Poverty and Conformity: Pre-Analysis Plan*

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Abstract

This document describes the analysis plan for a randomized experiment examining whether people who receive a poverty prime are more likely to imitate others in risky choices and inter-temporal choices. We will recruit 1012 respondents from Amazon Mechanical Turk. Half of the sample will receive a prime which triggers financial worries (poverty prime), while the other half will not (placebo). Then, half of the participants who received the poverty prime and half of those who received the placebo will get some information about how previous MTurk participants answered the questions on risk preferences and time discounting, while the other participants will not receive any information about previous participants' behavior. In our experiment we can therefore identify (i) how the poverty prime affects risk preferences and time discounting, (ii) how information about others' behavior affects the respondents' behavior and (iii) whether the poverty prime makes people more likely to imitate others in risky choices and inter-temporal choices. This plan outlines the design of the experiment, the outcomes of interest, the econometric approach and the dimensions of heterogeneity we intend to explore.

Keywords: Poverty, Conformity, Peer Effects, 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 an individuals' social interactions and their behavior in social situations. In particular, no evidence exists that examines the psychological effects of poverty on people's tendency to conform to what others do. Yet, how individual choices are affected by others' choices is of high importance. In particular, a large theoretical and empirical literature documents the importance of conformity on behavior. Moreover, there exists theoretical work emphasizing that high levels of conformity can be detrimental for development as they can perpetuate poverty traps, for example through a channel of low aspirations (Genicot and Ray, 2014).

Feelings of poverty could affect individuals' inclination to conform through various mechanisms. Recent evidence highlights that feeling poor lowers individuals' sense of control, i.e. their perceived ability to be in control of their lives (Sheehy-Skeffington and Sidanius, 2015). Moreover, correlational evidence suggests that poverty is associated with low levels of self-esteem. Both of these factors in turn could increase poor individuals' willingness to conform to others' actions. In particular, it could be that poor individuals try to compensate for their lack of confidence by pleasing others and that they weigh information deduced from others' choices more heavily as a result of their lowered self-esteem. Therefore, we hypothesize that feeling poor increases levels of conformity to others' preferences.

To shed light on how feeling poor affects conformity, we will run an experiment exploring whether people conform more to other people's decisions when they are worried about their financial situation. We will recruit 1012 participants on Amazon Mechanical Turk. In order to induce feelings of poverty, we use the methodology developed by Mani et al. (2013). Half of the participants are asked to describe how they would manage to cope with a large decrease in their income, and how they would go about finding a large sum of money very quickly in case of an emergency (poverty prime). The other half are

simply asked how they would deal with a very small decrease in their income, and how they would go about finding a very small amount of money (placebo). The poverty prime have been shown to make people worried about their financial situation (Mani et al., 2013) relative to the placebo.

Then, we ask participants to answer two incentivised questions: one which involves a risky choice, and another one which involves an inter-temporal tradeoff. Half of the participants get some information about how previous MTurk participants answered the questions on risk preferences and time discounting. Specifically, they are told which option most MTurkers picked in a survey we ran prior to the experiment. For the first question, participants need to choose between $100 for sure and a lottery that pays $70 with 50% probability and $160 with 50% probability. For the second question, participants need to choose between $100 on the day of the experiment and $110 one week later.

Subsequently, participants are asked to answer a series of questions, which will shed light on the mechanisms which could be driving treatment effects. Specifically, we ask them questions on their level of self-esteem, their self-confidence, their level of individualism, their level of social desirability, the extent to which they compare themselves to others, and the extent to which they trust academic researchers on MTurk. Finally, we also ask them to complete several Raven matrices in order to get a measure of cognitive function for every individual.

This document proceeds as follows: We first outline the experimental design. Then, we describe the data collection and the schedule of tasks. Subsequently, we outline the econometric approach and the dimensions of heterogeneity we would like to explore. Finally, we outline the hypotheses guiding this experiment.

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 pays $2.50 for approximately 20 minutes, i.e., an hourly wage of about $7.50. 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 have the chance of winning a large monetary payoff of up to $160 depending on their choices in the incentivized behavioral measures.

2.2 Treatment

2.2.1 Poverty Prime

We have adapted the poverty prime developed by Mani et al. (2013) to the MTurk environment. Participants are randomly assigned to either get the poverty prime or to get the placebo.

Participants who receive the poverty prime (placebo) need to explain how they would deal with an income decrease of 20% (5%). 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. Then, respondents are asked how they would come up with $3000 ($150) on short notice. The order with which these hypothetical scenarios is presented is randomized. Respondents write down how they might deal with the different financial scenarios. The aim of the hard financial 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 used in the poverty prime. 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 210 participants on August 1st in which we document that our poverty prime makes people more worried with their financial situation. In particular, poorer individuals from our sample are quite strongly affected by our treatment: they are significantly more worried about their financial situation and they are less satisfied with their income level. The primes are further described in Appendix A. Moreover, at the very end of the document, we attach the exact experimental instructions.

2.2.2 Peer Information

We ran a survey on Amazon Mechanical Turk on July 30$^{\text{th}}$ in order to get incentivized preference data that we could use as peer group information in the experiment outlined in this pre-analysis plan. We recruited 223 participants out of which 210 participants completed our survey. We asked respondents various questions on their level of risk aversion and time discounting. In particular, we find that 50.25 percent of the sample chose \$100 now and 49.75 percent chose \$110 in one week. 55 percent of the participants chose \$100 for sure, and 45 percent chose the lottery between \$70 and \$160. We chose those time and risk preference measures for which the preferences over the two different options were most evenly distributed.

Half of our respondents will be randomly assigned to receive information about which option the majority of the respondents in the survey chose. In particular, they will receive the following message on the page before the behavioral measures:

> *On the 30th July 2015, we conducted a survey with more than 200 American MTurkers to get some information about their preferences. Like you, these MTurkers come from the US, have completed more than 500 HITs, and have an approval rating of more than 95%. In the survey, we asked them the same two questions as the ones you will answer now. For each question, we will let you know which option most MTurkers chose. We advertised the survey on the Reddit page "HitsWorthTurkingFor" on July 30th. You can check that the survey actually took place by clicking on the following link:* `https://www.reddit.com/r/HITsWorthTurkingFor/comments/3f5typ/us_5_minute_experiment_on_economic_preferences`

Subsequently on the page of the time-preference task, the treatment group will be told:

> *Most of the MTurkers who took our previous survey preferred getting \$100 today.*

Then on the page of the risk-preference task, the treatment group will be told:

> *Most of the MTurkers who took our previous survey preferred getting \$100 for sure.*

2.2.3 Data Collection and schedule of tasks

We design this experiment using Qualtrics and will post the link to our experiment on Amazon Mechanical Turk. The sequence of the different tasks in our experiment is as follows:

1. Simple demographics.
2. Poverty primes.
3. Manipulation checks.
4. Behavioral measures of time and risk preferences (with and without peer information).
5. Mechanisms: measures of confidence, sense of control, self-esteem, social desirability, social comparisons, individualism/collectivism, belief that there is a right answer, identification with other Mturkers, five Progressive Raven Matrices as well as trust in experimenter.
6. Measures of credit constraints.

The exact experimental instructions can be found in a separate Appendix containing all of the experimental instructions.

2.3 Power Calculations

The chosen sample size of 1012 effective participants for the experiment ensures that we can detect an effect size of 0.25 at a significance level of 0.05 with a power of about 0.8.

3 Econometric Approach

3.1 Main Specifications

To identify the effect of feelings of poverty on conformity, we employ a 2×2 design. In particular, we use a treatment indicator, $Treatment_i$ (taking value 1 for those participants receiving the poverty prime and taking value 0 for participants receiving the placebo), as

well as a peer group indicator, $Peer_i$ taking value one if the participant receives information about the behavior of other participants in the relevant behavioral measure. Our main specification of interest is:

$$y_i = \alpha_0 + \alpha_1 Treatment_i \times Peer_i + \alpha_2 Treatment_i + \alpha_3 Peer_i + \varepsilon_i \quad (1)$$

Our main object of interest is the coefficient α_1, which measures the effect of receiving both the poverty prime and receiving peer group information. It allows us to identify whether the poverty prime affects conformity in risk preferences and time preferences. The coefficient α_2 provides us with the effect of the poverty prime on risk and time preferences. Finally, α_3 measures how receiving information on other people's behavior affects participants' choices. 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 poorer individuals in comparison to richer ones.

$$y_i = \beta_0 + \beta_1 Treatment_i \times Peer_i \times Poor_i + \beta_2 Treatment_i \times Peer_i + \beta_3 Treatment \times Poor_i + \beta_4 Peer_i \times Poor_i + \beta_5 Poor_i + \beta_6 Peer_i + \beta_7 Treatment_i + \varepsilon_i$$

Our main coefficient of interest is β_1 which gives us the treatment effect of the prime on conformity for the poorer 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:

$$y_i = \beta_0 + \beta_1 Treatment_i \times Peer_i \times Inc_i + \beta_2 Treatment_i \times Peer_i + \beta_3 Treatment \times Inc_i + \beta_4 Peer_i \times Inc_i + \beta_5 Inc_i + \beta_6 Peer_i + \beta_7 Treatment_i + \varepsilon_i$$

To check that the poverty prime made people more worried about their financial situation, we will regress an index of the financial worries' questions on the treatment indicator.

To study mechanisms, we will construct indices for self-confidence, for self-esteem, for individualism, and for sense of control, which we will regress on the treatment indicator. We also regress our measure of cognitive function on the treatment indicator. Specifically, we will estimate the following equation:

$$y_i = \alpha_0 + \alpha_1 Treatment_i + \varepsilon_i \tag{2}$$

As beforehand, we also estimate heterogeneous treatment effects by income.

$$y_i = \alpha_0 + \gamma_1 Treatment_i \times Poor_i + \gamma_2 Treatment_i + \gamma_3 Poor_i + \varepsilon_i \tag{3}$$

Finally, we also want to analyse how receiving information about other people's behavior affect the participants' decisions. To do this, we simply regress the main outcome variables on the $Peer_i$ indicator, without differentiating between people who received the poverty prime and those who got the placebo. In particular, we will estimate the following specification:

$$y_i = \pi_0 + \pi_1 Peer_i + \varepsilon_i \tag{4}$$

3.2 Heterogeneous Treatment Effects

We will explore heterogeneous treatment effects along several other dimensions:

- Gender
- Index of collectivism/individualism
- Index of social desirability
- Index of social comparisons
- Identification with other mTurkers
- Trust in experimenters

All of the indices are constructed using the methodology developed by Anderson (2008). For all of these variables, we interact the variable of interest, $variable_i$, with a treatment indicator, while also controlling for the variable of interest in the equation.

$$y_i = \beta_0 + \beta_1 Treatment_i \times Peer_i \times variable_i + \beta_2 Treatment_i \times Peer_i + \beta_3 Treatment \times variable_i$$
$$+\beta_4 Peer_i \times variable_i + \beta_5 variable_i + \beta_6 Peer_i + \beta_7 Treatment_i + \varepsilon_i$$

3.3 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 could be potential mechanisms (e.g. cognitive function, confidence, sense of control, self-esteem, collectivism/individualism, social desirability, trust in experimenters)
- We include the variables measuring the potential mechanisms as "endogenous controls" (cognitive function, confidence, sense of control, self-esteem, collectivism/individualism, social desirability, trust in experimenters) in the main specification of interest. In other words, we include the variables step-by-step and investigate whether the inclusion of any of the "endogenous controls" significantly affects our estimated treatment effects.

4 Main Outcome Variables

1. Risk Preferences: Choose between \$100 for sure and a lottery: receiving \$70 with 50 % and \$160 with 50%.
2. Time Preferences: Choosing between \$100 on the day of the experiment and \$110 one week later.
3. Manipulation Checks (Appendix B)
    - Financial Worries: This 4-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.
    - Satisfaction with income
4. Mechanisms (Appendix C)

- Confidence
- Self-esteem
- Individualism/collectivism
- Sense of control
- Social comparisons and relative concerns
- Social desirability
- Identification with other mTurkers
- Cognitive function: Number of correct answers and response time to the Raven Progressive Matrices

5 Hypotheses

5.1 Effect of the Poverty Prime

We expect that the hard financial scenario compared to the easy financial scenario will trigger financial worries, i.e. it will affect all four items in our financial worries scale. Moreover, we hypothesize that the prime will make individuals more risk-averse (choosing option A in the risk-preference task) and more impatient (choosing option A in the time-preference task). In addition, we think that the treatment will lower individuals' confidence, self-esteem, and sense of control (Sheehy-Skeffington and Sidanius, 2015).

Guided by the findings from our pilot exploring the effects of the prime on financial worries, we expect that all of our treatment effects will be driven by the poorer subsample, i.e. by individuals with a household income below the median in our sample.

5.2 Effect of the Peer Information

We hypothesize that those individuals who receive information about which option the majority of respondents chose in a previous mTurk experiment will be more likely to choose the option chosen by the majority of respondents. More precisely, we expect the coefficient α_3 of the following specification to be positive and significant.

$$y_i = \alpha_0 + \alpha_1 Treatment_i \times Peer_i + \alpha_2 Treatment_i + \alpha_3 Peer_i + \varepsilon_i$$

5.3 Effect of the Prime Combined with Peer Information

We expect that those individuals who receive the poverty prime and the peer information will be more likely to conform to the majority choice. More precisely, we expect the coefficient α_1 of the following specification to be positive and significant.

$$y_i = \alpha_0 + \alpha_1 Treatment_i \times Peer_i + \alpha_2 Treatment_i + \alpha_3 Peer_i + \varepsilon_i$$

As beforehand, we expect that our treatment effects will be mainly driven by the poorer subsample, i.e. by individuals with a household income below the median in our sample.

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 or four 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:

  > How would you go about getting $3000 ($150) on a very short notice? Three or four 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.
4. I often feel ashamed because of my current financial situation.

B.2 Satisfaction with Income

In addition, all participant will be asked the following question: How satisfied are you with your household income level? The scale is as follows:

1 - Very Dissatisfied

2 - Dissatisfied

3 - Somewhat Dissatisfied

4 - Neutral

5 - Somewhat Satisfied

6- Satisfied

7- Very Satisfied

C Mechanisms

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.

C.1 Self-Efficacy (Jerusalem and Schwarzer, 1992)

1. I can always manage to solve difficult problems if I try hard enough.
2. I am confident that I could deal efficiently with unexpected events.
3. I can solve most problems if I invest the necessary effort.
4. If I am in trouble, I can usually think of a solution.

C.2 Self-Esteem (Rosenberg, 1965)

1. All in all, I am inclined to feel that I am a failure.
2. I feel I do not have much to be proud of.
3. I am able to do things as well as most other people.
4. I take a positive attitude toward myself.

C.3 Sense of Control (Pearlin and Schooler, 1978)

1. I have little control over the things that happen to me.
2. What happens to me in the future mostly depends on me.
3. I often feel helpless in dealing with the problems of life.
4. There is really no way I can solve some of the problems I have.

C.4 Collectivism (Triandis and Gelfand, 1998)

1. I rely on myself most of the time; I rarely rely on others.
2. I feel good when I cooperate with others.
3. It is important to me that I respect the decisions made by my groups.
4. I usually sacrifice my self-interest for the benefit of my groups.

C.5 Social Desirability (Singelis et al., 1995)

- I feel uncomfortable publicly dissenting with what the majority believes.
- Even if most people disapproved of something I like to do, I would still do it.
- I dislike holding a view that is different from my friends.
- If I hold a different opinion from my friends, I sometimes refrain from voicing it.

C.6 Scale for Social Comparison Orientation (Gibbons and Buunk, 1999)

1. I often compare myself with others with respect to what I have accomplished in life.
2. If I want to learn more about something, I try to find out what others think about it.
3. I always like to know what others in a similar situation would do.
4. If I want to find out how well I have done something, I compare what I have done with how others have done.

C.7 Identification with other MTurkers

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

C.8 Raven Progressive Matrices

Raven Progressive Matrices: This task measures fluid intelligence. Each trial consists of a pattern, with part of the pattern missing. Respondents are asked to choose the correct figure, from a set of 8 candidate figures, which best completes the overall pattern. We incentivize the responses to this task by giving five cents for each correct answer. Respondents must complete five questions without any time limits. In this task, we measure the number of correct answers and reaction time. We have chosen Raven matrices that were neither too easy nor too hard with a Pilot of 50 respondents from MTurk on August 4^{th}.

D Belief That There Is a Right Answer

During the experiment, we asked you to choose between two options:

- Option 1: $100 for sure.
- Option 2: 50% chance of winning $70 and 50% chance of winning $160.

Which statement do you agree with the most?

- Everyone should choose Option 1, because Option 1 is just better than Option 2.
- Everyone should choose Option 2, because Option 2 is just better than Option 1.
- Neither option is intrinsically better than the other one.

Then, participants will be asked a similar question regarding the time preferences measures: During the experiment, we asked you to choose between two options:

- Option 1: $100 today
- Option 2: $110 in a week

Which statement do you agree with the most?

- Everyone should choose Option 1, because Option 1 is just better than Option 2.

- Everyone should choose Option 2, because Option 2 is just better than Option 1.
- Neither option is intrinsically better than the other one.

E Trust in Experimenters

- Researchers on MTurk do not generally deceive participants in their experiments.
- I trust that the researchers conducting this study will pay the bonuses described in the experiment.

Subjects receiving peer information will additionally answer the following question:

During the experiment, we told you that we ran a survey with more than 200 American MTurkers to get some information about their preferences. We also told you that we asked them the same two questions as the ones you answered. Finally, we showed you the Reddit page on which we advertised the survey.
To what extent do you agree with the following statement? (On a scale from 1 - Strongly disagree to 5 - Strongly agree).

- I was very confident that the information provided was true.

Moreover, we ask our respondents about their beliefs regarding the percentage of MTurkers having chosen option A:

During the experiment, we told you that we ran a survey with more than 200 American MTurkers to get some information about their preferences. We also told you that we asked them the same two questions as the ones you answered. Finally, we showed you the Reddit page on which we advertised the survey. In one of the questions, we told you that the majority of respondents preferred \$100 for sure over a lottery with a 50% probability of winning \$70 and a 50% probability of winning \$160. If you correctly guess the percentage of people who chose the sure amount, you will receive an additional bonus of five cents.

What percentage of respondents in the previous survey do you think preferred the sure amount over the lottery?

We ask a similar question for the time preference measure:

During the experiment, we told you that we ran a survey with more than 200 American MTurkers to get some information about their preferences. We also told you that we asked them the same two questions as the ones you answered. Finally, we showed you the Reddit page on which we advertised the survey. In one of the questions, we told you that the majority of respondents preferred $100 now over $110 in a week later.

If you correctly guess the percentage of people who chose $100 now, you will receive an additional bonus of five cents.

What percentage of respondents in the previous survey do you think preferred the amount now over the amount one week later?

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