Radio as the Voice of God: Peace and Tolerance Radio Programming's Impact on Norms

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Abstract:

Observers have argued that radio programming can alter norms, especially through hate radio designed to increase animosity between groups. This article tests whether or not radio programming under the Countering Violent Extremism (CVE) policy framework can reduce potential conflict and increase civic engagement and positive views of foreign nations. Data from surveys of more than 1,000 respondents in Mali, Chad, and Niger illuminate the ways in which peace and tolerance programming changed perspectives and altered behavior in statistically significant ways. Results show that individuals exposed to multi-level U.S. government programming were more likely to listen to peace and tolerance radio. Further, bivariate, multivariate regression, and propensity score matching techniques show that individuals who listened more regularly to such programs participated more frequently in civic activities and supported working with the West to combat terrorism (holding constant a number of potential confounding economic, demographic, and attitudinal factors). However, higher levels of radio listening had no measurable impact on opposition to the use of violence in the name of Islam or opposition to the imposition of Islamic law. Further, data indicate that women and men have responded to programming in measurably different ways. These mixed results have important implications for current and future "soft-side" programs for countering violent extremism.

Introduction

Radio programming has incited hatred and catalyzed violence in well-documented ways. Created in Rwanda in 1993 by Hutu residents, the station *Radio-Television Libre des Mille Collines* ("Free Radio-Television of the Thousand Hills," abbreviated as RTLM), played a strong role in inciting the horrific 1994 genocide that killed more than 800,000 people[1]. RTLM featured a "stream of commentators…exhorting violence, playing provocative songs, and even reading out the names and locations of those who must be killed" [2]. Announcers at the station pushed for a "final war," regularly referring to Tutsis as "cockroaches" (*inyenzi*) and declaring that "We will kill you!"[3]. Post-genocide tribunals held in Arusha, Tanzania, found the managers of RTLM guilty of incitement, but radio stations in Bosnia, Serbia, and Kenya have similarly spewed hatred against ethnic groups and encouraged violence since these troubling events [4]. As a result of the power of these broadcasts some commentators have referred to radio as the "voice of God" due to the authority accorded to broadcasts and the power that radio may hold over its listeners [5].

Given radio's ability to influence violence and inflame hatred, a pressing question is whether radio programming can reduce conflict, facilitate cooperation, and alter norms in listening populations in a positive way [6]. This is especially important because various Western governments have adopted new strategies for countering violent extremism through local radio programming within the defense, diplomacy, and development approach to terrorism [7]. Planners across the world have recognized that military strategies alone cannot "defeat" violent extremist organizations (VEOs) such as Al-Qaeda in the Maghreb, Boko Haram in Nigeria, Hamas in the Middle East, Lashkar-e-Taiba in Southeast Asia, and Al-Shabab in the Horn of Africa. Rather, decision makers in the United States, Canada, the United Kingdom, and Australia have pursued "soft" strategies to counter violent extremism (CVE) around the world. In the United States, for example, both the State Department's Quadrennial Diplomacy and Development Review (QDDR) in 2010 and the Department of Defense's new Concept Plan (CONPLAN) 7500 stressed non-military approaches to containing terrorism. Strategies include norm messaging, the provision of vocational and educational opportunities to populations vulnerable to VEO recruitment, and the strengthening of local NGOs and civil society. Many of the counter-VEO programs under the management of the United States Agency for International Development (USAID) and the State Department use radio broadcasts to alter the norms and behaviors of listeners.

USAID has an extensive history of behavior change communications and distance learning through radio in development settings across nations in Africa, Southeast Asia, and Latin America since the end of World War II. For example, the Agency provided assistance to Radio Sutatenza in Colombia (which began programming in 1947), trained Swaziland radio producers in the mid-1980s [8], promoted radio programs in El Salvador more than two decades ago [9], and helped spread knowledge of reproductive health through radio programming in Bolivia since 1998 [10]. The newest generation of tactics for countering violent extremism rest on best practices in social marketing developed over years of health and education programming around the world.

Although it appears increasingly likely that Africa, Southeast Asia, and other "hot spots" for extremism will be populated by Internet and cell phone users, radio already serves as an existing, trusted framework for communication. Scholars have estimated that there are more than 20,000 radio stations and 2 billion radio receivers in the world, and they are a low-cost, high-yield infrastructure for information diffusion and norm messaging. Radio remains "the dominant mass-medium in Africa with the widest geographical reach and the highest audiences compared with television, newspapers and other information and communication technologies" [11]. While many residents in nations such as Mali, Niger, and Chad lack regular access to electricity, cannot afford televisions in their homes, and cannot read, radios have penetrated households and become fixtures for social meetings. In Mali, for example, two-thirds of the nation has never

watched television; instead, more than three-quarters of the people receive their information from radios.

U.S. government planners hope to take advantage of the low-cost and ubiquitous nature of radios and have worked to develop both the physical infrastructure for radios (assisting with the construction of new stations and broadcasting towers and the distribution of hand-cranked and solar-powered radios) and the content of radio programs (helping train local residents as reporters and producers and providing workshops on effective radio programming). A number of ongoing projects continue USAID's use of radio programming as a distribution channel for messages which increase civic engagement, deepen knowledge, and influence local communities. USAID has supported new radio networks in Pashto-language in south and southeast Afghanistan [12] along with similar programs to support vulnerable girls in Mozambique, Botswana, and Malawi [13]. In Afghanistan, USAID has partnered with the NGO Internews to build more than 40 radio stations associated with the *Salam Watandar* ("Hello Countrymen") network, which reaches 10 million listeners [14]. These channels provide platforms by which important messages and often unheard voices (such as moderate imams, NGOs, and health workers) can reach large numbers of rural residents.

Radios have served as the main delivery mechanism for several programs designed by the State Department and USAID in Africa to counter violent extremism. The Pan-Sahel Initiative (created in 2002) began as a security-focused initiative and became the more holistic, interagency approach known as the Trans-Sahara Counter-Terrorism Partnership (TSCTP, created in 2005). The Peace through Development (PDEV), started in 2008 and now operating as PDEV II) program, represents USAID's largest contribution to the overall TSCTP programs. Alongside these programs USAID has run a number of smaller-scale programs for countering violent extremism; USAID's CVE programs in Mali, for example, are not within the PDEV framework, while those in Chad and Niger are. TSTCP – the largest of the programs focused on the often ungoverned spaces of northern Africa – targeted "youth empowerment, education, media, and good governance" [15]. Qualitative analyses of the program have argued that, through radio programs, PDEV has strengthened local civic culture, improved information flow, and strengthened moderate voices in the region [16].

This article looks closely at radio programming through a two-level analysis. Initially, it investigates whether multi-vectored U.S. programming in African communities - such as educational, vocational, and capacity-building programs - motivated individuals to listen more regularly to peace and tolerance radio. Then, it shows how higher levels of peace and tolerance radio listening altered four outcomes among the population: civic engagement, support (or opposition) for their host nation working with the West to fight terrorism, support for (or opposition to) the use of violence in the name of Islam, and support for (or opposition to) the imposition of Islamic law.   Through this investigation, the article makes several contributions to

the growing literature on the "soft" side or development approach to countering violent extremism.

First, critics regularly point out that the field of counterterrorism and countering violent extremism lacks objective, quantitative assessments of the influence of existing programs [17]. One review of more than 100 articles focused on countering violent extremism found that less than 10 percent used quantitative analyses [18]. This article provides a large-N, quantitative analysis of norm and behavior change based on U.S.-sponsored radio programming in Africa, using bivariate analyses, ordered probit regression models, and propensity score matching with average treatment effect (ATE) analytical techniques. With consistent results across multiple types of analyses, this article can make more robust claims about the causal connections between variables and outcomes of interest.

Next, this article seeks to test past arguments that broad-vectored U.S. programming in nations such as Mali, Chad, and Niger has increased rates of listening to peace and tolerance channels. That is, using differences between control and treatment groups in three African nations, it confirms past studies that have posited that multiple channels of interventions can increase levels of peace and radio program listening [19]. At the same time, it moves one step beyond previous studies to show how higher levels of listening impact norms and behaviors, such as a willingness to work with the West to fight terrorism and involvement in local community decision-making processes. Through a quasi-experimental design and the transformation of an observational data set into a more matched, experimental one using propensity score matching, this article demonstrates the power of radio to alter listeners' choices and attitudes. It also shows the limits of radio programs, as the same programs had little influence on other, higher level beliefs in the listening population.

Finally, this article adds to the discussion of the role of mass-media channels, such as radio, in altering norms toward outcomes that increase local and international cooperation. While radio has indeed served as a "voice of God" in past horrors, catalyzing violence and activating inter-group hatreds, it also holds the potential to deepen local civic culture, increase positive feelings towards the United States and other countries, and make vulnerable areas more resilient to recruiting by VEOs. These results support the move by Western governments away from reliance on military-based tactics such as drone strikes and covert operations teams toward softer, development-based strategies [20]. Yet the mixed results of the analysis also underscore that radio is neither a "silver bullet" nor a panacea, as several attitudes remained unchanged even among populations with very high levels of peace and tolerance listening. While the effects of radio programming may require a longer time horizon and more consistent application of resources than shorter term strategies such as missile attacks or battlefield operations, their impact, while limited, is indeed measurable.

Theory

Strong evidence from qualitative and quantitative studies in the developing world shows that media programming more generally and radio programming in specific can positively alter norms and behavior in listeners and their communities. Using interviews and focus groups with 182 respondents in the nations of Chad and Niger, for example, one scholar argued that USAID-sponsored radio programming in these nations led to positive individual and community-level changes. Through radio-club discussions about issues such as domestic violence and environmental awareness, residents held more conversations on tolerance and good governance and then mobilized collectively to improve their communities [21]. Similarly, in the nation of Benin, a survey of more than 4,000 households in 2009 showed that radio programming changed behaviors regarding the purchase of anti-malarial bed nets. Households exposed to health-related programming on the radio were more likely to purchase bed nets than similar, non-exposed households [22]. Bed net use has become a pillar in the anti-malarial campaigns conducted by international institutions, NGOs, and host nation governments, and these results supported mass-media campaigns to reduce the incidence of the disease.

Radio programming alters norms and behaviors through several mechanisms. First, radio serves as one of the few widely available media channels in societies with high rates of illiteracy. As a result, large numbers of listeners envision the information on radio programs as highly legitimate; studies in Mali, for example, have shown that the majority of Malians rely on local radio as their primary source of trusted news. Because of these high levels of trust and illiteracy, critics have argued that listeners find it difficult to refute claims made on the air [23]. In this sense radio programming remains a double-edged sword; should extremists use radio broadcasts to diffuse their messages, they can catalyze existing hatreds. As mentioned in the introduction, a number of massacres, such as those in Rwanda, were catalyzed by the use of radio programming to largely illiterate audiences. At the same time, positive messages about inter-ethnic and international cooperation may have a measurable impact on listening populations.

Further, in communities with limited access to outside sources of information, radio programs allow information to bypass "information brokers" in villages such as imams (religious leaders in Islam) and village chiefs who "choose how to shape the information for dissemination in the village once it arrives"[24]. Where Western listeners may have access to hundreds of radio channels, thousands of television stations, and millions of hours of YouTube videos, many residents of developing countries have far fewer channels for new information. Rather than receiving messages that have been filtered through religious or traditional leaders, radio allows listeners can hear the ideas directly and seek to evaluate them for their merits. Scholars have illuminated the ways in which radio programs create "generative loops" in which listeners discuss new concepts in their social network, contact producers and reporters to provide their own opinions on the subject, and then hear their own voices broadcast to society at large [25]. The democratic nature of radio programming adds to its legitimacy and impact.

Finally, mass-media broadcasts can alter widely held norms through habituation and exposure. Simply hearing of an alternative lifestyle or a new approach to a pressing social or health problem can provide listeners with a new set of options in their own lives. A study of *Rede Globo* telenovellas on Brazilian television, for example, showed that while the characters in these shows remained relatively unfaithful to their partners between 1965 and 2004, the rate of divorce among the viewing population rose as their access to the programs rose. The authors found that "exposure to modern lifestyles as portrayed on TV, to emancipated women roles, and to a critique of traditional values was associated with increases in the share of separated and divorced women across Brazil's municipal areas" [26]. Through regular viewing of popular, divorced characters many Brazilian women altered their beliefs about the necessity of remaining in marriages and advocated for divorce. Radio listeners in Africa exposed to new ideas about inter-group cooperation, civic engagement, and positive views of the West may similarly be influenced to change their own views and behaviors.

I now turn to the data to see how broader programming impacted rates of radio listening, and then how those rates of listening changed norms and behaviors.

Data

The responses from more than 1,000 African residents analyzed in this article come from in-person surveys carried out in the nations of Chad, Mali, and Niger by U.S. government-sponsored teams and local survey organizations between October 24, 2010 and December 20, 2010. Limiting surveys to a month-long period better controlled for potential effects from (then) current events which could impact on respondents' answers, such as terror attacks, drone strikes, or government activities. Data from Niger was collected in the village of Gabi, the city of Maradi, and the neighborhoods of Yantala and Lazaret in the city of Niamey. Data for Chad was collected in the neighborhood of Diguel in N'Djamena and in the cities of Moussoro and Massakory and for Mali in the cities of Diré and Timbuktu.

Figure 1 provides a map of the nations and communities sampled for this dataset.

Figure 1: Map of the communities under study

Note: Jeremy Chevrier assisted with the creation of this map

Trained enumerators carried out face-to-face surveys in local languages in Niger and Chad; in Niger, for example, while many residents in the nation speak French, evaluators used Hausa in a number of communities to ensure comprehension. Similarly, in Mali, some surveys were administered in Sonrai, where appropriate. Due to security concerns at the time, the *Association Malienne pour la Survie au Sahel* (AMSS, a survey institute) administered surveys in Mali in Timbuktu and Diré. Evaluators surveying the local population in all three countries were, whenever possible, citizens of that country and did not mention connections to the U.S. government to avoid potentially biasing responses and for security (for respondents and evaluators alike). Enumerators selected homes randomly, and went on to nearby houses if respondents did not answer their knocks or refused to answer questions. Responses to the survey were recorded on a Likert scale from 1 to 5, with the highest values given to responses seen as in alignment with the goals of the United States. For example, for the question, "What is your

opinion of the United States?" the response "very favorable" was coded as 5 while "very unfavorable" was coded as 1. Similarly for the question, "Do you support or oppose the implementation of Sharia (Islamic law)?" opposition was coded as 5 while support was coded as 1.

A dummy variable captures whether or not the respondent lived in a community in Africa exposed to several years of multi-vectored U.S. government programming through USAID. U.S. government-sponsored programs active in these three countries during the period before these surveys included micro-loan frameworks, educational and vocational training, capacity-building for NGOs, and workshops on improving governance. Labeled in the dataset as *treatment or control*, this indicated whether or not U.S. government records showed active programming in the area. In Niger, the neighbourhood of Lazeret had no TSCTP-programming and was classified as a control community, while Yantala had several years of exposure and was a treatment community. The village of Gabi had no TSCTP activities, while Maradi did. Chad's Diguel and Moussoro received TSCTP focused programming, while Massakory had not. Finally, U.S. planners had focused on Timbuktu for five years, while Diré had not received any programming.

Table 1 summarizes the different levels of exposure to government programming found in the sampled control and treatment cities in Mali; the treatment and control communities in Niger and Chad also had strong differences in their levels of interaction with U.S. programs.

Table 1: Differences in Exposure to U.S. Programming in Mali

Program	Timbuktu (Treatment) Presence	Diré (Control) Presence	Details
Radio for Peace Building in Northern Mali	Yes (2 radio stations)	No	Technical training, infrastructure assistance, program production
Road to Reading (PHARE)	Yes (10 medersas)	No	Improve instruction of reading and writing in French
Pro-Mali Nord	Yes (10 trainees)	Partial (1 trainee)	Promote market driven employment through small enterprises
Capacity building for local government	Yes (multiple sites across Timbuktu)	No	Improve efficiency, transparency accountability of officials
Micro-finance "Trickle up"	Yes (13 local agencies)	Partial (one NGO shortlisted)	Microenterprise development with a focus on women, disabled, and youth
Walaikum	Yes (9 communes, multiple workshops, 4 imams, and 1 radio station)	No	Conflict mitigation and peace building for 2000 people

Note: Table adopted from Aldrich, forthcoming article in *Terrorism and Political Violence*

The survey sought to capture socioeconomic conditions for respondents, asking about both *views on the economic situation* and *satisfaction with available services*. Respondents who saw their economic situation as untenable might be more likely to feel animosity toward ethnic groups whom they believe are doing well and less likely to want to cooperate with Western nations that may have little control over, or interest in, local economic conditions. Further, dissatisfaction with available services may turn citizens away from engaging with their town councils and local decision-making bodies out of frustration, or, alternatively, may motivate them to become more involved in the decision making process.

The questionnaire sought to understand the degree of civic engagement and connection to local political institutions through questions about the *degree of participation in local decision making*, beliefs about whether *youth associations make positive contributions,* and the respondents' *satisfaction with decision making processes*. Further, the survey asked if the respondents believed that their *opinions were respected by community leaders*. These questions tested the level of efficacy held by the respondents and whether they believed that they – or others in their community, such as youth associations – could improve the quality of life for the

community. Those who believe that their voices do not matter may not seek to engage in legal or formal channels when they have grievances, or they may be more likely to find common cause with radicals who seek to use violence to make their points. Many studies have underscored that higher levels of civic participation reflect deeper ties to the community and more trust in existing institutions [27].

The survey asked broadly if respondents regularly *heard messages about peace and tolerance* from any source and then more specifically if they *listened to radio programs about peace and tolerance*. These questions captured the degree to which the respondents lived in communities where they might be exposed from multiple sources, including social networks, educational settings, or mass media diffusion to messages about cooperation and tolerance, and more specifically the intensity with which they listened to peace and tolerance radio programs. Levels of radio listening may be a function of the degree of exposure to broader U.S. programming [28], and higher levels of radio listening can in turn alter the listener's attitudes and behaviors.

Many violent extremist organizations have pushed narratives in which the West is seen undermining Islamic principles, damaging historical social relationships, and eroding sacred traditions. To better understand how respondents envisioned Western nations and the United States in particular, evaluators asked about their *opinion of the United States*, if *their government should work with West to fight terror*, and *whether the United States was fighting Islam or terrorism*. These variables seek to understand the respondents' vision of the United States, if they saw the United States, United Kingdom, and other Western nations as partners, and if they believed that United States truly sought to end terrorism, or instead focused on encircling Islam.

The next block of survey questions focused on higher level cultural beliefs, such as *whether violence serves as effective problem solving method*, whether the *use of violence in the name of Islam is justified*, whether *Al Qaeda's violent activities are permitted under Islamic law*, and *support (or opposition) for the implementation of Islamic law*. In many countries in northern and western Africa, traditional religious norms are more syncretic and based on pre-existing animist traditions than the strict Wahhabi and Salafist fundamentalism taught by clerics trained in Saudi Arabia, Afghanistan, and Pakistan. Recently, for example, Islamic militants of Ansar Dine (Defenders of the Faith) have damaged the shrines and infrastructure of historic and sacred areas in Timbuktu, Mali, arguing that local religious leaders have deviated from core traditions. More generally, these survey questions seek to probe respondents' feelings about stricter forms of Islam and the use of violence in the name of Islam.

The poll controlled for demographic characteristics such as the *sex* and *age* of respondents. Scholars have long argued that sex strongly determines behavioral and cognitive outcomes, with some arguing that women and men display differences due to intrinsic biological factors and others arguing for the role of education and socialization [29]. Whatever the reasons, analyses in Mali have shown broad differences between women and men in the areas of education, health

care, governance, and economic growth [30], and thus controlling for sex is critical. Another critical factor to take into account is age, as many attitudes develop through exposure, life experience, and education [31]. Additional controls in the dataset include dummy variables by country to control for any differences across respondents from Chad, Niger, and Mali.

Finally, I created a new dichotomous variable to capture if respondents had an *above average rate of peace and radio listening*. By doing so, I could better structure the propensity score matching and average treatment effects analyses, as they require dummy variables [32]. This variable was set at 1 if the levels were above the average level of listening and 0 if below. Table 2 below provides descriptive statistics about the dataset.

Table 2: Descriptive Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
Community exposed to U.S. government programming	1064	0.64	0.48	0	1
Views on economic situation	859	2.93	1.03	1	5
Satisfaction with available services	1059	3.01	1.05	1	5
Degree of participation in decision making	1054	2.76	1.37	1	5
Youth associations make positive contribution	857	2.69	1.37	1	5
Satisfaction with decision making process	853	2.97	1.14	1	5
Opinions respected by community leaders	859	2.60	1.37	1	5
Violence as effective problem solving method	839	4.29	1.14	1	5
Hearing messages about peace and tolerance	852	3.66	1.22	1	5
Listen to radio programs about peace and tolerance	1058	3.62	1.26	1	5
Opinion of the United States	1038	3.66	1.14	1	5
Should our government work with West to fight terror	1037	3.54	1.62	1	5
Use of violence in the name of Islam is justified	1052	4.24	1.22	1	5
Al Qaeda's violent activities permitted under Islamic law	1008	4.40	1.10	1	5
Support for implementation of Sharia law	1055	2.06	1.65	1	5
U.S. fighting Islam or terrorism	1045	3.96	1.44	1	5
Sex	1042	0.66	0.47	0	1
Age (by group)	1057	2.98	1.42	1	5
Chad	1064	0.49	0.50	0	1
Niger	1064	0.32	0.47	0	1
Mali	1064	0.19	0.39	0	1
Above average rate of peace and radio listening	1058	0.55	0.50	0	1

Methodology

This analysis takes place in two steps. In step one, I seek to understand the relationship between the control and treatment groups, that is, between African communities and cities (not) exposed to U.S. government programming and the outcome variable of listening to peace and tolerance programming, using bivariate plots and chi-squared statistics. In the first stage of the analysis, the dependent variable (that is, the outcome of interest) is the level of peace and tolerance radio program listening. Then, in the second stage, I explore exactly how higher levels of listening to peace and tolerance programming may have influenced various norms, using bivariate, multivariate, and propensity score matching analysis. In the latter stage, I look closely at four outcomes of interest (working with the West to combat terrorism, participation in decision making, support or opposition to the use of violence in the name of Islam, and support or opposition to the imposition of Sharia) to see if they were influenced by independent variables such as higher levels of radio listening, age, sex, socioeconomic conditions, and so forth.

The initial analyses rely on the bivariate technique of chi-squared analysis, which uses statistical expectations about the distribution of variables to estimate whether the null hypothesis is supported or not. While this hypothesis test remains among the most popular, when used with two variables it is unable to control for potential confounding factors (such as age, gender, socioeconomic conditions, higher order norms, and so forth). Therefore, after setting up the likely existence of a relationship between the variables of interest using bivariate analyses (and graphing the results using box-and-whisker plots), I move on to more sophisticated, multivariate approaches. When carrying out maximum likelihood regression analyses, ordered probit analysis is most appropriate when dealing with the ordinal dependent variables found in this dataset, such as those generated from Likert-scaled questions. That is, these dependent variables are ranked, clearly ordered, and bounded (in this case, made up of integers from 1 to 5) with outcomes indicating gradations or steps. In cases involving bounded intervals, a standard regression analysis (such as ordinary least squares, or OLS) is inappropriate due to nonlinear parameters.

While the initial data collection process for the surveys resembled a quasi-experiment, in that it involved control and treatment groups, these communities were not chosen at random. Because of the deliberate selection of communities with and without U.S. government programming, the dataset remains strongly observational, and thus more susceptible to biased estimators. For example, the assignment of individuals to the treatment or control groups may have been deliberate; certain communities may have been selected based on a belief that their responses would support programmatic goals. To handle this problem, propensity score matching and average treatment effects allow us to make stronger arguments for a causal relationship between variables by paring away unlike observations and, in a sense, recreating a smaller, but more experimental dataset on common support. Pre-processing creates a twin study-like dataset where both the new treatment and control groups were equally likely to have received the treatment, thus making them more comparable [33].

By matching a resident who had higher levels of radio listening to a resident who listened less (or not at all) but was equally likely to have listened based on covariates such as age, gender, socioeconomic conditions, attitudes toward the West, and so on, we can better evaluate the differences between the two in terms of our four outcomes of interest. Unlike standard regression analyses, which may compare apples and oranges (people who listened to radio programming more often may have covariates quite different than those who did not), matching seeks to reduce the discrepancies created by non-experimental data collection methods. Further, once the propensity score matching has been completed and the respondents on common support compared to one another, we can simply measure the difference between them in terms of the quantity of interest. We call this outcome the average treatment effect (ATE), and, as it involves no further manipulation of the data or belief that we have properly structured the model (as there is no modeling in this procedure), it is simultaneously easier to understand than most regression-based approaches and based on more fewer – and more believable – assumptions [34].

Results

I begin with an investigation of the relationship between exposure to broader U.S. programming and levels of radio listening. Figure 2 displays the differences in outcomes between control and intervention groups in Mali, Chad, and Niger, with a noticeably higher level of listening for residents of the treatment communities in these countries. The difference between the control group which lacked this exposure and the control group which received it, is statistically significant, with a chi-squared score of .001 (with more than 1000 observations). There is clearly a strong correlation between the two, but without additional controls it is difficult to make claims about a causal relationship.

Figure 2: Differences in outcomes between control and intervention groups in Mali, Chad, and Niger (higher values indicate more regular listening)
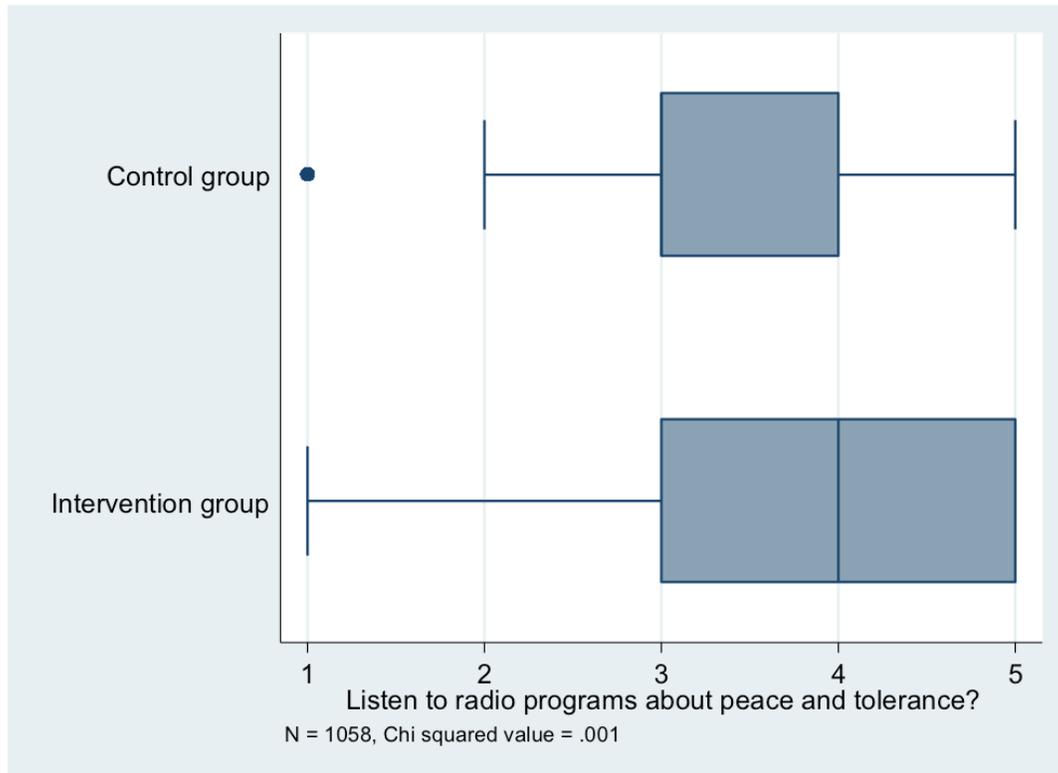
To deepen the investigation of the relationship between the control and treatment communities and radio listening levels, I ran an ordered probit analysis with the dependent variable of levels of listening to peace and tolerance radio and controlling for a large number of factors beyond exposure to U.S. programs (or lack thereof). Table 3 provides the estimated coefficients for the model; it is important to note that the coefficient for treatment/exposure is large and positive (the largest of the estimated coefficients, and because the variables all sit on the same scale we are able to compare coefficients across variables) and the P-value is less than .0009, meaning that exposure has a large, statistically significant influence on levels of radio listening.

Table 3: Estimated regression coefficients for an ordered probit model on listening to peace and tolerance radio

	Coef.	Std. Err.	z	P>z	Low CI	High CI
Community exposed to U.S. government programming	0.33	0.09	3.52	0.000	0.14	0.51
Views on economic situation	-0.02	0.06	-0.27	0.789	-0.13	0.10
Satisfaction with available services	0.14	0.06	2.52	0.012	0.03	0.25
Degree of participation in decision making	0.10	0.04	2.32	0.020	0.02	0.18
Youth associations make positive contribution	0.07	0.04	1.95	0.052	0.00	0.15
Satisfaction with decision making process	0.08	0.05	1.71	0.087	-0.01	0.17
Opinions respected by community leaders	0.04	0.04	0.96	0.338	-0.04	0.11
Violence as effective problem solving method	-0.10	0.04	-2.43	0.015	-0.19	-0.02
Opinion of the United States	0.31	0.04	7.54	0.000	0.23	0.39
Should our government work with West to fight terror	0.06	0.03	2.25	0.024	0.01	0.12
Use of violence in the name of Islam is justified	0.02	0.04	0.53	0.597	-0.06	0.10
Al Qaeda's violent activities permitted under Islamic law	-0.04	0.04	-0.94	0.347	-0.13	0.05
Support for implementation of Sharia law	0.01	0.03	0.38	0.703	-0.04	0.06
U.S. fighting Islam or terrorism	-0.10	0.03	-3.31	0.001	-0.16	-0.04
Sex	-0.18	0.09	-2.01	0.045	-0.35	0.00
Age	0.05	0.03	1.63	0.103	-0.01	0.11
/cut1	0.28	0.32			-0.35	0.91
/cut2	0.65	0.33			0.01	1.29
/cut3	1.74	0.33			1.10	2.39
/cut4	2.42	0.33			1.77	3.08

Note: N=733; model uses robust standard errors

While other variables, including opinion of the U.S. and sex, are also significant correlates with levels of listening, this first section has reinforced past findings that communities with over-time exposure to U.S. educational, vocational, and capacity-building programming are more likely to listen to peace and tolerance radio programming holding constant other factors.

I now move on to explore the relationship between higher levels of programming and norms and behaviors. The degree to which higher levels of listening alter levels of support (or opposition) to the use of violence in the name of Islam is displayed in Figure 3. With more than 1,000 responses, the chi-squared value for this analysis is .016, which is within the realm of the somewhat arbitrary range of "statistical significance."

Figure 3: Differences support for violence in the name of Islam by level of peace and tolerance radio program listening (higher values indicate less support)
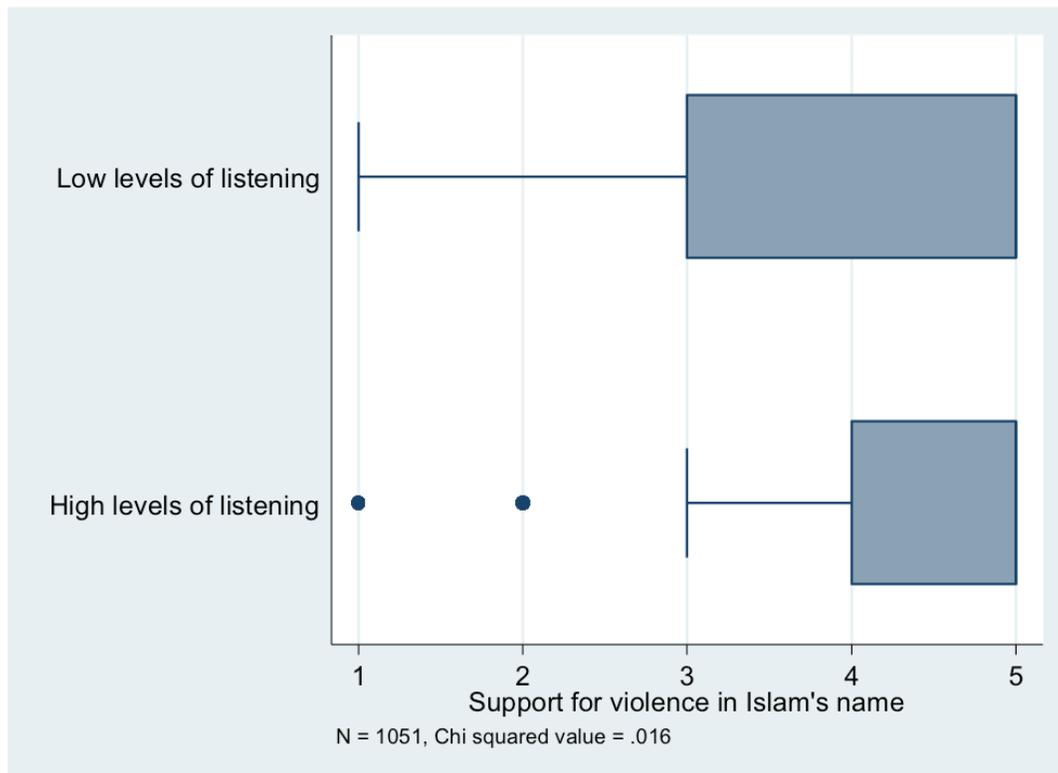
Without additional variable controls, we cannot definitively resolve whether individuals listening to more peace and tolerance radio are more likely to oppose the use of violence under the banner of religion. Resolving the question of the actual strength of this relationship will require a more sophisticated analysis that controls for other factors.

I now look at the connection between levels of peace and radio listening and the behavior of civic engagement. Figure 4 displays the differences in level of civic engagement by level of peace and tolerance radio programming. With more than 1,000 respondents, and a chi-squared value of .0001, this initial analysis shows a deep relationship between the two.

Figure 4: Differences in level of civic engagement by level of peace and tolerance radio program listening (higher values indicate more participation)
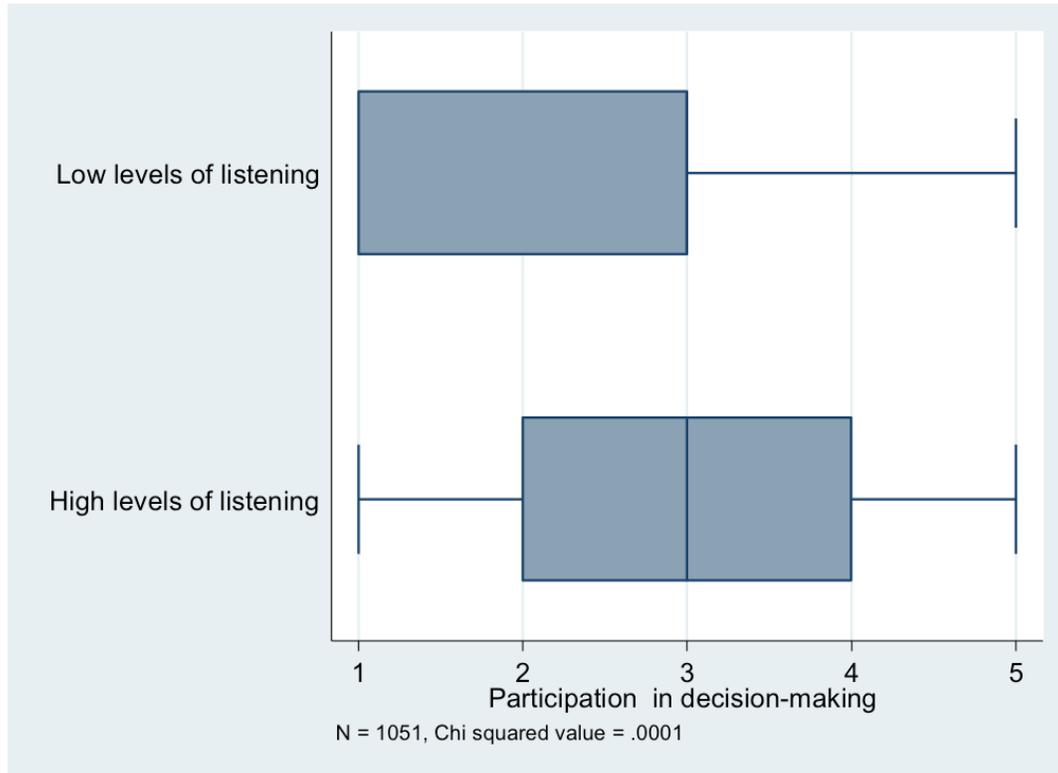
Individuals who listened to more peace and tolerance radio programming were more likely to report deeper levels of civic engagement in their communities. Having set the stage for these relationships, I now investigate the connections between our dependent and independent variables using ordered probit analyses and propensity score matching.

I seek to understand if there is a measurable relationship between levels of listening to peace and tolerance radio programming and support (or opposition) to working with the West to combat terrorism. The estimated regression coefficients for an ordered probit model on working with the West to combat terrorism are displayed below in Table 4.

Table 4: Estimated regression coefficients for an ordered probit model on working with the West to combat terrorism

	Coef.	Std. Err.	z	P>z	Low CI	High CI
Views on economic situation	-0.12	0.06	-2.07	0.038	-0.23	-0.01
Satisfaction with available services	0.14	0.06	2.32	0.020	0.02	0.25
Degree of participation in decision making	0.06	0.04	1.41	0.158	-0.02	0.14
Youth associations make positive contribution	0.12	0.03	3.34	0.001	0.05	0.19
Satisfaction with decision making process	0.17	0.05	3.37	0.001	0.07	0.26
Opinions respected by community leaders	-0.10	0.04	-2.60	0.009	-0.18	-0.03
Violence as effective problem solving method	-0.01	0.05	-0.31	0.757	-0.11	0.08
Listen to radio programs about peace and tolerance	0.10	0.04	2.57	0.010	0.02	0.18
Opinion of the United States	0.25	0.04	5.46	0.000	0.16	0.33
Use of violence in the name of Islam is justified	0.12	0.04	3.07	0.002	0.04	0.19
Al Qaeda's violent activities permitted under Islamic law	0.05	0.04	1.13	0.259	-0.03	0.13
Support for implementation of Sharia law	-0.09	0.03	-3.29	0.001	-0.15	-0.04
U.S. fighting Islam or terrorism	0.05	0.03	1.76	0.078	-0.01	0.11
Sex	-0.30	0.09	-3.27	0.001	-0.49	-0.12
Age	0.05	0.03	1.53	0.125	-0.01	0.11
/cut1	1.86	0.33			1.206	2.52
/cut2	2.08	0.34			1.422	2.74
/cut3	2.52	0.34			1.853	3.18
/cut4	2.99	0.34			2.312	3.66

Note: N=733, robust standard errors

A number of variables had statistically significant relationships with this outcome, including sex, attitudes about violence in Islam's name, opinion of the United States, efficacy measures, and views on the economic situation. As shown through the initial analysis, and most important here, the variable of listening to peace and tolerance radio was statistically significant (a p-value of .01) and had a coefficient in line with the effects of other variables (estimated at .1). Holding other factors equal, there is a measurable connection between radio listening and support for international collaboration.

Next, Table 5 shows the estimated regression coefficients for an ordered probit model with the outcome of participation in decision-making. A number of independent variables, including satisfaction with available services, a belief that youth associations make a positive contribution, satisfaction with the decision-making process, and believing that one's opinions were respected by community leaders were statistically significant and had a positive relationship on decision making. Most importantly, the variable of listening to peace and tolerance radio also was

statistically significant (with a p-value of .016) and had a positive estimated coefficient, meaning that higher levels of listening were associated with higher levels of decision-making, holding other factors constant.

Table 5: Estimated regression coefficients for an ordered probit model on participation in decision-making

	Coef.	Std. Err.	z	P>z	Low CI	High CI
Community exposed to U.S. government programming	-0.16	0.10	-1.59	0.112	-0.35	0.04
Listen to radio programs about peace and tolerance	0.10	0.04	2.40	0.016	0.02	0.19
Views on economic situation	-0.06	0.06	-1.04	0.300	-0.17	0.05
Satisfaction with available services	0.22	0.06	3.74	0.000	0.10	0.33
Youth associations make positive contribution	0.24	0.04	6.42	0.000	0.17	0.32
Satisfaction with decision making process	0.23	0.05	4.46	0.000	0.13	0.33
Opinions respected by community leaders	0.23	0.04	5.65	0.000	0.15	0.31
Violence as effective problem solving method	-0.08	0.04	-1.85	0.064	-0.16	0.00
Opinion of the United States	0.01	0.04	0.12	0.903	-0.08	0.09
Should our government work with West to fight terror	0.05	0.03	1.55	0.122	-0.01	0.11
Use of violence in the name of Islam is justified	-0.06	0.04	-1.60	0.109	-0.14	0.01
Al Qaeda's violent activities permitted under Islamic law	0.02	0.04	0.37	0.714	-0.07	0.10
Support for implementation of Sharia law	-0.01	0.03	-0.22	0.828	-0.06	0.05
U.S. fighting Islam or terrorism	0.01	0.03	0.44	0.658	-0.05	0.07
Sex	0.02	0.09	0.19	0.849	-0.16	0.19
Age	0.01	0.03	0.47	0.639	-0.04	0.07
/cut1	1.78	0.38			1.04	2.51
/cut2	2.19	0.38			1.44	2.93
/cut3	3.21	0.40			2.43	3.98
/cut4	4.02	0.40			3.23	4.80

Note: N=733, robust standard errors

Due to space considerations, repetition, and a lack of statistical significance, I have omitted the coefficient tables for the remaining two outcomes of interest: support for violence in the name of Islam and support for implementing Sharia. Radio listening did not have a statistically significant relationship with either of these two outcomes, with a p-value of .954 for violence in Islam's name and .735 for implementing Islamic law.

Finally, I turn to the results of the propensity score matching and average treatment effect analyses. Given that ordered probit maximum likelihood analysis found evidence that only two of the four outcomes of interest – civic participation and support for working with the West – were connected to higher levels of peace and tolerance radio listening, I display the results only

for these two outcomes. Table 6 demonstrates that, using nearest neighbor matching with replacement, individuals with higher levels of radio listening were more likely to participate in decision-making activities and more likely to support working with the West to combat terrorism.

Table 6: Propensity matching score average treatment effect outcomes for high and low levels of peace and tolerance radio listening

Outcome of Interest	Matching method	Coef.	Std. Err.	z	P>z	Low CI	High CI	N
Participation in decision making	Nearest neighbor matching with replacement, standard average treatment effect (SATE)	0.25	0.11	2.27	0.02	0.03	0.46	764
Working with the West to counter terrorism	Nearest neighbor matching with replacement, standard average treatment effect (SATE)	0.29	0.13	2.17	0.03	0.03	0.54	757

Note: Matching on: community exposed to U.S. government programming (control/treatment), views on economic situation, satisfaction with available services, youth associations make positive contribution, satisfaction with decision making process, violence as effective problem solving method, opinion of the United States, should our government work with West to fight terror, use of violence in the name of Islam is justified, U.S. fighting Islam or terrorism, sex, and age.

Matching on a large number of potential confounding factors, including age, sex, views on the economic situation, satisfaction with services, belief in the power of youth associations, opinion of the United States, whether the United States is fighting terror or Islam, and whether violence is an effective way of solving problems, these outcomes are statistically significant (notice the p-

values of .02 and .03 for decision making and working with the West, respectively). Further, the results are not small: the average difference between individuals with high listening and those with low listening was around .25 on a 5-point scale for both of these outcomes.

Discussion and Future Directions for Research

This article has used a variety of techniques to better understand the relationship between ongoing U.S. government projects in Mali, Chad, and Niger in the field of countering violent extremism through radio programming. While the structure of the initial interventions did not meet the "gold standard" of randomized, double-blind experiments, nonetheless this article has been able to extract critical information from the interviews with more than 1,000 respondents across Chad, Niger, and Mali. Beginning with bivariate analyses, and progressing through multivariate regression and propensity score matching, I have sought to transform a quasi-experimental dataset into a more experimental structure to better make causal arguments about the relationships between factors. The data showed that residents of communities with ongoing, multi-vectored programming were more likely to engage in peace and tolerance radio listening, and then that heavier listeners had measurably different behaviors and norms than their less-tuned-in counterparts.

While this article has focused primarily on the role played by U.S. government programs and radio listening, other variables regularly showed up as important, including sex. Women and men had noticeably different patterns of listening to the radio and in terms of their belief that their nation should work with the West to combat terrorism. Results from the regression analyses indicate that men are less likely to listen to peace and tolerance radio (p-value of .045), less likely to support working with the West to combat terrorism, and less likely to support both violence in the name of Islam (p-value of .0001) and the implementation of Sharia (p-value of .0001) at statistically significant levels. These data shed additional light on anecdotal reports that women are more likely than men to listen to programming in radio clubs [35] along with recent fieldwork in Mali which found that women, more than men, grouped together to listen to program to radio in shared, covered areas [36].

More broadly, observers have pointed out that many policy-makers have ignored the ways in which counter-terrorism and counter-insurgency approaches overlook differences in their effects on women and men. [37] U.S. government agencies have emphasized the need for better understanding of the role of gender as both a brake on and driver of violent extremism [38]. The data analyzed here support efforts to distinguish between women and men when thinking about their involvement in and response to programming. If women are already more likely to engage in social listening to radio programs, and hence listen more often to peace and tolerance radio programming, then future efforts should seek to deliver programming to men in different ways.

Further, while significant resources went into the acquisition of data for this article, the weaknesses of this study should guide the agenda for the next wave of studies. Future research on development-based CVE policies should seek to carry out randomized, double-blind field experiments to ensure that we can better measure the impact of interventions and treatments. The best field studies from Africa subject-matter experts have used completely randomized studies to better ensure absence of bias [39]. Next, while listeners self-reported the level of listening to peace and tolerance radio, their answers may not reflect empirical reality; for example, respondents may have underestimated or overestimated their levels of listening. Some have overcome this problem by controlling access to media and directly providing the radio programming to the treatment communities [40].

Finally, social networks may have a strong impact on the perception of social norms [41], and these surveys were not designed to take such conditions into account. It is possible that some individuals in a community may have been influenced by social pressures and local norms alongside the effects of the radio programming. Finally, rather than relying on a side-by-side comparison of listeners and communities alone, future studies should undertake a longitudinal study of interventions, beginning with baseline measurements in both the control and treatment communities and moving on to confirm individual-level exposure to relevant messages. By establishing baseline parameters in the treatment and control communities, the study could be structured along a "difference-in-difference" framework that has been quite successful in economic research.

Conclusion

Many observers have argued that the U.S. military should take a back seat to USAID, the State Department, and other civilian-led government agencies in ongoing countering violent extremism efforts around the world [42]. This study supports calls for increased USAID presence in overall CVE programming as ongoing soft-side efforts in developing nations in Africa have generated measurable, statistically significant results. The data show that residents of communities where the United States has run educational, vocational, and capacity-building projects, such as Timbuktu in Mali, are more likely to listen to higher levels of peace and tolerance programming than similar, nearby communities such as Diré. Higher levels of listening, in turn, have altered the norms and behaviors of listeners in ways that will connect them more firmly to the governance structures of their communities and make them more favorable to pursuing alliances with the West against terrorist groups.

Recent developments in Mali have underscored the gaps between the violent extremist groups attacking indigenous forms of religious practice and those seeking to implement strict forms of justice under the aegis of Islam. Refugees from northern Mali have described how the messages from groups such as Ansar Dine have not resonated with local communities, and how such

groups have relied on intimidation and force in their rise to prominence. In Mali, USAID projects and U.S. government programming more broadly have perhaps helped to reinforce native tolerance and drive a wedge between residents and well-armed outsiders seeking to impose their will on the local population.

The low-cost nature of radios and their broad reach should make them an attractive mechanism for Western governments seeking to carry out norm messaging in Africa. With the development of hand-cranked and solar radios, community radio broadcasts provide a relatively expensive, scalable, and sustainable approach to information diffusion. Studies have shown some variability in the costs (and revenues) of radio stations in Africa [43]. For example, one study estimated the cost of necessary equipment for 20 100-watt radio stations which can reach up to 25,000 people are less than $20,000, while others argued that "[a] small FM station, with a 40-watt transmitter, mast, and basic studio equipment can be bought for about US$3,000, excluding shipping and customs duties" [44]. These financial requirements are drops in the bucket when compared with the massive amounts of military spending in Africa by the West.

It is important to recognize that simply increasing the availability of radios and peace and radio programming in developing nations will not serve as a panacea for economic and social ills. This study showed how two of the four outcomes of interest were unaltered by higher levels of listening. Past studies using randomised experiments in Rwanda have found similar mixed outcomes, where "[t]he reconciliation radio program did not change listeners' personal beliefs but did substantially influence listeners' perceptions of social norms" [45]. That is, radio-transmitted norm messaging had specific, limited effects. Further, there may be negative social network externalities resulting from the diffusion of new media into traditional villages. One study of 600 villages in East and Central Java, Indonesia, showed that increased reception of TV and radio signals resulted in less trust and lower levels of involvement in voluntary organizations. More specifically, "[e]ach additional channel of television reception is associated with 7 percent fewer social groups existing in the village, and with each adult in the village participating in about 4 percent fewer types of groups over a 3 month period" [46]. It is also important to recognize that women and men responded to the programming in different ways, with men less likely to engage peace and tolerance programming from the start. Hence authorities should ensure that they anticipate likely variation between the sexes in their responses and seek to alter their programming accordingly.

Despite its limitations, this research has shown the promise that comes with radio programming. Where radios have served in past conflict as a "voice of God" and encouraged schism and violence, they also hold the potential to reduce conflict and increase cooperation. Future attempts to curtail violent extremist groups around their world should deepen their connections to soft-side and development-based tactics and use social science-based methods to measure their impact.

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Notes

[1] The name of the station refers to Rwanda's nickname as "the land of a thousand hills." Radio programming catalyzed a number of existing factors including the Belgian colonial practices that used socio-economic indicators to label Rwandans as Tutsi or Hutu, years of scapegoating of Tutsis during crises, anti-Tutsi violence in the 1950s and 1960s, belief that the Tutsi were foreign invaders, and the formation of the Rwandan Patriotic Front (RPF) in Uganda under Paul Kagame. The RPF's invasion of Rwanda in 1990 and the shooting down of President Juvénal Habyarimana's plane at the Kigali airport were also among the many layers undergirding the massacres. For a full discussion of this topic, see Darryl Li. 2004. Echoes of violence: considerations on radio and genocide in Rwanda. *Journal of Genocide Research* 6(1) 9–27; Jean-Pierre Chretien, et al., (Eds). 1995. *Rwanda, les medias du genocide*. Paris: Karthala; Lee Ann Fujii. 2004. Transforming the moral landscape: the diffusion of a genocidal norm in Rwanda. Journal of Genocide Research 6(1), pp. 99–114; and E. Elizabeth, 2009. Reducing Intergroup Prejudice and Conflict Using the Media: A Field Experiment in Rwanda. *Journal of Personality and Social Psychology* Vol. 96, No. 3, pp. 574–587.

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