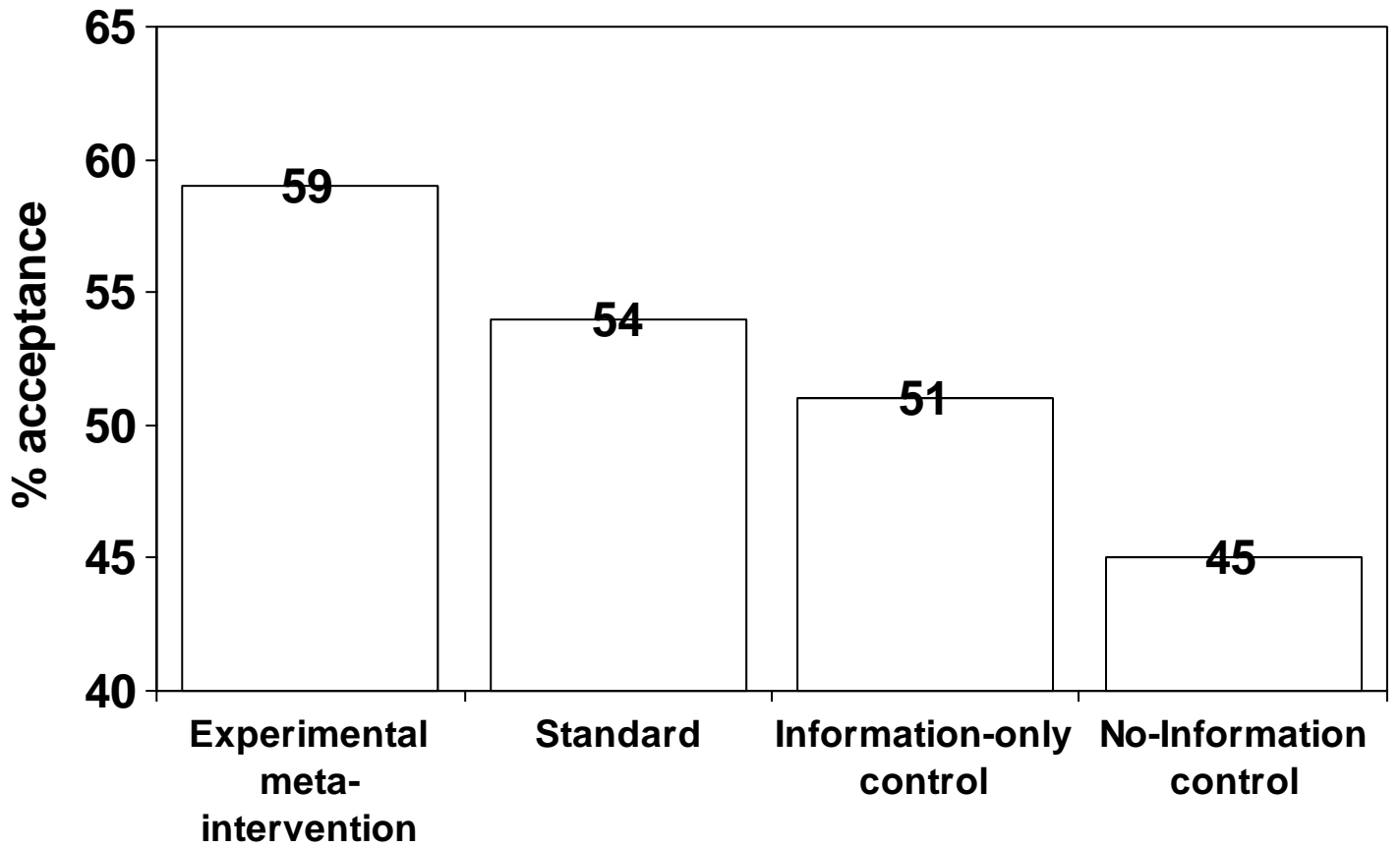
Table 2
Analysis of the Effects of Experimental Conditions on Acceptance Rates

Variable	Logit coefficient	Odd ratio	95% CI		<i>p</i>
			LL	UL	
Overall sample	-1.07	0.34	0.65	1.47	.92
Number of STIs in past year (continuous)	-0.02	0.98			
Having a main partner (dummy variable)	0.22	1.25	0.52	3.01	.62
Ethnicity (continuous)					.02*
African-American (vs. European American)	0.58	1.79	1.15	2.76	.01***
African-American (vs. Other)	-0.18	0.89	0.41	1.96	.77
Condom use intentions (continuous)	0.06	1.06	0.99	1.14	.12
Experimental and standard vs. information-only and no-information conditions (dummy variable)	0.41	1.50	1.00	2.26	.05*
Low intention group					
Constant	-0.61	0.55			
Number of STIs in past year (continuous)	-0.05	0.95	0.51	1.77	.88
Having a main partner (dummy variable)	0.09	1.09	0.25	4.70	.91
Ethnicity (continuous)					.11
African-American (vs. European American)	0.52	1.69	0.94	3.03	.08
African-American (vs. Other)	-0.37	0.69	0.27	2.29	.54
Experimental vs. control conditions (dummy variable)	0.69	1.99	1.05	3.78	.04*

*: $p < .05$. **: $p < .01$. ***: $p < .001$.

Figure Captions

Figure 1. Percentage of participation in counseling as a function of experimental condition. The top panel presents all participants. The bottom panel presents participants with low intentions to use condoms at baseline.



Footnotes

¹ A formal statistical test indicated no significant interaction between condition and initial condom use intentions. Nonetheless, the low-intention group is the most relevant from a public health perspective and thus was analyzed separately in addition to the overall analyses. Similar analyses revealed no differences across conditions for the group with high initial intentions to use condoms.