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THE IMPACT OF A TARGETED RADIO CAMPAIGN TO PREVENT STIs AND HIV/AIDS IN MOZAMBIQUE

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In 1997 to 1998, Population Services International (PSI) carried out a targeted radio campaign in Mozambique to promote behavior change for the prevention of sexually transmitted infections (STIs) and HIV/AIDS. To evaluate the coverage and impact of the campaign, PSI designed and implemented a cross-sectional study using a two-stage random sample of "at-risk" individuals; 754 individuals between the ages of 13 and 49 were interviewed.

Over half (52.4%) heard the campaign and 45.5% recalled one or more radio messages. However, recall of specific messages in specific risk groups was low. A multivariate model demonstrates that among those exposed to the radio campaign, 97.2% reported intent to change their sexual behavior compared with 62.8% of those not exposed to the campaign ($p < .001$). Among those who recalled campaign messages, 86.1% attempted to change their behavior compared with 58% of those who had no message recall ($p < .001$). Success in changing behavior is significantly higher among those with message recall (83.8%) than those without (56.8%, $p < .001$).

This study illustrates the difficulties in using radio to target a specific group with a corresponding behavior change message. Although general recall of campaign messages was high per target group, the campaign did not succeed in ensuring exposure to the intended target group. The strategy of airing all of the spots simultaneously with different but similar messages resulted in one spot "stepping on" another. Despite the limitations in using radio to target, exposure to the radio campaign has contributed to individual intent to change sexual behavior.

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This study examines the effect of a radio campaign on behavior change for the prevention of sexually transmitted infections (STIs) and HIV/AIDS in Mozambique. Substantial evidence supports the use of mass media for changing behavior across a number of health promotion areas including family planning, smoking cessation, weight loss, exercise, and AIDS prevention (Kane, Gueye, Speizer, Pacque-Margolis, & Baron, 1998). Interventions have used a variety of channels to reach their intended audience including radio, television, print media, and interpersonal communications (Novelli, 1990; Valente, Poppe, Alva, de Briceno, & Cases, 1995).

In December 1996 PSI initiated a radio campaign to promote safer sexual behavior among sexually active adults throughout Mozambique. The campaign used targeted radio messages to maximize available resources and affect desired health outcomes and thus increase impact (World Bank, 1997). Targeting refers to the practice of segmenting the population into unique and distinguishable groups to which specific products, services, or messages are directed (Dahl, Gorn, & Weinberg, 1997; Melkote, Muppidi, & Goswami, 2000). HIV/AIDS interventions define target groups by their relative risk of acquiring HIV/AIDS or STIs, and not necessarily by measures of equity (Hanson, Kumaranayake, & Thomas, 1998). In fact, at early stages in the epidemic those wealthier, more mobile, urban, and better educated are often at greater risk of acquiring HIV or STDs than other groups (Smith et al., 1999). Condom social marketing activities, such as the one discussed here, often target this urban "elite" as well as other similar groups as role models to promote behavior change among their peers. Thus targeting is a form of audience segmentation meant to divide consumers into "high-risk" groups and delivering discreet prevention messages through mass media and interpersonal communications channels to the perceived needs of each.

This article addresses the issue of targeting as a measure of coverage and efficiency. Two key questions are considered: First, addressing coverage, did PSI Mozambique's radio campaign effectively reach its intended audience with respective messages tailored to each group?; and second, in terms of efficiency, what impact did exposure to targeted messages have on the preventive behavior of the target audience? To address the former question, recall of the campaign by each target group will be explored. To address the latter, the paper will examine the impact of the radio campaign on individual self-efficacy to avoid high-risk sexual encounters. The results will demonstrate the positive impact that a radio campaign can have on individual sexual practice and highlight the difficulties of targeting messages to specific groups.

HIV/AIDS AND CONDOM SOCIAL MARKETING IN MOZAMBIQUE

As part of a comprehensive behavior-change communications activity for the prevention of STIs and HIV/AIDS, PSI began the social marketing of JeitO[1] brand condoms in Mozambique in April 1995. The initiative came at a time when HIV/AIDS rates in Mozambique were increasing sharply. This rise was due to numerous factors including the cantonment of foreign troops from Zimbabwe and Malawi along important transport corridors during Mozambique's protracted civil war, ending in 1992. Peace brought stability as well as economic and social liberalization. However, the free movement of people and goods internally and externally hastened the spread of HIV from major cities, ports and principal transport routes to the country as a whole. Re-

1. JeitO can be translated as skill, style, ability, or flair.

cent estimates show that 14.2% of sexually active adults aged 15-49 years old are infected with HIV (UNAIDS, 1998a).

In Mozambique, PSI's ongoing project seeks to reduce the transmission of HIV and other STIs by encouraging the adoption of safer sexual behavior, including the use of condoms. To achieve this goal, the project increases both demand for and accessibility to condoms. Intensive behavior change communications are used to increase demand while access is ensured by the distribution of condoms through a network of private commercial sector outlets throughout the country.[2] A four-pack of condoms costs 1,000 Meticais, corresponding to approximately US $0.02 per condom at the time of the study.

PSI uses the technique of social marketing to harness existing commercial and non-profit sectors to create demand and ensure supply for essential health products and services among disadvantaged or at-risk groups. Commercial marketing techniques such as mass media advertising and direct marketing through interpersonal communications are used to create demand. To secure affordable access, supply for these goods and services is guaranteed by subsidizing the cost of commodities and distributing them through the private commercial sector, and in some cases the public sector.

When project activities began in Mozambique, radio was the only mass media with national coverage and became an important component of an integrated communications strategy used by the project (Davis, 1997). The radio jingle "*Só Com JeitO*" (Only with style) launched the brand in the Mozambican market in April 1995 and quickly raised brand awareness to near universal levels throughout the project's intervention areas. Interpersonal communications activities, including peer-education debates and street theater, complemented the mass media campaign. By June 1998, the project had conducted approximately 18,000 peer education debates for 404,000 participants, averaging 20 debates per day over 3 years. During the same period, a total of 2,700 theater performances were staged for 280,000 participants, averaging 5 performances per day (Karlyn & Monjane, 1998).

PSI's communication strategy consists of the extensive use of market research, including opinion surveys, pre-tests and posttests of materials and messages, and follow-on evaluations such as this one. The strategy integrates the various media used in a campaign into a "media mix" to ensure the best compatibility and consistency in message and channel. For instance, during the campaign discussed here, the radio spots were programmed to coincide with theater events, peer education debates, and sales promotions. Other factors important in targeting were considered such as the timing, language, audience size, and station. The objective was to create a synergism between channels and messages in order to reach as many target groups as possible with a message especially crafted for each. Music from popular musicians were used in the radio jingles while actors from the national theater company, Mutumbelo Gogo, as well as other well known actors portrayed the characters in PSI's plays, radio spots, outdoor billboards, print media, and more recently television.

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2. At the time of the study, approximately 1,500 outlets sold JeitO condoms, including bars, nightclubs, discos, shops, supermarkets, kiosks, itinerant traders, hotels, hair salons, barbershops and gas stations (Davis, 1997).

THE TARGETED RADIO CAMPAIGN

On World AIDS Day, December 1, 1996, PSI launched the 'So A Vida Oferece Flores' (Only life offers flowers) national radio campaign using nine spots in Portuguese. The spots were designed to reinforce key messages from the PSI flagship play of the same name using the same personalities, music, and themes. This "education-entertainment" approach mirrors similar initiatives in Africa and elsewhere (Piotrow et al., 1990; Valente, Kim, Lettenmaier & Glass, 1994; Yoder, Hornik, & Chirwa, 1996). The "education-entertainment" strategy has been defined as "the intentional incorporation of educational messages into entertainment formats with the purpose of changing audience members' behavior" (Rogers, Vaughan, Swalehe, Rao, Svenkerud, & Sood, 1999). The technique adopted by PSI Mozambique was modeled most closely after the "two-step flow model" used by Valente, Poppe, and Merritt (1996) in Peru where mass-media communications stimulated early adopters to talk with friends about family planning.

Based on the positive public reaction to the initial Portuguese language campaign, PSI translated the spots into 10 of the most commonly spoken languages in Mozambique. Local language versions of the spots were launched in November 1997. Between December 1996 and June 1998, the spots were aired in local languages as well as Portuguese over 10,000 times (Monjane & Karlyn, 1998).

The spots used separate prevention messages to target youth between the ages of 13 and 20 and adults 21 to 49 years of age (Table 1). The development of the radio campaign was based on several assumptions. First, the target groups identified were sufficiently discreet and specific to warrant segmentation. Second, the programming of the spots could be directed to each target group. Third, the translation of the spots into local languages would increase recall and impact among the specific target groups.

The national broadcaster, Radio Mozambique (RM), was used to transmit the spots in Portuguese nationwide. Although coverage is limited in many areas, RM reaches nearly 100% of urban and periurban populations. In addition, each of the 10 provincial capitals has a provincial RM radio station that broadcasts in Portuguese as well as the predominant local language(s). The Tete provincial radio station was out of commission during much of the campaign; however, the province was partially covered by both RM national broadcasts and neighboring RM Manica.

DATA AND METHODS

To evaluate the targeted radio campaign, PSI sought to measure the overall coverage attained through the spots, general recall rate, message retention per target group, and behavioral impact of the campaign on the groups targeted. The data collection was carried out over a period of 2 weeks in June 1998. The interviews were based on a sample of individuals considered to be at risk of acquiring STIs or HIV/AIDS. Such individuals included in-school youth, out-of-school youths, and adults found in locations associated with risk behaviors including venues for commercial sex (night clubs, bars, kiosks) and areas of high mobility (truck stops, police/military posts). Only individuals within these categories between the ages of 13 and 49 years were interviewed. The study was undertaken in 75 urban and periurban health districts.

A two-stage, random sample was undertaken. The first stage employed a self-weighted selection of clusters using probability of selection proportional to the population size. The second stage listed those present at a selected location over a fixed period of time. A random number table was used to select a predetermined num-

Table 1. Summary of Radio Campaign by Spot, Target Group, Personality, Key Words and Principal Message

Spot	Target Group	Personalities	Key Words Identifiers	Principal Message
1	Young males	Rappers	Rap music	JeitO is not bad or prejudicial. Hey "malta" [gang]! Let's be responsible and use a condom.
2	Young males	Zé and friend	Zé, where did you go last night?	It was a great scene. Carlitos is really bad [sick] with AIDS. Condoms prevent STDs, AIDS and unwanted pregnancy.
3	Young females	Guida and friend	Hi Guida, I'm a bit worried about Carla	Practice safe sex or delay first sexual activity.
4	Adult females	Marta and Aunt	Marta, it's been a long time since I've seen you. Why are you so sad?	Men, use a condom if you have an outside sexual relation, don't put your wife at risk.
5	Adult females	Marta and Olga	Marta makes favorite dish for husband.	He's a lucky man. Women should convince their partner to use a condom with outside partners.
6	Adult females	Osvaldo and Marta	Osvaldo arrives home early.	He's preoccupied. Negotiate condom use in a permanent relationships
7	Adult males	Osvaldo and doctor	Doctor counsels patient (Osvaldo).	AIDS is for real (not a story). Condoms protect if used correctly and consistently
8	Adult males	Osvaldo and Chico	Osvaldo is very angry.	Women are crazy, they only want men who use condoms. Use a condom to protect you and your partner.
9	Adult males	Osvaldo and Alice	Osvaldo declares his love for Alice.	A person who appears healthy can be infected with HIV/AIDS. Condoms protect.

ber of interviews per target group from the list. A total of 10 respondents were interviewed per cluster, 3 youths in school, 2 youths out of school, and 5 high-risk adults. A total of 754 interviews were undertaken, of which 18.7% (141) were young females, 22.1% (167) young men, 17.8% (134) adult women and 41.4% (312) adult men. No additional weights were applied to the data.

PSI staff supervised the sample selection and interviews, which were carried out by community activists associated with the project. Both groups of individuals participated in a weeklong training course prior to the survey. The data were cleaned and verified in the field at the provincial level and sent to PSI's central office in Maputo for review, data entry, and analysis. Bivariate analysis of the data was carried out using the chi-square test and considered significant at the p-level of .05 unless otherwise noted.

DEPENDENT VARIABLES

Exposure to radio programming is the principal indicator used to measure the utility of radio as a mass media instrument. To determine message recall of the radio campaign, a series of probing, open-ended questions were asked of the respondents who had heard the PSI spots. Recall of specific spots was determined by citing the names of the characters in each advertisement and the principal message transmitted. Each respondent was given an opportunity to identify several spots and their corresponding message.

Critics of the use of mass media for behavior change cite the limitations in attributing individual behavior to a specific campaign (Myhre & Flora, 2000). As an alternative approach, this study sought to measure self-efficacy as an intermediate

indicator of behavior change (Bandura, 1977). For the purpose of this article, self-efficacy is defined as intent to carry out a behavior after exposure to one or more elements of the campaign. To construct an indicator of self-efficacy, the study asked respondents whether the radio campaign affected their intent, actions, and results of any actions taken after exposure to the radio campaign. Specifically, respondents were asked "After hearing the radio program, did you intend to change your behavior?"; "If so, did you actually try to change your behavior?"; and finally, "Did you succeed in changing your behavior?"

No attempt was made at measuring the intensity or direction of self-efficacy or behavior change. Respondents were given up to four open-ended options of actions they had intended to take after exposure to the radio campaign. Because of the cumulative and sometimes contradictory nature of these options, the results were coded as a binary variable.

METHODS

To attribute the observed change in risk behavior either to the radio campaign or the cumulative effect of exposure to prevention messages over time, a multivariate regression model was run using multiple classification analysis, which presents the findings in terms of adjusted percentages, after controlling for other factors. If the unadjusted effect of a predictor variable disappears (or diminishes) after adjusting for other factors, then we conclude that the observed effect was due to these other factors. By contrast, if controlling for other factors does not change the effect of the variable, then the effect cannot be attributed to these other variables.

The dependent variable (self-efficacy) consists of three sub-variables—"Intent to," "attempt to," and "success in" changing one's sexual behavior. Each is modeled separately and tested against a set of control variables including sociodemographics factors and exposure to PSI's program.[3] For an example of a similar analysis see Agha, Karlyn, and Meekers (2001).

LIMITATIONS

The data are presented at the national level and disaggregated by target group, education, and province as appropriate. Civil status was not determined directly by the survey instrument. Partner status was defined as either having a regular partner[4] or nonregular partner[5] (WHO/GPA, 1994). Further details and observations regarding the design or implementation of the survey can be found in the baseline survey report (Monjane & Karlyn, 1998). Several limitations should be noted in examining the various components of behavior change. As noted by Kane and colleagues (1998), making causal inferences based on exposure and self-reported behavior is problematic and may reflect a "social desirability" bias on the part of the respondent or pre-existing

3. Independent variables include gender, age, education, speaks Portuguese, radio exposure, alcohol consumption, occasional partner, number of sources of exposure to PSI communications, heard radio campaign, recall campaign message.

4. Married or having a sexual relationship lasting 1 year or more.

5. a nonmarital relationships of less than 1 year.

Table 2. Percentage of Respondents by Target Group and Education, Partner Status, Language, and Province

	Youth		Adult		
	% Female	% Male	% Female	% Male	% Total
Education					
Not specified	1.4	0.6	6.7	2.9	2.8
Less than secondary	14.2	8.4	21.6	16.7	15.3
Any secondary	83.7	87.4	63.4	64.4	72.9
Higher than secondary	0.7	3.6	8.2	16.0	9.0
Partner type					
Not specified	0.7	1.2	3.0	1.0	1.3
Regular partner	29.8	15.6	52.2	37.2	33.7
Regular & nonregular	7.8	10.8	20.1	47.4	27.1
Nonregular partner	28.4	26.3	19.4	9.6	18.6
No partner	33.3	46.1	5.2	4.8	19.4
First language					
Portuguese	46.1	55.1	36.6	43.3	45.2
Local language	53.9	44.9	63.4	56.4	54.6
Secondary language					
Not specified	1.4	1.8	3.7	1.0	1.7
Portuguese	48.2	42.5	53.0	51.9	49.3
Local language	50.4	55.7	43.3	47.1	48.9
Province					
Maputo	9.9	13.8	18.7	15.4	14.6
Sofala	12.8	13.2	11.2	14.4	13.3
Manica	15.6	10.8	9	12.2	11.9
Tete	7.8	8.4	7.5	8	8
Gaza	3.5	4.2	7.5	5.8	5.3
Inhambane	9.9	7.8	9.7	9.3	9.2
Zambézia	12.8	12.6	6.7	7.1	9.3
Niassa	2.8	3.6	6.7	6.7	5.3
Nampula	14.2	18	15.7	11.5	14.2
Cabo Delgado	10.6	7.8	7.5	9.6	9
Total	100.0	100.0	100.0	100.0	100.0
	141	167	134	312	754

perceptions of risk on the part of the respondent. Measurement of behavior change is also hampered by the cross-sectional design of the study (Cleland & Ferry, 1995).

The potential for interviewer bias does exist due to the fact that the community agents, while not directly employed by PSI, would obviously have an interest in furthering the success of the program. The open-ended interview technique combined with content analysis at the supervisory level, described above in the discussion of the dependent variables, was used to reduce the potential for the interviewer to influence the results of the survey. Although these measures do not eliminate the possibility of interviewer bias, the author is confident that any potential bias was discouraged by the control techniques employed.

RESULTS

PROFILE OF RESPONDENTS

As would be expected from an urban sample, respondents reported a relatively high level of educational attainment, with 81.9% reported attaining any secondary

schooling or higher (Table 2). Virtually all respondents spoke Portuguese as their first or second language (93.8%), and nearly half spoke Portuguese as their first language (45.2%). Fewer adult women registered fluency in Portuguese (88.8%).

Nearly half of adult men (47.4%) reported a nonregular partner in addition to a regular partner. Fewer adult women reported both a regular and nonregular partner (20.1%). In contrast, youth reported higher frequencies of only nonregular partners. A total of 28.4% of female youth reported a nonregular partner and 26.3% of young men reported a nonregular partner. Fewer than 20% (19.4%) of adult women reported having a nonregular partner only; the percentage was lower (9.6%) for adult men. Youths were more likely to report no partner, with 46.1% of young men and 33.3% of young women reporting neither a regular nor nonregular partner in the past year. For adults, only 5.2% of women and 4.8% of men reported no partner. This pattern of sexual behavior is consistent with previous studies in Mozambique and the region (Agha, Karlyn, & Meekers, 2001; Cleland & Ferry, 1995; Karlyn & Monjane, 1998; UNAIDS, 1998a, 1998b).

RADIO EXPOSURE

A total of 62.9% of respondents listened to the radio in the week prior to the survey (Table 3). Adult men reported the highest exposure to the radio in the past week (69.6%), followed by young females (62.4%), young males (58.1%) and adult women (53.7%). Exposure to radio is positively associated with level of class attainment, and some variation was noted by province.

SPOT AND MESSAGE RECALL

Of the 754 respondents surveyed, 52.4% heard the radio campaign. Of those not exposed to the campaign, over half had not heard the radio at all during the month prior to the study. Adult men were more likely to have heard the campaign (62.5%) than female adults (37.3%). Respondents in Cabo Delgado (64.7%) and Sofala (64%) provinces registered the highest exposure to the campaign whereas Tete (38.3%) and Nampula (36.4%) registered the lowest.

Recall of one or more specific messages of the radio campaign was reported by 45.5% of those interviewed. Just over half of all men interviewed recalled message details, while slightly more than a third of women could do so (not shown). By target group, this corresponded to recall by 55.4% of male adults and 41.3% of male youth. Female adults registered lower recall (35.1%) than female youth (38.3%). By province, the lowest recall was found in Nampula province where only 29% of respondents could identify at least one campaign element.

Further probing in the interview demonstrated the limited grasp over the content of the messages by most respondents. Only 32.4% of men and 24.4% of women were able to identify one or more prevention issues raised in the radio campaign (not shown). Respondents fared even worse in citing key prevention messages: 29.6% of men and 23.6% of women were able to repeat key messages contained in the campaign (not shown). Male adults were more capable of citing details of the campaign than the others. However, substantial variation was found by province, notably Cabo Delgado (60.3%), Sofala (48%), and Niassa (47.5%) where recall of issues was dramatically higher than other provinces. Recall of campaign messages was similarly high in these three provinces. Finally, recall of issues and messages shows a strong positive correlation with level of education ($p < .05$).

Table 3. Level of Exposure and Recall of the Publicity Campaign by Target Group, Education, and Province

	Heard Radio[a]	Heard Radio Campaign[b]	Recall Radio Message[c]	No. of PSI Communications Exposed To[d]			Total	
				None	1	2+		
	%	%	%	%	%	%	*N*	%
Target Group								
Female youth	62.4	48.9	38.3	8.5	38.3	53.2	141	100
Male youth	58.1	48.5	41.3	11.4	26.9	61.7	167	100
Female adult	53.7	37.3	35.1	19.4	28.4	52.2	134	100
Male adult	69.6	62.5	55.4	8.3	27.2	64.4	312	100
Education								
Not specified	38.1	19.0	19.0	19.0	61.9	19.0	21	100
Primary	47.8	32.2	24.3	21.7	40.9	37.4	115	100
Secondary	65.1	56.0	48.5	8.9	26.9	64.2	550	100
Tertiary	77.9	67.6	64.7	7.4	20.6	72.1	68	100
Province								
Maputo	67.3	62.7	54.5	3.6	28.2	68.2	110	100
Sofala	74.0	64.0	57.0	6.0	25.0	69.0	100	100
Manica	52.2	45.6	42.2	12.2	28.9	58.9	90	100
Tete	63.3	38.3	35.0	10.0	28.3	61.7	60	100
Gaza	65.0	62.5	52.5	10.0	40.0	50.0	40	100
Inhambane	60.9	46.4	39.1	14.5	37.7	47.8	69	100
Zambézia	54.3	50.0	34.3	7.1	14.3	78.6	70	100
Niassa	72.5	57.5	50.0	2.5	27.5	70.0	40	100
Nampula	56.1	36.4	29.0	26.2	39.3	34.6	107	100
Cabo Delgado	67.6	64.7	64.7	11.8	26.5	61.8	68	100
Total								
%	62.9	52.4	45.5	11.0	29.4	59.5	754	100

Note. PSI = Population Services International. [a]Heard the radio in the past week. [b]Can identify one or more elements of the radio campaign. [c]Can recall a specific message from the radio campaign. [d]Exposure to PSI media elements, including peer education, theater, television, or radio.

The programmatic objective of targeting specific spots to specific groups met with limited success. For example, Spot 6 was the most popular spot across target groups and pre-tested well, but only 16.4% could recall its details. Directed toward adult women to promote interpartner communication and condom use in marital relationships, Spot 6 suggested that a wife could successfully negotiate condom use with her husband. Instead of appealing to the intended target group of adult women, the spot appealed strongly to adult men. A total of 21.8% of adult men could identify Spot 6 in detail, whereas only 13.4% of adult women could do so (not shown).

EXPOSURE TO PSI PROGRAM COMMUNICATIONS

Exposure to the JeitO brand was nearly universal with 94% of respondents having heard of JeitO[6]. A considerable proportion (41.2%) knew of JeitO but was not exposed to the radio campaign. Exposure to IPC activities was quite high. Over half of respondents (53.2%) reported theater as a source of knowledge about JeitO, and 65.9% reported participating in PSI's peer debates. Radio as a source of information about JeitO was cited by 64% of respondents. Female adults reported the least exposure to any communications means as well as being more likely to have no exposure at all. Adult males registered higher exposure to each communication channel.

As presented in Table 3, few respondents (11%) reported no exposure to any one of the project's three principal communications activities. Nearly one third (29.4%) was exposed to only one activity and 59.5% were exposed to two or more types of communications activities. By target group, adult males reported the highest rate of exposure to communications activities overall. Exposure to PSI communications increases with level of educational attainment. By province, Zambézia registered the highest exposure and Nampula the lowest.

INTENT AND ACTION TAKEN

Table 4 examines the influence of exposure to communication sources on behavior change. Exposure to the radio campaign without detailed recall had no significant effect on intent to change behavior or actual actions taken by respondents. In fact, listening to the radio once or more per week appears to have a stronger impact on respondent behavior than having heard the radio campaign (see Table 4). Frequent radio listeners (once or more per week) reported higher intent to change their behavior as a result of the risk of HIV/AIDS than less frequent radio listeners, 85.4% vs. 71.4%, $p < .001$, OR = 2.36. Attempt to change behavior is likewise higher among frequent listeners, 76.4% vs. 65%, $p < .001$, OR = 1.74 and reported success in changing behavior is significantly higher for frequent listeners as well, 74.7% vs. 62.5%, $p < .001$, OR = 1.77.

Recall of detailed radio messages had a strong effect on intent, attempt, and success in carrying out behavior change. Of those with detailed recall, 95.3% intended to initiate behavior change, compared with 67.6% of those without detailed recall, $p < .001$, OR = 9.78. In addition, 85.4% of those recalling specific messages attempted to change their behavior compared with 61.1% of those without the same recall detail, $p < .001$, OR = 3.74. Finally, success in carrying out behavior change was reported by

6. Data on exposure to channels not shown in any table.

Table 4. Intent, Attempt and Success in Changing Behavior by Indicators of Exposure to Communications

	Behavior Change Outcomes %		
	Intent	Attempt	Success
Listened to radio in past week			
No	71.4	65.0	62.5
Yes	85.4	76.4	74.7
p level	< 0.001	< 0.001	< 0.001
Heard radio campaign			
No	77.4	69.9	67.7
Yes	82.8	74.2	72.4
p level	*ns*	*ns*	*ns*
Recall message(s)			
No	67.6	61.1	59.1
Yes	95.3	85.4	83.4
p level	< 0.001	< 0.001	< 0.001
Number of sources of PSI communications exposed to			
none	37.3	30.1	27.7
1	82.4	73.4	71.6
2+	87.1	79.3	77.3
p level	< 0.001	< 0.001	< 0.001
Total	80.2	72.1	70.2
N	754	754	754

83.4% of those with detailed recall versus only 59.1% among those without detailed recall, $p < .001$, OR = 3.47.

The combined effect of exposure to several PSI communications (peer education debate, theater and any radio) activities also shows a significant positive relationship with behavior change outcomes. Respondents exposed to two or more communications activities reported higher intent (87.1%), attempt (79.3%), and success (77.3%) in behavior change as compared with those exposed to only one or fewer interventions, $p < .001$.

MULTIVARIATE MODEL

A multivariate model was constructed to demonstrate the effect of campaign message recall on intent to change one's sexual behavior in response to the threat of STIs and HIV/AIDS (Table 5). The effect of recall on intent was to raise individual intent to 97.2% compared with 62.8% for those not exposed to the radio campaign, $p < .001$, after controlling for other factors. Among those who recall the campaign message, 86.1% attempted to change their behavior compared 58.0% of those with no message recall, $p < .001$. Finally, self-reported success in changing behavior is significantly higher among those with message recall (83.8%) as compared with those without 56.8%, $p < .001$.

The effect of the radio campaign cannot be attributed to sociodemographic differences or exposure to other PSI communications, because the effect remains significant after controls. Additional characteristics significantly associated with self-efficacy include age, education, and exposure to the radio.

Table 5. Intent to Change Behavior Adjusted for Sociodemographic, Mass Media, and Campaign Factors

		Intent		Attempt		Success	
	N	Unadj.	Adj.	Unadj.	Adj.	Unadj.	Adj.
Gender							
Female	175	84.0	84.9	75.4	76.8	74.9	76.5
Male	332	84.3	83.8	75.3	74.6	72.9	72.0
Age					**		**
13-18	168	80.4	81.0	66.7	66.5	66.7	65.9
19-24	132	85.6	86.5	79.5	80.9	76.5	78.0
25-30	115	87.8	87.1	84.3	84.0	83.5	83.3
31-36	58	86.2	84.2	77.6	76.0	74.1	73.1
37-42	25	84.0	83.4	76.0	75.5	68.0	68.2
43-49	9	77.8	76.4	44.4	44.9	44.4	46.2
Education							**
Less than secondary	60	81.7	80.3	65.0	62.5	56.7	55.2
Any secondary	392	84.7	85.2	76.0	77.0	75.0	75.7
Higher than secondary	55	83.6	81.6	81.8	77.4	81.8	78.6
Speaks Portuguese							
No	22	86.4	85.2	72.7	76.2	63.6	69.8
Yes	485	84.1	84.2	75.5	75.3	74.0	73.7
Radio exposure			**		*		*
Infrequent	67	71.6	71.5	64.2	64.1	62.7	62.4
Frequent	440	86.1	86.2	77.0	77.0	75.2	75.3
Alcohol consumption							
Infrequent	342	82.5	83.1	73.4	74.7	72.5	73.3
Frequent	165	87.9	86.6	79.4	76.8	75.8	74.1
Occasional partner							
No	270	82.6	83.0	74.1	74.7	72.6	72.8
Yes	237	86.1	85.7	76.8	76.0	74.7	74.5
Exposure to PSI communications							
low	129	78.3	79.3	66.7	69.0	65.1	67.8
high	378	86.2	85.9	78.3	77.5	76.5	75.5
Recall radio campaign message			***		***		***
no	198	66.2	62.8	58.6	58.0	57.1	56.8
yes	330	95.2	97.2	85.8	86.1	83.6	83.8
Grand mean			80.2		72.1		70.2
Multiple R^2			0.182		0.136		0.133

Note. PSI = Population Services International. Significance of *F*: $*p < 0.05$; $**p < 0.01$; $***p < 0.001$. Unadj. = unadjusted, Adj. = Adjusted for gender, age, education, speaks Portuguese, radio exposure, alcohol consumption, occasional partner, number of sources of exposure to PSI communications, heard radio campaign, recall campaign message.

DISCUSSION

Radio is the most common source of information for the majority of Mozambicans in terms of accessibility and coverage. This is particularly true of those considered to be at risk of contracting HIV/AIDS—urban dwellers, the relatively wealthy, and the better educated. To a certain degree, the radio campaign promoted by PSI/Mozambique succeeded in reaching these individuals through a targeted approach. Recall of both general and specific messages transmitted by the campaign was relatively high across groups. However, the strategy of targeting each group with a tailored message did not result in higher recall of those messages. All groups were exposed to several targeted messages, including those not targeted at them. Even though the targeting of

specific messages to specific groups was not effective, exposure to the radio campaign appears to have changed behavioral intent.

Several reasons may be offered to explain the relatively low recall of detailed prevention messages. Coverage was hampered by implementation problems such as noncompliance on the part of the radio stations to play a spot during agreed upon time slots, power outages, and other technical problems. Furthermore, the groups targeted by the campaign may have been too large and indistinguishable, thus even perfect placement would have had limited success. Alternatively, the strategy of airing all nine spots simultaneously with different but similar messages, may have resulted in one spot "stepping on" another and left many in the intended audience with no clear message.

In terms of effectiveness of the campaign to influence individual self-efficacy, the multivariate model presented indicates that message recall had a significant positive impact on the target audience in terms of self-reported intent, attempt, and success in changing behavior. Based on the fact that the campaign stimulated reflection among the target population to adopt preventive practices as well as to anticipate what that change would entail, the radio campaign may be considered a qualified success.

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