

**The Impact of the Kenya Social Marketing  
Program on Personal Risk Perception, Perceived  
Self-efficacy and on other Behavioral Predictors**

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## **Abstract**

**Objective:** To determine whether a mass media HIV/AIDS prevention campaign had an impact on personal risk perception, perceived self-efficacy and positive attitudes towards condoms.

**Methods:** We used household survey data collected from 2213 sexually experienced male and female Kenyans aged 15-39. Respondents were administered a questionnaire asking them about their exposure to branded and generic mass media messages concerning HIV/AIDS and condom use. They were asked questions about their perceived self-efficacy, perceived risk awareness, embarrassment in obtaining condoms and openness in acknowledging that they knew someone with HIV. Logistic regression analysis was used to determine the impact of exposure to mass media messages on these predictors of behavior change.

**Results:** Exposure to branded advertising messages was associated with respondents' higher level of personal self-efficacy, their greater belief in the efficacy of condoms, a lower level of perceived difficulty obtaining condoms and a greater openness in acknowledging that they knew someone who had HIV or had died of AIDS. Those exposed to branded messages were also more likely to consider themselves at higher risk of acquiring HIV and to believe in the severity of AIDS. Moreover, there was a dose-response relationship: a higher intensity of exposure to advertising was associated with more positive health beliefs. The majority of positive health beliefs were associated with exposure to generic messages, although these relationships were somewhat weaker.

**Conclusions:** Mass media campaigns that promote condom use as an attractive behavior are likely to encourage positive health beliefs. In Kenya, the social marketing campaign helped create an environment in which there was a greater recognition of personal risk for acquiring HIV, a stronger belief in the efficacy of condoms and a higher level of personal self-efficacy.

## INTRODUCTION

A review of the family planning literature shows that interventions that use mass media to produce changes in the social environment can be effective in producing openness in discussion of contraceptive use and in reducing barriers to the adoption of contraception. For example, a mass media intervention using radio and television in Mali produced a dramatic decline in the proportion of men and women who believed that Islam opposed family planning (Kane et al., 1998). A radio soap opera in Tanzania increased self-efficacy in contraceptive adoption among those who heard the soap opera and encouraged discussion of contraception with spouses and peers (Rogers et al., 1999). Several interventions have shown dramatic increases in the number of contraceptive adopters during the period in which mass media broadcasts on contraception were aired (Rogers and Antola, 1985; Kincaid et al., 1996).

Social marketing programs have used mass media to promote condom use for HIV prevention. As condoms are often associated with immoral sexual behavior, many individuals find it difficult to discuss condom use with a partner and feel embarrassed obtaining condoms. Moreover, many individuals have a low personal risk perception because they consider themselves to be moral persons. By de-stigmatizing condom use through presenting use of condoms as an attractive behavior, social marketing interventions can contribute towards changing social norms and the social environment in which sexual behavior occurs (Davis, 1997; Sweat and Denizen, 1995; Lamphey and Price, 1998). Studies show that social marketing interventions have increased individuals' risk perceptions, their self-efficacy to discuss condom use with a partner, and improved their attitudes towards condoms and abstinence (Black and Harvey, 1976; Van Rossem and Meekers, 2000; Meekers, 2000; Agha, 2000, Kennedy et al., 2000; Agha et al., 2001; Agha and Van Rossem, 2001).

As the quality and intensity of mass media interventions may vary by country, it is important to evaluate the impact of mass media intervention in each context. In addition, cultural and contextual factors that may be specific to a society may influence the impact of an intervention. In the present analysis, we evaluate the impact of a social marketing communications campaign in Kenya. We assess the extent to which predictors of behavior change were influenced by the mass media campaign. In particular, we evaluate whether an increase in risk awareness, self-

efficacy, positive attitudes towards condoms, and openness about the AIDS epidemic are associated with exposure to mass media messages. A recent analysis of data from the 1998 Kenya Demographic and Health Survey shows that respondents who were exposed to mass media messages about AIDS were more likely to recognize the efficacy of condoms in preventing AIDS (Waithaka and Bessinger, 2001).

## **BACKGROUND**

Kenya is a country in East Africa with a population of nearly 30 million and an HIV prevalence level estimated at 14% in 1999 (UNAIDS, 2000). About 75% of all HIV infections in Kenya occur through heterosexual contact, with peri-natal transmission being the second most important transmission mechanism (NCPD, 1999). Multiple sexual partnerships and inconsistent condom use have contributed to the spread of HIV in Kenya: results from a 1998 national survey showed that 16% of married males reported extramarital sex and that 30% of single males reported two or more sexual partners in the last 12 months. Only 21% of men reported using a condom in last sex: 8% reported condom use in last marital sex and 43% in last non-marital sex (NCPD, 1999).

The low level of condom use in Kenya may partly be explained by factors such as lack of political will to recognize AIDS as a major social problem. Societal and individual openness to discuss sexual behavior are important factors in motivating individuals to reduce the risk of contracting HIV (Sweat and Denizen, 1995). There has been considerable opposition to supplying information to Kenyan adolescents because policy makers believe that providing information about sexuality and condom use will encourage premarital sexual activity (Williams et al., 1997). Throughout the early 1990s, religious groups either ignored AIDS or accused those with AIDS of immoral or deviant behavior (Black, 1997). The Kenyan parliament shelved discussions to introduce sex education to schools after demonstrations against sex education by anti-abortion groups and the Catholic church in Nairobi (Kigotho, 1997). The number of newspaper articles about HIV/AIDS declined after 1987, in spite of a sharp increase in the spread of the AIDS epidemic. Moreover, stories about AIDS in Kenyan newspapers were based mostly on stories about AIDS in other countries (Tassew, 1997). To encourage the national media to pay adequate attention to the HIV epidemic in Kenya, a coalition of media and health professionals has been formed recently (Anonymous, 2001).

Some community and church groups have emphasized abstinence instead of condom use and have formed pressure groups to control the availability of sexual health information available through the mass media (Amuyunzu, 1997). These groups have portrayed sexual behavior outside marriage as immoral. The lack of openness to discuss sexual matters has constrained individuals' abilities to develop skills to negotiate safer sex and to manage sexual relationships. Most Kenyans do not have the self-efficacy to practice safe sex (Kumah et al., 1993; Cameron et al., 1999). Moreover, because it has been difficult to promote the advantages and effectiveness of condoms (Kumah et al., 1993), misconceptions about STD and HIV transmission have been widespread and condoms are generally considered unreliable (Kekovole et al., 1997). Studies have shown that the majority of young Kenyans believe that they do not have sufficient information to make positive changes in their lifestyles (Eriksson et al., 1997).

In the last two years there has been an increase in the political commitment to fight the HIV epidemic. Toward the end of 1999, the Kenyan government declared that HIV/AIDS was a national disaster and established a National AIDS Control Council to coordinate the fight against HIV/AIDS. AIDS education interventions for secondary school and college-going youth focusing primarily on abstinence are part of the effort to motivate changes in sexual behavior. The emphasis of government-sponsored secondary school and college-oriented interventions remains on instilling moral values (Anonymous, 2000). The government's strategy also includes providing free air-time available for HIV prevention broadcasts to Population Services International (PSI) Kenya, a social marketing organization. This air-time was used to supplement PSI Kenya's ongoing branded communications campaign.

## DEVELOPMENT OF THE MASS MEDIA INTERVENTION

PSI Kenya used formative research to develop branded and generic mass media campaigns. Consistent with messages that had been promoted by some community and church groups, formative research showed that many Kenyans continued to associate condom use with immoral behavior. Respondents listed trusting a partner as one of the main reasons for not using a condom. They were reluctant to discuss condom use with their partner because they felt that their partner might feel accused of immoral behavior.

In order to encourage openness about condom use and to motivate Kenyans to discuss condom use with their partners, PSI Kenya developed the “Lets talk” campaign. This was a branded communications campaign. Radio and television spots encouraging people to talk about *Trust* (which was also the brand name for the social marketing condom) were aired during 1997 and 1998. A second “Talk to me” campaign was aired in 1999 and continued through 2000. Both media campaigns promoted the *Trust* condom as a positive lifestyle choice and marketed its use as “cool” and contemporary. For example, in one radio spot, a man repeatedly calls a woman to ask for a date. The woman refuses to speak with him on several occasions. When she does agree to listen to him, the man describes the lengths that he has gone to organize the date, include getting transport to and from the movie. When he mentions his intention of bringing 20 packets of *Trust* condoms for her birthday party the following week, he finally manages to get her attention. This prompts her to say that he is cool and to agree to go out with him.

An underlying theme of the media campaign was that talking about *Trust* is a positive lifestyle choice. Thus, the branded mass media campaign promoted openness on multiple levels and tied condoms to the central issue of trusting one’s partner. Similar approaches have been successful in other social marketing interventions in sub-Saharan Africa (Agha et al., 2001). The visual presence of *Trust* condoms was enhanced by the use of outdoor advertising, including a wall branding (mural) campaign. Various other special events such as concerts were also part of the brand advertising activities.

Although brand advertising is a powerful mechanism for conveying positive lifestyle messages, using it to relay fear-inducing messages may damage brand equity. Therefore, a generic

campaign emphasizing consistent condom use was developed and aired on radio and television. In one of these generic advertisements, several men and women introduce themselves by saying “Hi, I’m Fred,” “Hi, I’m Mary” etc. The listener is asked to guess which of these persons has HIV. The messages behind the advertisement are that condoms should be used consistently and that it is not possible to guess by hearing or looking at someone if they have AIDS.

Between January and December 2000, 324 *Trust* television and 1,233 *Trust* radio spots lasting between thirty and sixty seconds were aired on all major television and radio channels. As part of the generic mass media campaign, 556 television spots and 2,128 radio spots lasting sixty seconds were aired during the same year. The broadcast of the generic campaign was made possible because of the donation of free air-time by the Kenya Broadcasting Corporation (KBC).

## **DATA AND METHODS**

To evaluate the impact of the mass media campaigns on a variety of beliefs that influence condom use, we use data from a national household survey of Kenya.

### *Sampling*

The Kenya Knowledge Attitude and Practice Survey 2000 (KKAPS 2000) is based on a multistage cluster sample collected in all provinces of Kenya except North Eastern Kenya (which accounts for about 5% of the population of Kenya). As was the case for the Kenya Demographic and Health Survey (KDHS 1998), the sparsely populated Northeast region was excluded to reduce costs (NCPD, 1999). The KKAPS 2000 survey was conducted in collaboration with the Central Bureau of Statistics (CBS) and was funded by the United States Agency for International Development (USAID).

Urban areas of Kenya were over-sampled because of greater variation in behavior in urban areas and need to have a large enough sample to make reliable estimates for sub-groups of interest. The NASSEP III sampling plan was followed to randomly select 300 clusters (103 urban and 197 rural). Cluster maps and household listings were provided by the Central Bureau of Statistics. Data was collected between December 13, 2000 to January 15, 2001. Each selected cluster was visited by a team consisting of a supervisor and a male and female interviewer. A systematic sampling interval was used to select ten households per cluster. All females 15-39



and all males 15-49 in a household were eligible for selection. One eligible respondent was randomly selected from each household. If the randomly selected individual was not present on the day of the interview, a repeat visit was made to the household. The actual number of completed interviews was 2,912. Since the focus of the present study is on the relationships between variables rather than the levels of different indicators, we use unweighted data for the analysis. In order to keep comparable age groups for men and women, we included only men and women aged 15-39 in our analysis (and excluded men aged 40-49). This left us with a total of 2,711 respondents, of which 2,213 were sexually experienced.

### **The Questionnaire**

The survey instrument was based on a standardized questionnaire used by Population Services International (PSI) in numerous countries in sub-Saharan Africa. An earlier version of this questionnaire was based on the instrument used for the WHO Knowledge Attitude Behavior Practices Survey (Cleland and Ferry, 1995). The instrument was used to gather data on socio-demographic characteristics, knowing someone who had HIV or had died of AIDS, risk perception, self-efficacy, knowledge of condoms, awareness of generic and mass media condom promotion, and sexual behavior.

### **The Variables**

#### *Outcome variables*

Six of the outcome variables are based on questions that elicited yes/no/don't know responses. To measure self-efficacy, respondents were asked if they thought they could convince their spouse to use a condom during sex. Unmarried respondents were not asked the question on self-efficacy. To measure condom-efficacy respondents were asked if they thought that condoms were effective in preventing HIV/AIDS. To assess respondents' perception of the availability of condoms, they were asked if it was difficult to obtain condoms. To assess their level of openness about the epidemic, respondents were asked if they personally knew someone who had HIV or had died of AIDS. Although this variable may also reflect the prevalence of HIV, we believe that a respondent's acknowledging that they know someone who has HIV indicates that they have partly overcome the stigma associated with HIV/AIDS. Openness towards obtaining condoms was measured by asking respondents if they would feel embarrassed buying condoms

in an outlet in their neighborhood. Perceived severity of risk was measured by asking respondents whether they thought there was a cure for AIDS.

Three of the four variables did not elicit a yes/no response. To determine a respondent's perceived efficacy of condoms respondents were asked about the most important reason that they would choose to use a condom. Possible responses included: protection from HIV/AIDS, protection from pregnancy, or other. A binary variable was created for those respondents who gave protection from HIV/AIDS as the main reason they would use a condom. To assess personal risk perception respondents were asked if they thought they had a small, moderate, or high risk of contracting HIV/AIDS. Their responses could include small, moderate, high, or no risk. A binary variable was constructed to indicate the proportion of respondents at high risk of HIV/AIDS. To assess their perception of the magnitude of the AIDS epidemic, respondents were asked if they thought AIDS was a serious problem in their community, somewhat of a problem, or not a problem. A binary variable was created to indicate the proportion of respondents who feel that AIDS is a serious problem in the community.

### *Independent variables*

Residence in urban or rural areas, age, gender, marital status (single versus married) and education (none, primary and secondary/higher) were included as control variables. In addition, one indicator was developed to measure the recall of branded messages and another to measure recall of generic mass media messages: these variables measured no exposure, low exposure (i.e. exposure through either radio or television) and high exposure (i.e. exposure through both radio and television) to messages. Both branded and generic messages refer to messages produced by the social marketing program (Berman, personal communication, 2001). Besides what was aired for the social marketing program, other AIDS prevention mass media dissemination activities were limited to what could be relayed through one radio AIDS hotline (Waithaka, personal communication, 2001).

### **The Analysis**

We use recall of mass media messages as a proxy for exposure to mass media messages. There are concerns about the validity of using recall as a measure of exposure, because those who use condoms may be more likely to remember messages about condoms. In order to ascertain

whether there is recall bias, we first compare patterns of recall of condom messages to reported listenership/viewership of radio/television. There is no reason to expect that reported listenership/viewership of radio/television is influenced by differences in the motivation to use condoms. Thus, if patterns of reported listenership/viewership of radio/television are similar to patterns of recall of condom messages, we can assume that remembering condom messages is not significantly affected by recall bias.

Next, we measure the impact of advertising exposure on predictors of behavior change. Since wealthier people are more likely to have access to mass media (NCPD, 1999), we adjust this analysis for socioeconomic differences in the characteristics of individual respondents. Previous studies have shown that condom users are likely to have greater self-efficacy and more positive attitudes towards condom use in general (Meekers and Klein, 2001; Trigg, 2001).

In order to further protect ourselves from finding an artifactual relationship between exposure to advertising and condom use, we adjust for condom ever use in the analysis. By adjusting for condom ever use, we reduce the possibility that the motivation to use condoms confounds the relationship between exposure to condom messages and predictors of behavior change.

### **Sample characteristics**

About half the respondents (52%) were aged 15-24 years and nearly half (49%) were single. About 42% of respondents had secondary or higher education and 39% were males. Nearly a third of respondents (31%) had no exposure to *Trust* advertising, another third (34%) had some exposure to *Trust* condom advertising (had heard it on either radio or television) and the last third (35%) had high exposure to *Trust* advertising (had heard it both on radio or television). Exposure to generic messages was lower: 36% had no exposure to generic messages, 47% had some exposure and 17% had high exposure. About 25% of respondents had ever used condoms.

### **Strengths and limitations of the study**

#### **Strengths**

The data for the present analysis is from a national survey of Kenya. National surveys are necessary to monitor the full impact of national level interventions such as the social marketing intervention evaluated in this study. We assess the impact of mass media on multiple predictors

of behavior change. Doing so gives a more holistic picture of the impact of the intervention than an evaluation that uses a limited number of outcome indicators.

### Limitations

Survey questions on exposure to generic and branded messages asked about “ever” having heard of advertising through various mass media channels. Because branded communication campaigns had been implemented since 1997, responses to the question regarding branded communication capture cumulative exposure to three years of social marketing campaigns. In contrast, responses to this question regarding generic messages only capture approximately one year of exposure. Thus, from this study, we cannot directly compare the impact of generic messages to the impact of branded messages.

Our study relies on recall of advertising as a proxy for exposure to advertising. This has the potential to introduce a bias in the results: individuals who may have more positive attitudes towards condoms and have greater self-efficacy may be more likely to recall branded and generic communication messages. We limit the extent to which this bias may affect the findings of this study by controlling for condom use. However, controlling for condom use may not fully take into account the motivation to use condoms that existed prior to the advent of the advertising campaigns.

## **RESULTS**

To determine whether there is any evidence of bias in recall of condom messages, we compare the latter to patterns of general radio listenership and general television viewership.

### **Radio listenership and exposure to branded messages**

Table 1 shows adjusted odds ratios of general radio listenership (Model 1) and recall of branded condom messages on the radio (Model 2). Model 1 shows that urban respondents were 1.5 times as likely as rural respondents to have listened to the radio in the last week. Males were about 2.5 times as likely as females to have listened to the radio. Respondents with primary education (2.5 times) and those with secondary or higher education (6 times) were more likely to have listened to the radio compared to those with less than primary education. There was no relationship between age and radio listenership.

### *Branded condom messages*

The pattern of recall of *Trust* condom messages on the radio was very similar to the pattern of general radio listenership: urban respondents were more likely than rural respondents to have heard radio messages about *Trust* condoms; males were more likely than females to have heard *Trust* condom messages; respondents with primary or higher education were more likely than respondents with no education to have heard of branded condom messages.

Table 1 about here

### **Television viewership and exposure to branded messages**

Table 2 shows the adjusted odds ratios of general television viewership (Model 3) and the recall of branded condom messages on television (Model 4). Model 3 shows that urban respondents were more than three and a half times as likely as rural respondents to have watched television last week, males were almost twice as likely as females to have watched television, and those not married were 1.5 times as likely as married people to have watched television. Lastly, respondents with primary (2.5 times) or secondary and higher education (6.6 times) were significantly more likely to have watched television in the last week than those with no education.

### *Trust condom messages*

Model 4 shows that urban respondents were more likely than rural respondents to recall a *Trust* condom advertisement from television; males were more likely than females to recall a *Trust* condom advertisement from television and single people were more likely than married respondents to recall a *Trust* condom advertisement from television. However, one difference that emerged was that younger people were more likely to be exposed to branded advertising on television than older respondents (whereas there was no age difference in general television viewership). This shows that, among television viewers, younger people are more likely to recall branded condom messages than older people. This may be because of their higher motivation to use condoms and appears to demonstrate a recall bias among younger television viewers.

Table 2 about here

## **The impact of mass media advertising**

In Table 3, Models 5 through 8 assess the impact of exposure to branded advertising and exposure to generic HIV/AIDS advertising on personal self-efficacy, belief in the efficacy of condoms, and perceived condom availability. In Table 4, Models 9 through 13 assess the impact of advertising on openness about AIDS/condoms, risk awareness, and perceived risk severity. Adjusted odds ratios are presented, controlling for residence, socio-demographic variables, and condom ever use.

### *Perceived self-efficacy*

Model 5 shows that, after adjustment for a range of variables, married respondents with some exposure to branded messages (i.e. those who were exposed to *Trust* condom advertising through either radio or television) were 1.7 times as likely as those not exposed to any branded messages to believe that they could convince their spouse to use a condom. Moreover, respondents who reported a high exposure to branded messages (i.e. those who were exposed to *Trust* condom advertising through both radio and television) were twice as likely to believe that they could convince their spouse to use a condom. There was no relationship between exposure to generic advertising and perceived self-efficacy.

Other variables also had significant relationships with the measure of perceived self-efficacy. We were surprised to find that urban respondents were less likely than rural respondents to believe that they could convince their spouse to use a condom. It is possible that this reflects more independent decision-making about reproductive health issues in urban areas than in rural areas. Younger married respondents were more likely than older married respondents to perceive that they have self-efficacy, which suggests that it is becoming easier to negotiate condom use in marriage. Men were more likely than women to believe that they could convince their spouse to use condoms. Secondary or higher education and having used condoms were also associated with greater self-efficacy. Condom ever users reported greater self-efficacy.

### *Perceived condom-efficacy*

Model 6 shows that, after adjustment, respondents who had some exposure to branded messages were 1.4 times as likely as those not exposed to any branded advertising to believe that condoms are effective for HIV prevention. Respondents who had high exposure to branded advertising

were 1.5 times as likely as those not exposed to any branded advertising to believe that condoms are effective for HIV prevention. There was also a relationship between exposure to generic advertising and the belief in the efficacy of condoms: respondents who had high levels of exposure to generic advertising were 1.3 times as likely as those not exposed to any generic HIV/AIDS messages to believe that condoms are effective in HIV prevention. Men were less likely than women to believe that condoms are effective against HIV transmission. Primary education was associated with a greater belief in the efficacy of condoms. Ever use of condoms was also associated with a greater belief in the effectiveness of condoms.

Model 7 shows that respondents with high exposure to branded advertising were 1.5 times as likely as those not exposed to branded advertising to cite HIV prevention as the main reason they would use condoms (Model 7). Exposure to generic messages did not make a respondent more likely to state that they would use condoms for HIV prevention. Having ever used condoms was associated with a greater likelihood of citing HIV prevention as the main reason for condom use.

#### *Perceived condom availability*

Respondents with some exposure to branded advertising were less likely (0.6 times) than those not exposed to branded messages report that condoms are difficult to obtain (see Model 8). Those who reported high exposure to branded messages were even less likely (0.41 times) to believe that it is difficult to obtain condoms. Those with some exposure to generic advertising were also less likely to perceive that it is difficult to obtain condoms than those with no exposure to generic messages.

Urban residents were less likely than those in rural areas to perceive that it is difficult to obtain condoms. Those with secondary or higher education and those who had ever used condoms were also less likely to perceive that condoms are difficult to obtain.

Table 3 about here

#### *Openness about AIDS and condoms*

Model 9 (Table 4) shows that respondents with high exposure to *Trust* condom advertising were 1.7 times as likely as respondents who were not exposed to branded messages to report that they knew someone who had died of AIDS. Those exposed to some generic HIV advertising were 1.3

times as likely, while those with high exposure to generic HIV advertising were 1.6 times as likely as those not exposed to generic advertising to report that they knew someone with HIV/AIDS. Younger respondents were less likely to report knowing someone who had HIV or who had died of AIDS. Men were less likely than women to report knowing someone with HIV or who had died of AIDS. Those with primary or higher education were also more likely to acknowledge that they knew someone who had HIV or had died of AIDS.

Model 10 shows that exposure to branded advertising lowers the likelihood of being embarrassed purchasing condoms. Urban respondents were more likely than rural respondents to feel shy purchasing condoms. This finding is consistent with the lower perceived self-efficacy of urban compared to rural respondents (see Model 5). Men were less likely than women to feel embarrassed about purchasing condoms. Those who had ever used condoms were less likely to feel shy purchasing condoms.

#### *Risk awareness*

Exposure to *Trust* condom advertising increased personal risk perception: respondents with high exposure to branded messages were twice as likely as those with no exposure to report that they were at high risk of acquiring HIV (Model 11). We were surprised to find that respondents with high exposure to generic HIV/AIDS advertising were less likely to feel at high risk of getting HIV than respondents with no exposure to generic messages. It seems difficult to find a logical explanation for this finding. Urban respondents were more likely than rural respondents to perceive being at high risk of getting HIV.

Model 12 shows that exposure to branded and to generic advertising are also associated with the perception of AIDS being a serious problem in the community. Respondents who had some exposure to *Trust* condom advertising were 1.4 times as likely than those not exposed to condom advertising to feel that AIDS is a serious problem in their community. Respondents with high exposure to branded messages were 1.5 times as likely as those not exposed to be aware of the risk of AIDS in their community. Some exposure to generic HIV messages also increased the likelihood of reporting that AIDS is a serious problem in the community. Consistent with their higher perceived personal risk of acquiring HIV, urban respondents were more likely than rural



respondents to believe that AIDS is a serious problem. Younger respondents were less likely than older respondents to recognize AIDS as a serious problem.

#### *Perceived severity of risk*

The belief that there is no cure for AIDS was higher among respondents who had some exposure (2.1 times) or high exposure (1.7 times) to branded advertising versus those with no exposure. Exposure to generic messages about HIV prevention was not associated with the perceived severity of HIV.

Table 4 about here

## **CONCLUSIONS**

We used a national survey of Kenya to assess the impact of a social marketing intervention that used branded and generic mass media to promote safer sex behaviors. Because we analyzed data from a cross sectional survey and relied on retrospective recall of advertising messages as a proxy for exposure to advertising, we assessed whether there was any evidence of a recall bias. We did find some evidence of recall bias among television viewers: younger respondents were more likely to recall branded condom messages on television than older respondents whereas there was no age difference in general television viewership. This suggests that recall of branded messages on television may not be an accurate reflection of exposure to branded advertising on television. However, we found no evidence of recall bias related to branded advertising on the radio.

To assess the impact of the social marketing program, we measured the association between advertising exposure and the predictors of behavior change. We adjusted the analysis for socio-demographic variables and ever use of condoms. A consistent picture emerges of the impact of branded messages on outcomes that are considered important by several models of health seeking behavior. Exposure to branded advertising was associated with perceived self-efficacy, perceived condom efficacy, perceived condom availability, respondents' openness about AIDS, risk perception, and perceived risk severity. Moreover, in most cases, there was a dose-response relationship between exposure to branded communication and positive outcomes. Exposure to generic communication about HIV prevention was also associated with positive beliefs about

condom efficacy, perceived condom availability, openness about AIDS, and risk perception. These findings show that generic HIV advertising makes an independent contribution towards improving beliefs and attitudes. The results of this study are consistent with literature showing that mass media has a measurable impact on reproductive health intentions and behavior (Rogers and Antola, 1985; Kincaid et al., 1996; Rogers et al., 1999; Van Rossem and Meekers, 2000; Kennedy et al., 2000; Agha, 2000; Agha and Van Rossem, 2001; Agha et al., 2001).

It is encouraging that young married Kenyans had greater perceived self-efficacy in being able to negotiate condom use with their spouse than older married respondents. This indicates that there are now fewer barriers to the adoption of condom use in marriage than before. With any partner, however, younger respondents were less likely than older respondents to perceive that AIDS is a serious problem. These findings emphasize the importance of strengthening interventions targeted at young adults, so that they are able to make appropriate choices to protect themselves against HIV transmission.

Most of the findings of this study were consistent with our expectations. For example, urban respondents perceived it easier to obtain condoms than rural respondents and were more likely than rural respondents to consider AIDS as a serious problem. However, there were some unexpected findings: urban respondents felt greater embarrassment about purchasing condoms than rural respondents; rural respondents were more likely to believe that they could convince a spouse to use a condom. One earlier study also showed that some mixed findings emerged during the process of behavior change (Meekers et al., 1997).

Overall, these results show that mass media advertising has an important role to play in creating a more positive and open social environment. An environment in which people have the opportunity to discuss sexual matters, recognize their personal risk of acquiring HIV, and believe in their ability to implement condom use fosters their ability to make positive changes in their sexual behavior.

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Table 1: Adjusted odds ratios of radio listenership & exposure to *Trust* condom messages on radio

	Model 1 Listened to radio last week (n=2711)	Model 2 Ever heard a radio advertisement for <i>Trust</i> condoms (n=2711)
<b>Residence</b>		
Rural	1.00	1.00
Urban	1.53***	2.21***
<b>Age</b>		
25-39	1.00	1.00
15-24	0.97	0.97
<b>Gender</b>		
Female	1.00	1.00
Male	2.46***	2.52***
<b>Marital status</b>		
Married	1.00	1.00
Single	0.94	0.93
<b>Education</b>		
None	1.00	1.00
Primary	2.47***	4.57***
Secondary/higher	6.00***	12.65***
Improvement in X <sup>2</sup>	306.25***	433.74***
Nagelkerke R <sup>2</sup>	0.15	0.20

\* p<0.05    \*\* p<0.01    \*\*\* p<0.001

Table 2: Adjusted odds ratios of television viewership & exposure to *Trust* condom messages on television

	Model 3 Watched television last week (n=2711)	Model 4 Ever seen a television ad. for <i>Trust</i> condoms (n=2711)
<b>Residence</b>		
Rural	1.00	1.00
Urban	3.67***	3.76***
<b>Age</b>		
25-39	1.00	1.00
15-24	1.04	1.25*
<b>Gender</b>		
Female	1.00	1.00
Male	1.88***	2.10***
<b>Marital status</b>		
Married	1.00	1.00
Single	1.45**	1.48***
<b>Education</b>		
None	1.00	1.00
Primary	2.49**	2.35**
Secondary/higher	6.65***	9.57***
Improvement in X <sup>2</sup>	459.19***	671.32***
Nagelkerke R <sup>2</sup>	0.22	0.30

\* p<0.05    \*\* p<0.01    \*\*\* p<0.001

Table 3: Adjusted odds ratios of self-efficacy, condom-efficacy and condom availability

	Self-efficacy	Condom-efficacy		Condom availability
	Model 5 I can convince my spouse to use condoms (n=1354)	Model 6 Condoms are effective for HIV prevention (n=2213)	Model 7 HIV prevention is reason I would use condoms (n=2213)	Model 8 It is difficult to obtain condoms (n=2213)
<b>Residence</b>				
Rural	1.00	1.00	1.00	1.00
Urban	0.67**	0.98	1.13	0.39***
<b>Age</b>				
25-39	1.00	1.00	1.00	1.00
15-24	1.49*	1.19	0.85	1.05
<b>Gender</b>				
Female	1.00	1.00	1.00	1.00
Male	2.02***	0.65***	1.10	0.93
<b>Marital status</b>				
Married	n.a.	1.00	1.00	1.00
Single	n.a.	0.95	1.34*	1.17
<b>Education</b>				
None	1.00	1.00	1.00	1.00
Primary	1.95	1.85**	1.07	0.75
Secondary/higher	2.40*	1.29	1.00	0.62*
<b>Exposed to branded mess.</b>				
No exposure	1.00	1.00	1.00	1.00
Some exposure	1.74**	1.38**	1.24	0.58***
High exposure	2.12***	1.49**	1.52**	0.41***
<b>Exposed to generic mess.</b>				
No exposure	1.00	1.00	1.00	1.00
Some exposure	1.07	0.97	1.00	0.76*
High exposure	0.94	1.34*	1.19	0.71
<b>Condom use</b>				
Never used	1.00	1.00	1.00	1.00
Ever used	7.92***	1.99***	1.42**	0.66**
Improvement in X <sup>2</sup>	276.08***	105.00***	51.83***	201.21***
Nagelkerke R <sup>2</sup>	0.26	0.06	0.03	0.13

\*p&lt;0.05 \*\*p&lt;0.01 \*\*\*p&lt;0.001, n.a.= not applicable



Table 4: Adjusted odds ratios of openness, risk awareness and risk severity

	Openness		Risk awareness		Risk severity
	Model 9 Knows someone who has HIV (n=2213)	Model 10 Not embarrassed to purchase condoms (n=2213)	Model 11 There is high risk of my getting HIV (n=2213)	Model 12 AIDS is serious problem in my community (n=2213)	Model 13 There is no cure for AIDS (n=2213)
<b>Residence</b>					
Rural	1.00	1.00	1.00	1.00	1.00
Urban	0.85	0.82*	1.31*	3.44***	1.30
<b>Age</b>					
25-39	1.00	1.00	1.00	1.00	1.00
15-24	0.75**	0.90	0.88	0.76**	0.80
<b>Gender</b>					
Female	1.00	1.00	1.00	1.00	1.00
Male	0.73**	1.33**	0.94	0.90	0.81
<b>Marital status</b>					
Married	1.00	1.00	1.00	1.00	1.00
Single	0.90	0.92	1.18	1.01	1.11
<b>Education</b>					
None	1.00	1.00	1.00	1.00	1.00
Primary	1.97**	1.08	1.25	0.91	1.00
Secondary/higher	2.64***	0.99	1.49	1.05	0.67
<b>Exposed to branded mess.</b>					
No exposure	1.00	1.00	1.00	1.00	1.00
Some exposure	1.21	1.34**	1.28	1.35*	2.06***
High exposure	1.66**	1.47**	1.96***	1.46***	1.73**
<b>Exposed to generic mess.</b>					
No exposure	1.00	1.00	1.00	1.00	1.00
Some exposure	1.31*	1.00	1.00	1.34**	1.06
High exposure	1.62**	0.97	0.68*	1.35	1.17
<b>Condom use</b>					
Never used	1.00	1.00	1.00	1.00	1.00
Ever used	1.16	2.03***	1.18	1.17	0.95
Improvement in X <sup>2</sup>	93.35***	86.62***	46.23***	216.73***	34.49***
Nagelkerke R <sup>2</sup>	0.06	0.05	0.04	0.13	0.03

\* p&lt;0.05 \*\* p&lt;0.01 \*\*\* p&lt;0.001