

Pre-Analysis Plan:
Effect of a brief contact on inter-ethnic trust:
Evidence from Senegal

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Abstract

We are conducting a lab-in-the-field experiment in Senegal to test the effects of a brief contact on inter-ethnic trust. In this plan we pre-register some key decisions to follow once the data is collected.

Keywords: contact hypothesis, trust, experiments.

JEL Classification: C92, C93

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1 Introduction

Under the “contact hypothesis”, interpersonal contact across group lines can reduce prejudice and discrimination. Allport (1954) provides conditions for contact interventions to be effective (placing participants on an equal footing, being endorsed by community authorities, and oriented towards a common goal) but provides little guidance regarding the nature of the contact (e.g. face to face encounters vs. team sports). The literature so far has primarily focused on finding contexts in which Allport’s conditions are satisfied (Carrell et al., 2015; Corno et al., 2019; Bagues and Roth, 2020), and whether these conditions are indeed necessary or sufficient (for instance, (Lowe, 2021) randomizes the “common goal” condition). Overall, contact has been proven effective in reducing prejudice and increasing tolerance (Paluck et al., 2019) in contexts such as education (Boisjoly et al., 2006; Scacco and Warren, 2018; Corno et al., 2019), sports (Lowe, 2021; Mousa, 2020) and the Army (Carrell et al., 2015; Finseraas et al., 2019; Bagues and Roth, 2020).¹

Contact may thus become an important policy tool (Bertrand and Duflo, 2017), in which case the generalizability of contact policies poses a challenge. In this paper, we address two open questions: Is it possible to (1) design contact protocols that can be implemented easily and at a reasonable cost in a wide variety of situations, and (2) target populations for whom contact will have the greatest expected impact?

Regarding the first question, we here propose and implement a structured face-to-face contact protocol that is cheap, fast and replicable. Recent successful contact interventions have used long and unstructured interventions, which are costly and difficult to replicate across contexts.² A structured protocol that provides guidelines on how to generate contact in a fast and cheap way may therefore help generalize contact interventions. We here design one such protocol based on a method developed by psychologists called the “fast-friend” procedure (Aron et al., 1997), which aims to generate closeness between two individuals. The proposed protocol consists in face-to-face encounters, with two individuals answering a series of questions drawn from a pre-existing list,³ where the questions gradually become more personal. In our experiment, the subjects will be paired with an

¹Quasi-experimental research, such as Bazzi et al. (2019), Rao (2019), Steinmayr (2021) and Billings et al. (2021), also finds positive effects of inter-group exposure.

²For instance, the experiments in Scacco and Warren (2018); Lowe (2021); Mousa (2020) last for several months. The costs of these interventions are not described, but are likely considerable.

³The list of of questions is presented in Appendix A.

assistant for about 15 minutes. Aron et al. (1997) find this procedure to have a positive effect on closeness indicators, including the Inclusion of Other in the Self scale. Previous research demonstrated that the procedure reduces anxiety and increases friendships across group lines (Page-Gould et al., 2008; Zhou et al., 2019). Our contribution is to gauge the effect of contact on *economic* outcomes, namely an investment decision (as proxied by the investment game) and the choice of a business partner.

For the second open question, regarding targeting, we explore the possibility that contact interventions works best when pre-experimental contacts are rare. This assumption is based on the existing literature and previous experiments Clochard (2021); Page-Gould et al. (2008) highlighting the potential mitigating role of previous encounters with members of the out-group.

In addition, we intend to use recent machine-learning techniques to test for heterogeneous treatment effects, inspired by the work of Chernozhukov et al. (2018). The methodology automatically looks for splits in the sample to get the sub-groups with the highest and lowest values of the treatment effects.

Furthermore, we aim to test the robustness of our effects across time, collecting follow-up data about a month after the intervention via a quick phone survey.

2 Experiment and sample

Sample The sample will consist of approximately 500 individuals from Saint-Louis in Northern Senegal. Saint-Louis is known for periods of inter-ethnic tension.⁴ We intend to run our experiment in different settings: the local university, a fishing village, and another site inside the city itself.

In addition to this sample, we intend to use data from a pilot experiment which consisted in 238 subjects from the same region. The total sample should therefore be approximately 750 subjects.

Experimental Design The sample will be randomly divided into three treatment arms. The first treatment arm (20% of the sample) will be the control group, the second (40% of the sample) will be a *Photo* treatment, and the third (40% of the sample) will

⁴See for instance <https://observers.france24.com/fr/20200207-senegal-saint-louis-guetndar-affrontements-pecheurs-mauritanie>.

be the *Contact* treatment. In the *Photo* and *Contact* treatment arms, subjects will be paired either with a person from their own ethnic group, or someone from a different ethnic group. Treatments are summarized in Figure 1.

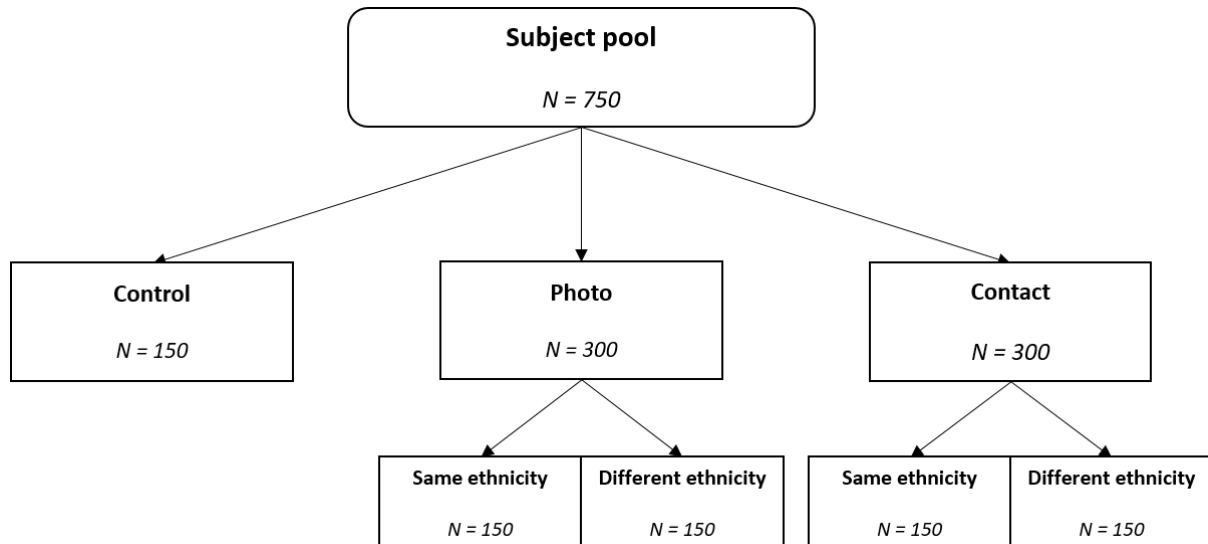


Figure 1: Treatment arms

In the control group, participants are not told who they are going to play with. This group serves as a reference for an average level of trust.

In the *Photo* treatment, participants will be shown the photo of their partner. This treatment is supposed not to affect levels of trust, but comparing the average level of trust between the control group and that for subjects paired with someone from a different ethnic group will indicate the potential anti- (or pro-) other ethnic group bias.

The contact treatment will be adapted from the “fast-friend” procedure by Aron et al. (1997). In pairs (one subject + one assistant), subjects will alternately answer questions becoming more and more intimate. The list of questions are displayed in Appendix A.

After the intervention, all participants will answer a set of questions which will be used to measure trust (see below for a detailed description of outcomes). The data will be collected using pen and paper.

Approximately one month after the intervention, we will test whether our short-term effects are lasting with a phone survey of our participants.

Decision rules for dropping observations If participants do not complete the experiment, we will exclude their observation.

Decision rules for dropping variables If 90 percent or more of the sample answers the same value on a given variable, we will define this as limited variation, and therefore will drop variables in question from the analysis.

Missing values If more than 30 percent of the respondents do not answer a particular question, it will no longer be seen as a variable of interest.

3 Data and coding of main variables

The main data will come from the questionnaire in Appendix B. For the follow-up data, the questionnaire will be that of Appendix C

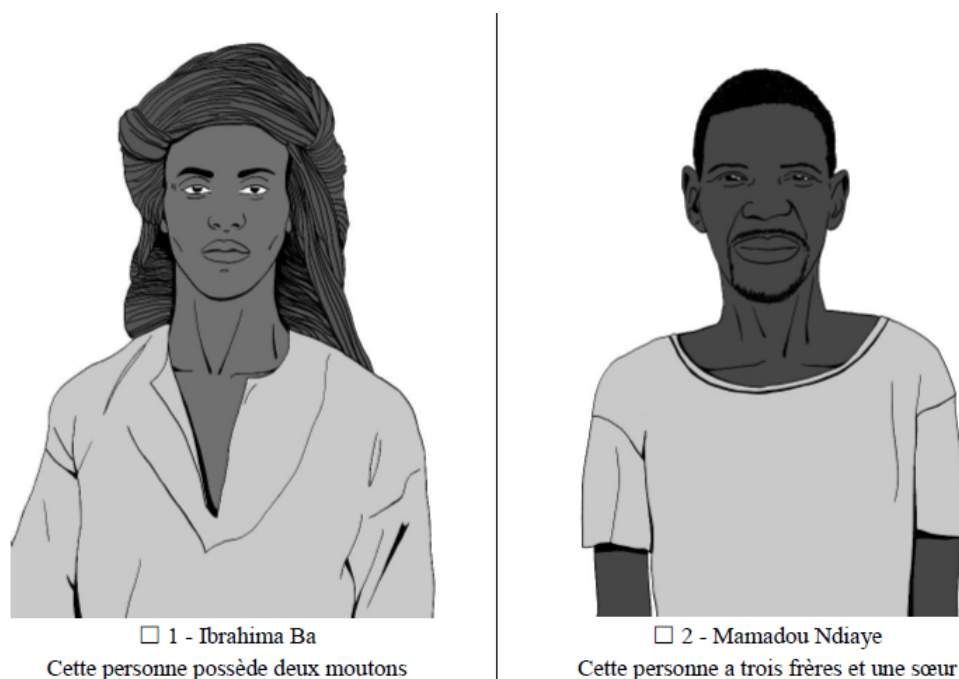
Treatment variables We will define two treatment variables, *Photo* and *Contact*. These two variables will be interacted with a dummy variable called *Different ethnic* capturing whether the person met was from a different ethnic group. By definition, the variable *Different ethnic* will be coded as 0 for members of the control group.

Primary outcome variables We will use two main outcome variables.

The first will be the amount sent in a regular Trust Game (Berg et al., 1995) played with the pair. The variable will be coded from 0 to 1 with 0 if the subject sends no token at all (corresponding to a very low level of trust) and 1 if the subject sends all his or her tokens (corresponding to high level of trust). This variable - *Trust Game* - will capture the level of trust and will be used to capture the effects of contact at the individual level (the person met).

The second variable will be used to measure the effect of contact at the collective level (the entire out-group). To test for this, we designed two “standard” drawings of a Pulaar man and a Wolof man (the two main ethnic groups in Senegal), shown in Figure 2, inspired by Blouin and Mukand (2019). Subjects were asked the following hypothetical question: “Here are two imaginary persons: Ibrahima Ba (left) and Mamadou Ndiaye (right). Ibrahima Ba owns two sheep. Mamadou Ndiaye has three brothers and one sister. Imagine that you are asked to split 10 000 Francs between these two persons. How would you like to split the money?”.

Figure 2: Drawings of “standard” individuals from the two main ethnic groups in Senegal



The variable *Split out-group* will be coded as the share of the endowment (between 0 and 1) sent to the hypothetical person from an ethnic group other than the participant's. For participants belonging to neither main ethnic groups in the sample, this variable will be coded as a missing value.

Controls There are control questions in the questionnaire, such as gender, age, region of origin, etc. We will use a Post-Double-Selection procedure Belloni et al. (2014) to include the most appropriate controls in our regression framework.

Heterogeneity We will use two strategies for heterogeneity analyses. First, we will use the number of close friends from an out-group as a dimension of heterogeneity of the treatment effect. The rationale behind this methodology is that the literature has highlighted the potential mediating role of previous contacts with the out-group in the effect of contact (Page-Gould et al., 2008; Clochard, 2021). To do so, in the questionnaire we will ask subjects to state the first and last names of the five people outside of their families with whom they spend the most time. We will then have a sample of local students to evaluate the perceived ethnicity of the family names. The ethnicity of each name will be defined as the mode of the survey. For our subjects, we will construct a dummy variable *Out-group friend* taking the value 1 if the name of the listed friend is

from an ethnic group other than that of the participant. We will then construct a dummy variable called *Exposure* which will be a median split of the sample based on the number of declared out-group friends.

Second, we will use Chernozhukov et al. (2018)'s method to determine other dimensions of heterogeneity. The principle of the method is to randomly partition the data a large number of times to get characteristics of people with the largest heterogeneity in treatment effects.

4 Empirical Strategy

We will estimate the following equation for both outcomes (*Trust Game* and *Split out-group*), with X_i the vector of controls selected by the Post-Double-Selection procedure.

$$Y_i = \beta_0 + \beta_1 Contact_i + \beta_2 Contact_i \times Different\ ethnic_i + \beta_3 Photo_i + \beta_4 Photo_i \times Different\ ethnic_i + X_i + \epsilon_i \quad (1)$$

For the heterogeneity analysis based on past exposures, we will interact the treatment variable with the *Exposure* dummy, defined above.

5 Hypotheses

We make two main hypotheses. The first is that, at the individual level, meeting a person from a different ethnic group improves the trust at the individual level. To take the definition of Equation 1, this means that when the outcome is *Trust Game*, the coefficient β_2 should be positive.

The second main hypothesis is the fact that contact should also have an effect at the collective level, meaning an effect on the out-group in general. We therefore expect the coefficient β_2 to be positive when looking at the *Split out-group* should also be positive.

For our heterogeneity analysis, we want to test whether regular interactions with members of the out-group moderate the treatment effect.

6 Power Calculation

We test for two main hypotheses, therefore, following the Bonferroni multiple hypothesis testing method from (Sidák et al., 1968), the p-values used for power calculations are divided by 2 and are therefore $\alpha = 0.025$.

We assume the sample size of the main treatment group (*Contact*) to be 300. We also assumed that 20% of the variance can be explained by control variables, and use the conventional $\beta = 0.80$ value for power.

According to the calculations made with the Optimal Design software (Raudenbush et al., 2011), the Minimum Detectable Effect is 0.23.

7 IRB Approval and Consent

We will ask for informed consent at multiple points. First, We will ask assistant participating in the study for their consent. Second, we will ask for informed consent from each participant before entering the session. Finally, all participants will be free to leave the session at any point in time and for any reason and without penalty. Their data will in this case not be considered for analysis.

The project received approval from the Institutional Review Board from Institut Louis Bachelier (IRB00013336) on February 21, 2022. The approval decision number is IRB00013336-2022-01.

8 Archive

The pre-analysis plan is archived before any data is collected. I archived it at the registry for randomized controlled trials in economics held by the American Economic Association: <https://www.socialscienceregistry.org/> on February 24, 2022.

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Appendices

A Questions for the *Contact* treatment

A.1 Set I (light closeness)

1. Given the choice of anyone in the world, whom would you want as a dinner guest?
2. Would you like to be famous? In what way?
3. Before making a telephone call, do you ever rehearse what you are going to say?
Why?
4. What would constitute a “perfect” day for you?
5. When did you last sing to yourself? To someone else?
6. If you were able to live to the age of 90 and retain either the mind or body of a 30-year-old for the last 60 years of your life, which would you want?
7. Do you have a secret hunch about how you will die?
8. Name three things you and your partner appear to have in common.
9. For what in your life do you feel the most grateful?
10. If you could change anything about the way you were raised, what would it be?
11. Take 4 minutes and tell your partner your life story in as much detail as possible.
12. If you could wake up tomorrow having gained any one quality or ability, what would it be?

A.2 Set II (intermediate closeness)

13. If a crystal ball could tell you the truth about yourself, your life, the future, or anything else, what would you want to know?
14. Is there something that you’ve dreamed of doing for a long time? Why haven’t you done it?
15. What is the greatest accomplishment of your life?
16. What do you value most in a friendship?
17. What is your most treasured memory?
18. What is your most terrible memory?
19. If you knew that in one year you would die suddenly, would you change anything about the way you are now living? Why?
20. What does friendship mean to you?

21. What roles do love and affection play in your life?
22. Alternate sharing something you consider a positive characteristic of your partner. Share a total of 5 items.
23. How close and warm is your family? Do you feel your childhood was happier than most other people's?
24. How do you feel about your relationship with your mother?

A.3 Set III (intensive closeness)

25. Make three true "we" statements each. For instance, "We are both in this room feeling..."
26. Complete this sentence: "I wish I had someone with whom I could share..."
27. If you were going to become a close friend with your partner, please share what would be important for him or her to know.
28. Tell your partner what you like about them; be very honest this time saying things that you might not say to someone you've just met.
29. Share with your partner an embarrassing moment in your life.
30. When did you last cry in front of another person? By yourself?
31. Tell your partner something that you like about them already.
32. What, if anything, is too serious to be joked about?
33. If you were to die this evening with no opportunity to communicate with anyone, what would you most regret not having told someone? Why haven't you told them yet?
34. Your house, containing everything you own, catches fire. After saving your loved ones and pets, you have time to safely make a final dash to save any one item. What would it be? Why?
35. Of all the people in your family, whose death would you find most disturbing? Why?
36. Share a personal problem and ask your partner's advice on how he or she might handle it. Also, ask your partner to reflect back to you how you seem to be feeling about the problem you have chosen.

B Questionnaire

C Questionnaire

Bonjour,

You participated to a survey a few weeks ago. We would like to ask you a few follow-up questions. To thank you for your time, we offer to send you 500 Francs at the end of the questionnaire. The exchange will only last a few minutes.

Do you agree?

Hello,

You participated to a survey a few weeks ago. We would like to ask you a few follow-up questions. To thank you for your time, we offer to send you 500 Francs at the end of the questionnaire. The exchange will only last a few minutes.

Do you agree?

Merci.

Thank you.

1. Quelle est votre année de naissance
What is your birth year?

We are now going to check that you are indeed the person who answered the first survey, by asking you two questions.

1. Quelle est votre année de naissance

What is your birth year?

2. Quel est le prénom de votre père

What is/was the first name of your father?

Merci. Nous allons maintenant vous poser une série de questions. Veuillez y répondre le plus honnêtement possible.

Thank you. We will now ask you a series of questions. Please answer them as honestly as possible.

3. /RUV GH OTH [SpULHQFH LO \ D TXHOTXHV VHIEdnbro deVette R X V D Y
personne était dans la liste suivante

At the beginning of the experiment a few weeks ago you were presented a person. Was the name of this person in the following list?

4. Sur une échelle de 1 à 7, à quel point diriez-vous que vous pouvez faire confiance à cette personne?

On a scale from 1 to 7, how much would you say you would trust this person?

5. Voici deux individus imaginaires: Oumar Sow, qui a trois enfants, un fils et deux filles, et Abdoulaye Dieye, qui possède un scooter. Imaginez que vous ayez 10 000 Francs à diviser entre ces deux personnes. Combien voudriez-vous donner à Oumar Sow?

Here are two imaginary individuals: Oumar Sow, who has three children, one son and two daughters, and Abdoulaye Dieye, who owns a black scooter. Imagine you have 10 000 Francs to split between these two persons. How much would you like to send to Oumar Sow?

6. 'H S X L V OTH [S pous H O C n t é d e N o u v e l l e s p e r s o n n e s ? S u i / N o n

Since the experiment, have you met any new people?

7. Si oui, pourriez-vous nous donner le nom de ces personnes? Maximum 5 noms.
If yes, could you give us the names of these persons? 5 names maximum.

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Thank you for your participation We will send 500 Francs to your account at the end of this call. s