OSF PREREGISTRATION

Title

Reducing Inter-Religious Animosity Between Christians and Muslims in Nigeria: Testing an Edutainment Radio Program

Description

Entertainment-education interventions (aka "edutainment" interventions) attempt to create social change by embedding content in entertainment programs intended to change viewer's attitudes, norms, and / or behavior. In this research, we will test whether entertainment-education interventions that portray the challenges and successes of intergroup interactions can decrease intergroup animosity and improve intergroup relations. We also aim to test whether narratives are more effective when they include an explicit acknowledgment of intergroup anxiety vs. no mention of intergroup anxiety. Finally, we aim to test whether entertainment-education interventions are more effective in reducing intergroup animosity when consumed alone vs. with others. This research will be conducted with a sample of Christians (n = 2500) in Kaduna, Nigeria, a region with a history of tension and conflict between Christians and Muslims.

STUDY INFORMATION

Hypotheses

List specific, concise, and testable hypotheses. Please state if the hypotheses are directional or non-directional. If directional, state the direction. A predicted effect is also appropriate here. If a specific interaction or moderation is important to your research, you can list that as a separate hypothesis.

Treatment (T1 or T2) vs. Placebo Radio Program:

H1: Listening to an edutainment radio program featuring a storyline about a growing friendship between a Christian woman and a Muslim woman (vs. a placebo radio program about mosquito nets) will (1) reduce inter-religious animosity, threat perceptions, and support for inter-religious violence, and (2) increase inter-religious interaction.

- We expect to see a reduction in inter-religious animosity, threat perceptions, and support for inter-religious violence when measured immediately post-treatment.

- We expect to see a reduction in inter-religious animosity, threat perceptions, and support for inter-religious violence, and to see an increase in inter-religious interaction, when measured one month post-treatment.
- Based on our previous studies, we expect that willingness to interact with the other religion and the endorsement of positive stereotypes about the other religion will already be high in the placebo group, so we may not be able to detect differences between treatment and placebo.

Treatment 1 vs. Treatment 2:

H2: Listening to an edutainment radio program that explicitly acknowledges anxiety around inter-religious interaction (vs. the same storyline minus the explicit acknowledgment of inter-religious anxiety) will be more effective in (1) reducing inter-religious animosity, threat perceptions, and support for inter-religious violence, and (2) increasing inter-religious interaction.

- We expect to see this pattern of results when measured immediately post-treatment and when measured one month later (inter-religious interaction is only measured during the one-month follow-up).

Interaction Effects: Listening to the Treatment (T1 or T2) vs. Placebo Radio Program Alone vs. with Others

H3a: The effects of the edutainment radio program on inter-religious animosity, threat perceptions, support for inter-religious violence, and inter-religious interaction will be larger for respondents who listen to the program with others, compared to those who listen to it alone.

- We expect to see this pattern of results when measured immediately post-treatment and when measured one month later (inter-religious interaction is only measured during the one-month follow-up).

H3b: Listening to the edutainment radio program with others (vs. alone) will lead to larger changes in perceptions of social norms around inter-religious attitudes and interaction.

- We expect to see this pattern of results when measured immediately post-treatment and when measured one month later.

NOTE: H3 may be explored and written up in a different paper than H1 and H2. If so, analyses related to H3 will be reported in that separate paper, not in the paper where we explore H1 and H2.

DESIGN PLAN

Study type

Please check one of the following statements:

X Experiment - A researcher randomly assigns treatments to study subjects, this includes field or lab experiments. This is also known as an intervention experiment and includes randomized controlled trials.

Observational Study - Data is collected from study subjects that are not randomly assigned to a treatment. This includes surveys, "natural experiments," and regression discontinuity designs.

Meta-Analysis - A systematic review of published studies.

Other

Blinding

Blinding describes who is aware of the experimental manipulations within a study. Mark all that apply.

X No blinding is involved in this study.

For studies that involve human subjects, they will not know the treatment group to which they have been assigned.

Personnel who interact directly with the study subjects (either human or non-human subjects) will not be aware of the assigned treatments. (Commonly known as "double blind")

Personnel who analyze the data collected from the study are not aware of the treatment applied to any given group.

Is there any additional blinding in this study? No

Study design

Describe your study design. The key is to be as detailed as is necessary given the specific parameters of the design. There may be some overlap between this question and the following questions. That is OK, as long as sufficient detail is given in one of the areas to provide all of the requested information. Examples include two-group, factorial, randomized block, and repeated measures. Is it a between (unpaired), within-subject (paired), or mixed design? Describe any counterbalancing required.

This is a randomized experiment with a 3 (radio program: treatment 1 vs. treatment 2 vs. placebo) x 2 (listen alone vs. listen with others) design. Outcomes will be assessed immediately post-treatment, and in a one-month follow-up survey.

Randomization

If you are doing a randomized study, state how you will randomize, and at what level. Typical randomization techniques include: simple, block, stratified, and adaptive covariate randomization. If randomization is required for the study, the method should be specified here, not simply the source of random numbers.

In the initial survey, participants will be randomly assigned using simple random assignment to one of the three radio programs (treatment 1, treatment 2, placebo), and to listen to the radio program alone vs. with others. The randomization will be done in the offline survey software SurveyCTO.

SAMPLING PLAN

Existing Data

Preregistration is designed to make clear the distinction between confirmatory tests, specified prior to seeing the data, and exploratory analyses conducted after observing the data. Therefore, creating a research plan in which existing data will be used presents unique challenges. Please select the description that best describes your situation. See https://cos.io/prereg for more information.

Registration prior to creation of data

X Registration prior to any human observation of the data

Registration prior to accessing the data

Registration prior to analysis of the data

Registration following analysis of the data

Explanation of existing data

If you indicate that you will be using some data that already exist in this study, please describe the steps you have taken to assure that you are unaware of any patterns or summary statistics in the data. This may include an explanation of how access to the data has been limited, who has

observed the data, or how you have avoided observing any analysis of the specific data you will use in your study.

Data collection began on July 12, 2022. The data on our outcome measures has not been viewed by any human.

Data collection procedures

Please describe the process by which you will collect your data and your inclusion and exclusion criteria. If you are using human subjects, this should include the population from which you obtain subjects, recruitment efforts, payment for participation, how subjects will be selected for eligibility from the initial pool, and your study timeline. For studies that don't include human subjects, include information about how you will collect samples, duration of data gathering efforts, source or location of samples, or batch numbers you will use.

Study population: Christian adults (aged 18+) living in Kaduna South, an area of the capital city of Kaduna State, Nigeria.

Recruitment strategy & eligibility criteria:

Potential subjects will be recruited from the 19 residential neighborhoods that make up Kaduna South, a region of Kaduna City (the capital of Kaduna State, Nigeria) that is predominantly Christian. Neighborhoods are randomly ordered, and will be visited in this order. Each day, mixed-gender pairs of interviewers will be given GPS coordinates as a "starting point" within the neighborhood. The starting points are chosen so that interviewers will cover all areas of the neighborhood, from the center to the outskirts.

From their start points, the interviewers will approach every 3rd structure, and will invite the household to participate in the study. If nobody is home or able to speak with the interviewer at that time, the household will be visited on another day to attempt to recruit them. If they still aren't home or available to speak during the second attempt, we will stop trying to recruit the household.

If someone in the household is willing to speak to the interviewer, they will be asked if their household is interested in participating in a research study. If yes, the interviewer will work with a member of the household to determine whether / how many people from the household meet the eligibility criteria:

- 18 years of age or older
- Actively living in the household (defined as a person who sleeps at the house most evenings, and considers this to be their primary residence)

- Is capable of comprehending survey questions in English
- Is the same gender as the interview (all interviews are gender matched with the interviewer to respect cultural norm)

The interviewer will list all eligible household members in the survey form on their tablet, and the survey software (SurveyCTO) will randomly select one of the household members to be included in the study.

If the selected respondent is present, they will be read a short oral recruitment script. They will then be asked if they would like to participate in the study right then. If so, the interviewer will continue with the consent process. If the subject would instead like to take the survey another time, the interviewer will make an appointment. If the respondent is not present, we will attempt to reach them on another day. If we have their contact information, we will make three attempts to reach the respondent over the phone to book a survey appointment. If we do not have their contact information, we will return to the respondent's house to attempt to survey them.

Once an interviewer is with a recruited respondent, they will first make sure the respondent meets the eligibility criteria: is deemed capable of consenting by the enumerator, is at least 18 years of age, and is Christian.

All respondents who complete the initial survey will also be invited to participate in the follow-up survey one month later. At the end of the survey, the interviewer will ask whether they are willing to participate in the follow-up.

Compensation: For the initial survey, participants will receive 500 Naira (~$1.20) in cash for their participation. This will be given to participants in person right after they complete (or withdraw early from) the survey. For the follow-up survey, participants will receive 1000 Naira (~$2.40) in cash, which again will be given to them in person right after they complete (or withdraw early from) the survey.

Study timeline: Data collection began on July 12, 2022. The follow-up survey will begin on August 11, 2022. Data collection will be completed by October 10, 2022.

Sample size

Describe the sample size of your study. How many units will be analyzed in the study? This could be the number of people, birds, classrooms, plots, or countries included. If the units are not individuals, then describe the size requirements for each unit. If you are using a clustered or multilevel design, describe how many units are you collecting at each level of the analysis. This might be the number of samples or a range, minimum, or maximum.

The intended sample size is 2500. Any deviations from this sample size will be a result of logistical challenges during fieldwork.

Sample size rationale

This could include a power analysis or an arbitrary constraint such as time, money, or personnel.

We conducted power calculations based on data from a similar radio experiment we ran in Kaduna, Nigeria in 2019. We only used data from Christian respondents in that experiment (n = 1095), since that's the population we're focusing on in this study.

Note that the items were on a 5-pt scale in the first study, whereas they will be on a 3-pt scale in this experiment. Additionally, most of the scales will have some different items than they did the first time around. However, we think this initial study serves as a good benchmark.

We focus on three indices: threat perceptions, support for violence, and dehumanization. We then used the EGAP power calculator to determine the sample size necessary to achieve 80% power, based on the actual treatment effect and the standard deviation of the outcome measure from our previous radio experiment.

Threat Index:
Treatment effect: -0.057
Sd of outcome measure: 0.315
To achieve 80% power: sample size of **486** per condition

Support for Violence Index:
Treatment effect: -0.061
Sd of outcome measure: 0.306
To achieve 80% power: sample size of **397** per condition

Dehumanization Index
Treatment effect: -0.033
Sd of outcome measure: 0.236
To achieve 80% power: sample size of **794** per condition

Based on these calculations and our available budget, we decided to recruit a sample of 2500 respondents. We are well-powered to detect main effects of the radio program treatment on our

outcome measures (~833 respondents assigned to each of the two treatment programs, and ~833 assigned to the placebo program).

We are also decently well-powered to test the interaction of listening to the treatment (T1 or T2) vs. control radio program, either alone or in a group. (~833 respondents will be asked to listen to one of the two treatment programs in a group; ~833 respondents will be asked to listen to one of the two treatment programs alone; ~417 will be asked to listen to the placebo program in a group, and ~417 will be asked to listen to the placebo program alone).

Stopping rule

If your data collection procedures do not give you full control over your exact sample size, specify how you will decide when to terminate your data collection. If you are using sequential analysis, include your pre-specified thresholds.

We plan to stop once we (1) have completed surveys from 2500 respondents, and (2) have recruited respondents from all 19 neighborhoods.

VARIABLES

Manipulated variables

Precisely define all variables you plan to manipulate and the levels or treatment arms of each variable. This is not applicable to any observational study.

Radio program: Respondents will be randomly assigned to listen to one of three brief radio programs (scripts and recordings for the radio programs are attached).

Treatment program 1: This is a 20-minute radio drama that tells the story of a Christian woman and a Muslim woman who end up having stalls next to each other in the market. When they first become neighbors at the market, they are a bit skeptical of each other and have some terse interactions. They both express anxiety to their husbands about being next to someone from the other religion. However, they soon start to discover that they have some common interests. Then one day a thief runs through the market and damages both of their stalls. They support each other during and after the incident, and over time become friends. In this version of the radio drama, the women explicitly discuss the anxiety they feel about interacting with someone from the other religion, and then at the end talk about how their worries were wrong.

Treatment program 2: This 16-minute radio drama follows the same story arc and includes most of the same dialogue as Treatment Program 1. However, all of the dialogue in which the women explicitly discuss feeling anxiety about interacting with someone from the other religion is removed.

Placebo program: This is a 10-minute radio drama on the importance of using mosquito bed nets to prevent malaria. The goal is to control for the experience of listening to a radio drama, but for the content to be completely unrelated to intergroup interaction.

Listening Alone vs. With Others

Respondents will be randomly assigned to either the Group Listening condition, or the Individual Listening condition (randomization is independent from the radio program randomization). Respondents in the Group Listening condition will be encouraged to invite additional people (typically other members of their household or neighbors) to join them for the radio program. These additional listeners will then be asked to leave right after the radio program, before the interviewer continues with the outcome measurement. Those in the Individual Listening condition will listen by themselves. The radio program is always played out loud on a speaker.

Here are the instructions the interviewers read out loud to participants:

Now we're going to do something a little bit different. You know there are a lot of audio programs going out to people these days. We would like to play some audio and get your opinion on it. The audio will last for [10/16/20] minutes.

[Group Listening Condition]: Sir / Ma'am, please can you gather a few of your family members or neighbors to join us to listen to the audio program? These people will only join for the audio, for the next [10/16/20 minutes]. Once the program is over, I will continue asking you questions alone.

[Group Listening Condition; Instructions to the interviewer] Encourage the respondent to find three additional adults (18+) to join for the audio program. You must do your best to find at least two. Swipe forward when you are ready to begin the program.

Now I am going to play the audio for you on this speaker. I am using this speaker so we can hear very well. It only increases the volume, it doesn't do anything else. I know some people are afraid it could be recording them, but this doesn't do anything like that. I will be putting it away right after the audio. Now please listen very carefully to the audio. I can only play it once.

[Instructions to the interviewer] Make sure the respondent sits near to you so they can hear very well. Plug the speaker into your phone using the aux cable. Make sure the speaker is turned on, and adjust the volume if necessary. If there is a disruption while you are playing the program, you can briefly pause it. When you are ready for the program, swipe to the next screen.

[Group Listening Condition] Thank you for joining us, we are finished now.

[Group Listening Condition; Instructions to the interviewer] Politely ask the guests to leave you alone with the respondent. Please try your very best to get the respondent alone again.

Measured variables

Precisely define each variable that you will measure. This will include outcome measures, as well as any measured predictors or covariates.

All variables are described in "KadunaEdutainment_Measures". Our outcome variables are classified into categories: primary outcomes, secondary outcomes, potential mechanisms, and exploratory outcomes. Primary outcomes will be reported in the main paper text. Secondary outcomes and potential mechanisms may not be reported in the main paper text, but will be reported in the paper's appendix. Exploratory outcomes (described later in the Exploratory Analyses section) may not be reported anywhere in the paper or appendix.

DEMOGRAPHIC COVARIATES:

- Gender
- Age
- Married
- Number of children
- Number of people living in the household
- Years of formal education
- Currently employed
- Neighborhood

PRIMARY OUTCOME MEASURES

1. Animosity towards Muslims
2. Perceptions of how threatening Muslims are
3. Support for violence against Muslims
4. Inter-religious interaction over past month (only asked at follow-up)

Inter-religious Animosity: We plan to combine the dehumanization, prejudice, and negative stereotype questions into an Animosity index.

Prejudice (3-point scale: Most of them, Some of them, None of them)

- Do you like Muslims? (reverse scored)
- Do you hate Muslims?

Negative Stereotypes (3-point scale: Most of them, Some of them, None of them)

- Do you think Muslims are disrespectful?
- Do you think Muslims are people with extreme or radical beliefs?
- Do you think Muslims are violent?
- Do you think Muslims are corrupt?

Dehumanization (3-point scale: Most of them, Some of them, None of them)

- Do you think Muslims are not able to think very well?
- Do you think Muslims have human feelings? (reverse scored)
- Do you think Muslims sometimes behave like animals?

Threat Perceptions (3-point scale: Most of them, Some of them, None of them)

- Do you think Muslims want to force their religious beliefs onto Christians?
- Do you think Muslims want to take over all the land and natural resources?
- Do you think Muslims want all of the political power?
- Do you think Muslims want to take jobs from Christians?
- Do you think Muslims want to physically harm Christians?

Support for Violence (Yes / No)

- Do you think it is okay to use physical violence against Muslims?
- Do you think violence toward Muslims is sometimes needed to protect your community?
- Do you support the use of physical violence against Muslims if they do something harmful to Christians?
- Do you think Muslims deserve any violence that comes their way?
- Would you ever be willing to participate in violence against Muslims if they do something harmful to Christians?

Inter-Religious Interaction (Asked at 1 month follow-up)

- In the last one month, have you interacted with a Muslim at an event, like naming or wedding ceremony? (Yes / No)
- In the last one month, have you ever been to the home of a Muslim person? (Yes / No)
- In the last one month, have you ever invited a Muslim person into your home? (Yes / No)
- In the last one month, have you bought or sold anything with a Muslim, like trade with them in the market? (Yes / No)
- In the last one month, have you interacted with a Muslim in any other way? (Yes / No)

We will also look at the following item individually:

- In the last one month, have you ever invited a Muslim person into your home? (Yes / No)

The following two items will be exploratory outcomes:

- *If interacted with a Muslim in any way over last month:* How many times have you interacted with a Muslim in the last one month? If you aren't sure of the exact number, please give your best guess.
- *If interacted with a Muslim in any way over last month:* When you interacted with Muslims in the last one month, how positive or negative were the interactions? If you've done this more than one time, tell me generally how positive or negative the interactions are. (Very positive, A little positive, A little negative, Very negative)

SECONDARY OUTCOME MEASURES

Positive Stereotypes: (3-point scale: Most of them, Some of them, None of them)

- Do you think Muslims are honest people?
- Do you think Muslims are trustworthy?
- Do you think Muslims would try to help you if you were in trouble?
- Do you think Muslims are willing to give money to others in need or help with what they have?

Willingness to Interact (Yes / No)

- Would you buy from or sell anything to a Muslim, like trade with them in the market?
- Would you invite a Muslim to a family event, like a baby naming or wedding ceremony?
- Would you invite a Muslim person to eat food in your house?
- Would you be willing to have a Muslim class teacher for your child? (If they say they do not have a child, ask them to imagine they do and answer the question)

- Would you be okay with someone in your family marrying a Muslim?

Competitive Victimhood (Yes / No)

- Throughout the history of Nigeria, do you think Christians have been treated unfairly more than Muslims?
- Throughout the history of Nigeria, do you think Christians have suffered more than Muslims?
- Do you think Christians need to be protected from the evil or bad intentions of Muslims?

POTENTIAL MECHANISMS:

Perspective-taking (scale: Never, Sometimes, Most times)

- Do you ever try to understand Muslims by thinking about their feelings, suffering, or thoughts?
- Do you ever try to think of reasons why Muslims might have a different point of view than Christians?
- Do you ever care about the suffering of Muslims?

Inter-religious anxiety (scale: Never, Sometimes, Most times)

- When you are around Muslims, do you ever feel anxious or troubled?
- When you are around Muslims, do you ever feel afraid?

Inter-religious similarity (scale: Yes, No)

- Do you think Christians and Muslims are similar to each other?

Motivation to get along (scale: Yes, No)

- Do you want to get along with Muslims?
- Do you think most Muslims want to get along with Christians?

Indices

If applicable, please define how measures will be combined into an index (or even a mean) and what measures will be used. Include either a formula or a precise description of the method. If you are using a more complicated statistical method to combine measures (e.g. a factor analysis), please note that here but describe the exact method in the analysis plan section.

To create indices, we will take the standardized mean of standardized versions of nonmissing index items. All indices are specified in “KadunaEdutainment_Measures”.

For the animosity outcome, we plan to combine two items measuring prejudice, 4 items measuring negative stereotypes, and three items measuring dehumanization. We will conduct a factor analysis to determine whether these three concepts hang together as one construct and can therefore be analyzed as one "animosity" index, or whether they need to be analyzed as three separate indices.

For the social norms index, we plan to combine three items measuring perceptions of fellow Christians' attitudes toward Muslims (whether they like Muslims, whether they think Muslims are violent, and whether they dehumanize Muslims), and three items measuring perceptions of how fellow Christians want to interact with Muslims (desire to get along, whether they would support inter-religious marriage in their family, and whether they support the use of physical violence against Muslims). We will conduct a factor analysis to determine whether these six items hang together as one "negative norms" construct and can therefore be analyzed as one "norms" index, whether they need to be analyzed as two separate indices, or whether all norms items need to be analyzed individually.

ANALYSIS PLAN

Statistical models

What statistical model will you use to test each hypothesis? Please include the type of model (e.g. ANOVA, RMANOVA, MANOVA, multiple regression, SEM, etc) and the specification of the model. This includes each variable that will be included, all interactions, subgroup analyses, pairwise or complex contrasts, and any follow-up tests from omnibus tests. If you plan on using any positive controls, negative controls, or manipulation checks you may mention that here. Provide enough detail so that another person could run the same analysis with the information provided. Remember that in your final article any test not included here must be noted as exploratory and that you must report the results of all tests.

HYPOTHESIS 1: Comparing the treatment and placebo radio programs

We will calculate the adjusted difference-in-means between those assigned to the treatment radio program (either T1 or T2) and those assigned to the placebo condition, using a regression with treatment indicators and controls for pre-treatment covariates, and the controls centered and fully interacted with treatment (Lin 2013). The list of pre-treatment covariates can be found in "KadunaEdutainment_Measures".

We will also calculate the adjusted difference-in-means between T1 and placebo, and T2 and placebo, using the same analysis strategy.

HYPOTHESIS 2: Comparing treatment radio program 1 to treatment radio program 2

We will calculate the adjusted difference-in-means between those assigned to treatment radio program 1 (with explicit acknowledgement of inter-religious anxiety) and those assigned to treatment radio program 2 (without explicit acknowledgment of inter-religious anxiety), using a regression with treatment indicators and controls for pre-treatment covariates, and the controls centered and fully interacted with treatment (Lin 2013). The list of pre-treatment covariates can be found in "KadunaEdutainment_Measures".

HYPOTHESIS 3: Examining the interaction between listening to the Treatment (T1 or T2) vs. Placebo radio program, either Alone vs. with Others

Average Treatment Effects ("intent to treat" analysis): We will calculate whether the adjusted difference-in-means between those assigned to the treatment radio program (either T1 or T2) and those assigned to the placebo condition are different for those assigned to listen to their radio program alone vs. those assigned to listen to the radio program with others. We will use a regression that interacts an indicator for assignment to a treatment radio program (T1 or T2) with an indicator for assignment to listen to the radio program with others, with controls for pre-treatment covariates that are centered and fully interacted with treatment (Lin 2013). The list of pre-treatment covariates can be found in "KadunaEdutainment_Measures".

Complier Average Causal Effect: Based on our pilot testing, we expect to see two-sided noncompliance, where some participants assigned to listen to the radio program with others will end up listening alone and some respondents assigned to listen to the radio program alone will end up listening with others. In our pilot testing, compliance was around 70%. This occurs because sometimes respondents assigned to listen with others cannot find any family members or neighbors who are around during their interview and can join them for ~15-20 minutes. Additionally, since interviews take place inside or right outside participants' homes, sometimes family members will hear the radio program start playing and will come to listen. In these cases, the interviewer politely asks the person to leave when they feel comfortable doing so, but sometimes this is not effective.

Therefore, we will conduct an additional analysis where we examine whether the local average treatment effect for those who complied with their treatment status of listening to the radio program alone vs. with others differs for those assigned to the treatment radio program (either T1 or T2) and those assigned to the placebo program. Our measure of compliance (listened_group) comes from a question answered by the interviewer immediately after playing the radio program:

“Did any additional people join you and the respondent for the radio program?”. When training the interviewers, we heavily emphasized the importance of answering this question honestly, even in cases of noncompliance.

Transformations

If you plan on transforming, centering, recoding the data, or requiring a coding scheme for categorical variables, please describe that process.

We will transform the variables as per the instructions in Column G in “KadunaEdutainment_Measures”.

Inference criteria

What criteria will you use to make inferences? Please describe the information you’ll use (e.g. specify the p-values, Bayes factors, specific model fit indices), as well as cut-off criterion, where appropriate. Will you be using one or two tailed tests for each of your analyses? If you are comparing multiple conditions or testing multiple hypotheses, will you account for this?

We will use an alpha value of 0.05 for the regression analysis.

Data exclusion

How will you determine which data points or samples if any to exclude from your analyses? How will outliers be handled? Will you use any awareness check?

Participants must be over the age of 18, able to understand the English language, and identify as Christian. We do not plan to exclude any participants who meet these criteria, unless there is a technical issue that prevents the participant from listening to the radio program. We will also conduct a robustness check in which we exclude participants who choose not to listen to the full radio program but continue on with the survey to answer the outcomes (this will be reported in the appendix).

Missing data

How will you deal with incomplete or missing data?

We will use listwise deletion when outcome variable values are missing. For any indices with missing values, we will take the average of nonmissing observations. For any covariates with missing values, we will replace missing with a value of 0 and include an indicator for whether that covariate was missing.

Attrition during initial survey: We will conduct a hypothesis test to assess whether treatment status affects whether people dropped out of the initial survey during or right after the radio program. To do so, we will run a regression that follows the specification in the Statistical Models section of this document exactly, except that the outcome is whether the respondent dropped out. We will conduct a heteroskedasticity-robust F-test on the joint null hypothesis that all treatment indicators do not affect attrition. If attrition is affected by treatment status, we will include an appendix table of estimates for each primary and secondary outcome and their uncertainty, along with the Lee (2009) bounds of the effect estimate.

Attrition during follow-up survey: We will also conduct a hypothesis test to assess whether treatment status affects whether people participated in the follow-up survey. To do so, we will run a regression that follows the specification in the Statistical Models section of this document exactly, except that the outcome is whether the respondent took the follow-up survey. We will conduct a heteroskedasticity-robust F-test on the joint null hypothesis that all treatment indicators do not affect attrition. If attrition is affected by treatment status, we will include an appendix table of estimates for each primary and secondary outcome and their uncertainty, along with the Lee (2009) bounds of the effect estimate.

Exploratory analysis

If you plan to explore your data to look for unspecified differences or relationships, you may include those plans here. If you list an exploratory test here, you are not obligated to report its results. But if you do report it you are obligated to describe it as an exploratory result.

Exploratory outcomes: In "KadunaEdutainment_Measures", we list a number of exploratory outcomes. These include perceptions of group malleability, emotions toward Muslims, meta-perceptions of what Muslims think about Christians, competitive and collective victimhood, meta-perceptions of whether Muslims think Christians are victims, and questions about the radio program (e.g., liking, perceptions of characters, whether respondents talked about the program with others).

Gender: Since the main characters in the treatment radio programs are women, it is possible that the treatment program will be more effective for female respondents. We plan to test whether there is heterogeneity in the effects of our treatment radio program on key outcomes by respondent gender.

OTHER

Other

If there is any additional information that you feel needs to be included in your preregistration, please enter it here. Literature cited, disclosures of any related work such as replications or work that uses the same data, or other helpful context would be appropriate here.