Poverty and Social Capital: Pre-analysis plan*

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Abstract

This document describes the analysis plan for a randomized experiment examining the psychological effects of poverty on cooperation, trust, negative reciprocity and altruistic punishment. We will recruit respondents from Amazon Mechanical Turk. We will run two separate experiments in which we expose our treatment group to a prime that triggers feelings of poverty (Mani et al., 2013). In each experiment we recruit 972 participants. In the first experiment we examine the effect of poverty primes on behavior in a public goods game and behavior of the first-mover in a trust game. In the second experiment we explore the consequences of feeling poor on the behavior of the second mover in a ultimatum game and on the behavior of the punisher in a third-party punishment game. This plan outlines the design of the experiments, the outcomes of interest, the econometric approach and the dimensions of heterogeneity we intend to explore.

Keywords: Poverty, Trust, Public Goods, Recipricty, Altruistic Punishment, Psychology, Experiment.

JEL classification: C90, Z1, Z13

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1 Motivation

Poverty is one of the most serious issues facing the world today: more than 1.5 billion individuals live on less than $1 a day. Poverty has far-reaching consequences, not only materially, but also psychologically. Feelings of poverty negatively affect cognition (Mani et al., 2013; Shah et al., 2012) as well as economic behavior, e.g. inter-temporal decision making (Haushofer et al., 2013) and risk-taking behavior (Haushofer and Fehr, 2014).

Little is understood on how feeling poor affects social relationships and social preferences more generally. Yet, high levels of social capital in the form of trust, cooperation, and social capital are important for both individual well-being and economic prosperity. Indeed, an increasing number of studies show that low social capital is correlated with lower levels of economic development, bad institutions, and bad governance.

In order to provide evidence on the effect of poverty on social capital, we will run two experiments exploring the psychological effects of poverty on trust, cooperation, altruistic punishment and negative reciprocity. We will make use of a sample of respondents recruited from Amazon Mechanical Turk. In our experiment, we present our respondents with either an easy or a hard financial scenario. The hard financial scenario has been shown to trigger feelings of financial worries (Mani et al., 2013) in comparison to the easy financial scenario. In the first experiment we examine the effect of poverty primes on behavior in a public goods game and the behavior of the first-mover in a trust game. We also shed light on the mechanisms by collecting data on cognitive function, beliefs about others' behavior, fairness concerns as well as risk preferences. In the second experiment we explore the consequences of feeling poor on the behavior of the second mover in a ultimatum game and on the behavior of the punisher in a third-party punishment game. Moreover, we explore various mechanisms through which feelings of poverty could affect the behavior in these two games, such as cognitive function, fairness concerns and behavior in a costless punishment game.

This document proceeds as follows: In section two we describe the sample, our treatment and the schedule of tasks. Subsequently, we delineate the econometric approach. Finally, we describe the main outcomes measures of interest used in the two experiments.

2 Design

2.1 Our Sample

We will run our experiment on Amazon Mechanical Turk (AMT), an online crowdsourcing marketplace developed in 2005 by Amazon.com, Inc. This platform is now commonly used by academics to conduct online experiments, as it provides a cheap and efficient way of recruiting participants.

A link to our experiment will be openly posted on AMT with a description stating that the survey paid $2.00 for approximately 18 minutes, i.e., an hourly wage of about $6.50. This is higher than the average effective wage on mTurk which according to Amazon is around $4.80 per hour (Kuziemko et al., 2015; Mason and Suri, 2012). In addition, all of our participants will receive bonuses depending on their choices in the behavioral games and the number of correct responses to the Raven test.

2.2 Treatment

2.2.1 Poverty Prime

We have adapted the poverty primes by Mani et al. (2013) to the MTurk environment. As in Mani et al. (2013), we present our respondents with hypothetical scenarios, each of which describes a financial problem. We randomly assign our respondents to either a hard or an easy financial scenario.

In the first financial scenario they need to explain how they would deal with an income decrease of 20% (5%) in the hard (easy) financial scenario. We then ask them a variety of questions on whether this income shock would substantially affect their situation and what kind of sacrifices they would need to make. In the second scenario people explain how they would deal with a situation in which they need to come up with an amount of money: In the hard (easy) financial scenario respondents are asked how they would come up with $3000 ($150) in a short notice. The order with which these financial scenarios is presented is randomized. Respondents write down how they might deal with the financial scenarios. The aim of exposure to these scenarios is to trigger feelings of poverty.

We have made two main changes to the primes used by Mani et al. (2013): first, we increased the amounts for the hard financial scenarios. Second, we removed two financial

scenarios because they did not seem well-suited for the MTurk population. We have conducted a pilot study with a sample of 350 participants on August 1st in which we document that our two primes successfully affect financial worries. In particular, poorer individuals from our sample are quite strongly affected by our treatment: They display substantially stronger financial worries. The primes are further explained in Appendix A. Moreover, at the very end of the document we attach the exact experimental instructions.

2.3 Schedule of Tasks and Treatments: Experiment 1

The sequence of the different tasks in our experiment is as follows:

1. Simple demographics
2. Poverty primes.
3. Manipulation checks.
4. Public Goods Game and Trust Game (randomly ordered).
5. Risk Preference
6. Raven Progressive Matrices
7. Other mechanisms: identification with other mTurkers, individualistic vs. collectivist orientations.
8. Credit constraints

2.4 Schedule of Tasks and Treatments: Experiment 2

The sequence of the different tasks in our experiment is as follows:

1. Simple demographics
2. Poverty primes.
3. Manipulation checks.
4. Ultimatum Game and Third-party punishment game (randomly ordered).
5. Raven Progressive Matrices

6. Other mechanisms: identification with other mTurkers, individualistic vs. collectivist orientations.

7. Credit constraints

2.5 Power Calculations

The chosen sample size of 972 participants for each of the two experiments ensures that we can detect an effect size of about 0.18 at a significance level of 0.05 with a power of 0.8.

3 Econometric Approach

3.1 Main Specification

We compare the measures of social preferences between our treatment group and the control group. $Treatment_i$ takes value one for those participants receiving the difficult financial scenario and value zero for those receiving the easy financial scenario. Our main specification is given by:

$$y_i = \alpha_0 + \alpha_1 Treatment_i + \varepsilon_i \tag{1}$$

Here our coefficient of interest is α_1 which gives us the treatment effect of the poverty prime on social preferences for the whole sample. ε_i is the idiosyncratic error term. We expect that our treatment effects are stronger for individuals experiencing higher levels of poverty. We make use of an indicator variable $Poor_i$ which takes value one for all individuals below the median income in our sample. Then, we estimate how our treatment differentially affects those living in higher levels of poverty in comparison to those who are not poor.

$$y_i = \beta_0 + \beta_1 Treatment_i \times Poor_i + \beta_2 Treatment_i + \beta_3 Poor_i + \varepsilon_i \tag{2}$$

Our main coefficient of interest is β_1 which gives us the treatment effect of the prime for the poorer half of our sample. β_2 is the treatment effect of the prime for the "richer half of our sample". In an alternative specification, we will also interact income inc_i with our

treatment indicator. Here, our specification of interest is given as follows:

$$y_i = \gamma_0 + \gamma_1 Treatment_i \times inc_i + \gamma_2 Treatment_i + \gamma_3 inc_i + \varepsilon_i \tag{3}$$

Moreover, we will explore heterogeneity by gender (the dummy $male_i$ takes value one for males) with the following specification:

$$y_i = \gamma_0 + \gamma_1 Treatment_i \times male_i + \gamma_2 Treatment_i + \gamma_3 male_i + \varepsilon_i \tag{4}$$

3.2 Disentangling Mechanisms

In order to understand the mechanisms behind potential treatment effects we pursue two main strategies:

- We analyze how our treatment affects the variables that we hypothesize to be potential mechanisms (e.g. cognitive function, risk preferences, beliefs about others' contributions, fairness concerns, etc).
- We include the variables measuring the potential mechanisms as "endogenous controls" in the main specification of interest. In other words, we include these variables (e.g. cognitive function, risk preferences, beliefs about others' contributions, fairness concerns) step-by-step and investigate whether the inclusion of any of the "endogenous controls" significantly affects our estimated treatment effects. This allows us to find out which of the mechanisms is driving the treatment effects.

4 Main Outcome Variables

1. **Public Goods Game:** Each respondent will play a game with three other MTurkers. All players will start with \$50 each. Then, every player will have the possibility of contributing some of their \$50 to a project, without knowing the contributions of the other players. The sum of the contributions made by the four players will then be multiplied by two, and all of the money will then be split equally among all four players. Thus, a player's total payoff consists of two parts: 1) The part of the \$50 that the player did not contribute to the project, 2) plus the payoff the player receives from the project, which is equal to 0.5 x (the sum of the contributions

made by all four players).Therefore, each player's total payoff is:($50 - the player's contribution to the project) + 0.5 x (the sum of the contributions made by all four players to the project). Once everyone has completed the survey, we will randomly form groups of four MTurkers. We will choose one group at random, and implement the choices made by the four players in that group.

2. **Mechanisms Public Goods game:** Directly after specifying their contribution in the public goods game, our participants will be asked various questions eliciting beliefs about others' likely contributions, their fairness concerns and their understanding:

   (a) How much money do you think the other players will contribute to the project on average? (Players are told that they receive 5 cents of they guess the other player's contributions correctly)

   (b) Imagine that each of the other three players contributed $25 to the project. How much money would you contribute to the project in that case?

   (c) Imagine that, of the other three players, one contributes $0, one contributes $25 and one contributes $50. How much money would you contribute to the project in that case?

   (d) Imagine that you wanted to earn as much money as possible from this game. How much money should you then contribute to the project? If you give the correct answer, you will receive an extra 5 cents.

3. **Trust:** We will ask our respondents to complete a game in which there are two players, whom we shall refer to as person A and person B. All of our respondent's (except for one) will play the role of person A. Person A and person B start with $50 each. Then, person A can choose to send some money to person B. Person B will receive 3 times the amount sent by person A. Then person B will have to choose how much money to send back to person A. Once everyone has completed the survey, we will randomly choose one participant in our survey who played the role of A to get their choice implemented and we will randomly choose one participant to play the role of B and get their choice implemented.

4. **Mechanisms Trust Game:** After completing the trust game:

(a) Our respondent's will be asked the following question:

"What amount do you think will Person B send back to you?"

5. **Third Party Punishment:** There are three players in this game: Player A, Player B and Player C. Our respondents will play the role of player C. All three players start with $100 each. This game has two stages. Stage 1: In this stage, Player A is the only one who has a decision to make. At the beginning of this stage, Player A receives an extra $100, which he or she can share with Player B. In particular, Player A can give either $0, $10, $20, $30, $40 or $50 to Player B. Stage 2: In this stage, Player C is the only one who has a decision to make. At the beginning of this stage, Player C receives an extra $50. Player C can use this extra $50 to reduce Player A's payoff, based on how much money Player A gave to Player B. For every $1 that Player C spends, Player A's payoff goes down by $2. We then ask our respondents how much money they want to spend to reduce Player A's payoff, for all of Player A's possible choices.

6. **Mechanisms Third Party Punishment Game:**

   (a) **Costless punishment** We ask our respondents to consider again case where Person A doesn't give any money to Person B. But this time, Person C does not need to give up some of their $50 in order to reduce Person A's payoff.

   (b) **Fairness concerns:** Moreover, we shed light on our respondents' fairness concerns by asking them the following question: In order to be fair, how much money should Person A give to Person B? Please click on the slider to choose the appropriate offer?

7. **Negative Reciprocity:** We ask our respondents to complete a game in which there are two players, whom we shall refer to as person 1 and person 2. All of our respondent's (except for one) will play the role of person 2. At the beginning of this game, person 1 receives $100, while person 2 receives nothing. Then, person 1 has to make an offer to person 2 on how to split the $100. Person 2 chooses either to accept the offer made by person 1, or to refuse it. If person 2 refuses the offer, both players receive nothing. If person 2 accepts the offer, each player receives the amount specified in the offer. Then our respondents specify the minimum amount

that person 1 would have to offer them, in order for them to accept their offer? Once everyone has completed the survey, we will randomly choose one participant in our survey who played the role of person 2 to get their choice implemented and we will randomly choose one participant to play the role of person 1 and get their choice implemented.

8. **Mechanism Negative Reciprocity:** After completing the ultimatum game, we ask the second mover the following question:
   In order to be fair, what offer should person 1 make to person 2?

9. **Cognitive Function**: Raven's Progressive Matrices: This task measures fluid intelligence. Each trial consists of a 3 $\times$ 3 matrix of figures, with the bottom right figure missing. Respondents are asked to choose the correct figure, from a set of 8 candidate figures, which best completes the overall pattern of the matrix. Respondents must complete five matrices without any time limits. They receive a payoff of 5 cents for each correct answer. In this task, we measure the number of correct answers and reaction time.

10. **Risk-preferences**: In addition, we include a standard risk-preference measure in which individuals choose one out of six lotteries with different levels of risk Eckel and Grossman (2003).

11. **Manipulation Check**

    - **Financial Worries:** This 3-item questionnaire provides an addition manipulation check for our poverty primes. We ask respondents to self-report on a Likert scale how worried they are about their financial situation.

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A Poverty Primes adapted from (Mani et al., 2013)

We will now ask you to imagine various scenarios, and we will ask you to explain how you would deal with them.

- Scenario 1: Imagine that the economy is going through difficult times, like in the recent financial crisis. Consider a scenario where your income suddenly decreases by 20% (5%)* due the bad economic circumstances.

  Then participants are asked to what extent they agree with the following statement (On a 4-point scale: 1 - strongly disagree, 2- disagree, 3 - agree, 4- strongly agree):

  > "Given my situation, I would be able to maintain roughly the same lifestyle under those new circumstances."

  All participants selecting either 1 or 2 they will be further prompted to answer the following: In the previous question, you said that you would not be able to maintain roughly the same lifestyle if your income decreased by 20% (5%). What changes would you need to make? Three sentences should be enough.

  Subsequently, all participants will be presented with the following question: In what ways would the 20 % (5%) reduction in your income affect your leisure, housing or travel plans? Three sentences should be enough. Finally, they are asked to answer a last question: To what extent do you agree with the following statement? (On a 4-point scale: 1 - strongly disagree, 2- disagree, 3 - agree, 4- strongly agree)

  > "The 20% (5%) decrease in my income would strongly impact my leisure, housing, or travel plans."

- Scenario 2: Imagine that an unforeseen event requires of you an immediate $3,000 ($150) expense. Are there ways in which you may be able to come up with that amount of money on a very short notice? Participants answer this first question with either yes or no.Then, they are presented with the following open-ended question:

*The numbers in brackets are those from the easy financial scenario, while the numbers not in brackets are from the hard financial scenario.

How would you go about getting $3000 ($150) on a very short notice? Three sentences should be enough.

Finally, they are asked to answer two-likert type questions: To what extent do you agree with the following statement? (On a 4-point scale: 1 - strongly disagree, 2- disagree, 3 - agree, 4- strongly agree)

- Coming up with $3000 ($150) on a very short notice would cause me long-lasting financial hardship.
- Coming up with $3000 ($150) on a very short notice would require me to make sacrifices that have long-term consequences.

B Manipulation checks

B.1 Financial Worries Scale

Participants will be asked: To what extent do you agree to the following statements? The scale is as follows:

1 - Strongly Disagree

2 - Disagree

3 - Neither Disagree nor Agree

4 - Agree

5 - Strongly Agree.

1. I am very worried about my financial situation.
2. I am very worried about having enough money to make ends meet.
3. I am very worried about not being able to find money in case I really need it.

B.2 Collectivism (Triandis and Gelfand, 1998)

1. It annoys me when other people perform better than I do.
2. One should live one's life independently of others.
3. I feel good when I cooperate with others.

4. I usually sacrifice my self-interest for the benefit of my groups.

B.3 Identification with other MTurkers

1. I strongly identify with other people working on Mturk.