Supplementary Material: Pre-Analysis Plan

Redistributive Behavior When Circumstances Shape Choices

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1 Experimental design

(1) Setting: spectator design

I use the paradigmatic spectator-worker design to (i) create an experimentally controlled situation of inequality between two workers and (ii) observe how spectators redistribute money between them. The focus of this study is on the redistribution decisions of the spectators in different experimentally created inequality situations between workers.

(i) Workers I hire US workers on Amazon's online labor market *Mechanical Turk* for an email collection task. Each worker k earns a piece-rate π_k and can freely choose how many tasks e_k to complete. Afterward, workers are assigned to pairs. Below, I will frequently refer to the two workers in a pair as worker A and worker B.

(ii) Spectators I invite participants from the general US population, also referred to as spectators, to an online experiment. Spectators can redistribute the worker's earnings.

A strategy method is employed: Each worker decides whether and how to redistribute the earnings in 8 different scenarios. The scenarios vary how many tasks worker A and worker B completed and, hence, how much effort each worker exerted. This means that spectators redistribute earnings conditional on the effort choices of workers.

(2) Treatments: Varying the effect of circumstances on choice

The central feature of the design is a between-subject comparison of redistributive behavior in two types of inequality situations:

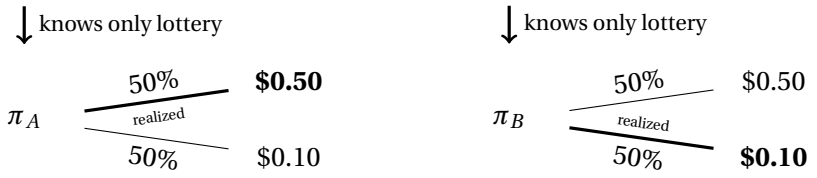
Situation type (a) The circumstances to which worker A and worker B react are *identical*. That is, they have the same piece-rate expectations. Ultimately, worker A receives piece-rate π_A, and worker B receives π_B.

Situation type (b) Worker A reacts to *different* circumstances than worker B. That is, they have different piece-rate expectations. However, eventually, workers receive the same piece-rates as in situation type (a).

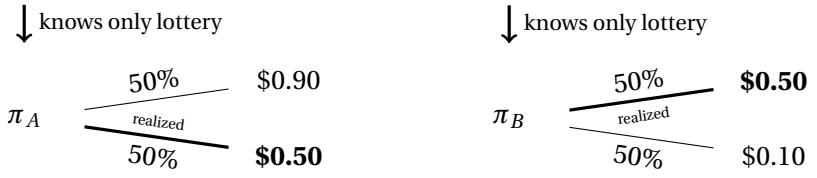
Thus, the design systematically varies the expected circumstances to which workers react but keeps constant which piece-rate they ultimately earn. If workers react to the same circumstances, their effort choices are directly comparable. If workers, however, react to different circumstances, circumstances exert a differential impact on their choices. Contrasting redistributive behavior across these two situation types illustrate whether or not spectators take this into account.

Treatment 1 In treatment 1, the piece-rate of both workers is identically and independently determined by a lottery and takes either a low value of \$0.10 or a high value of \$0.50 with 50% probability each. Worker pairs in treatment 1 are those that eventually receive the same piece rate. There are two versions of the treatment which I will analyze together: (1-low) both workers have a piece-rate of \$0.10; (1-high) both workers have a piece-rate of \$0.50. Importantly, while working, workers do not know the realized piece-rate. Thus, treatment 1 represents a situation with equal circumstances and equal expected circumstances. Inequality between workers is fully driven by the effort choices of workers which are directly comparable because both workers react to the same circumstances.

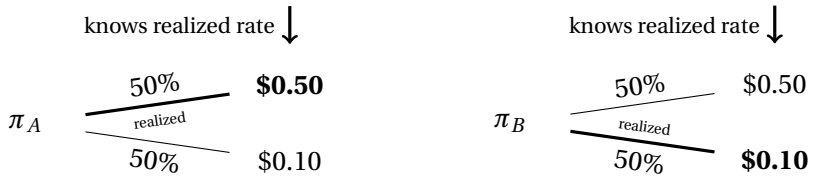
Treatment 2 The piece-rate of each worker is either low ($0.10) or high ($0.50), as in treatment 1. However, in treatment 2, worker pairs eventually receive different piece-rates: Worker A receives the high piece-rate, while worker B receives the low piece-rate (or vice versa). The workers do not know their realized piece-rate. Thus, workers have unequal circumstances but equal expected circumstances. Circumstances and choices influence inequality, but the choices are still comparable because they react to the same circumstances.



Treatment 3 Treatment 3 matches treatment 1 in that workers eventually receive an identical piece-rate (here: $0.50). Crucially, however, the piece-rates result from different lotteries. Worker A can either receive a piece-rate of $0.50 or $0.90, while worker B earns either $0.10 or $0.50 per completed task (or vice versa). Thus, worker A has higher piece-rate prospects, and the workers' effort choices respond to different circumstances. Circumstances are equal, but expected circumstances differ which renders effort choices incomparable. The latter is the only difference to treatment 1.



Treatment 4 Treatment 4 equals treatment 2, except that workers are informed about their piece-rates before they start working. Thus, treatment 4 depicts a situation with unequal circumstances and unequal expected circumstances. Both circumstances and choices determine the inequality between workers, but, since choices derive from different circumstances, they are not directly comparable. The latter is the only difference between treatment 2 and 4.



(3) Treatments: Belief manipulation

Differences in redistributive behavior in these treatment comparisons jointly derive from two different mechanisms. First, they depend on the beliefs of spectators about the effect of circumstances on effort choices. If, for instance, spectators do not understand that expected circumstances affect choice, treatments 1 and 3 (or 2 and 4) appear identical to them, and no change in redistributive behavior is to be expected. If this is not the case, the second factor, fairness preferences, becomes critical: Is inequality due to choices that derive from randomly assigned circumstances considered fair?

To distinguish between these two mechanisms, two additional treatments exogenously manipulate the beliefs of participants. To do so, I include a new page to the instructions on which I inform spectators that effort choices in the task are strongly context-dependent; i.e., workers typically react to the piece-rate they expect to receive.

Treatment 5 Treatment 3 plus information provision on effect of circumstances on choice.

Treatment 6 Treatment 4 plus information provision on effect of circumstances on choice.

2 Hypotheses

It bears emphasis that the nature of the project is explorative. There are two opposing hypotheses for each effect. Fortunately, this means that the project will be informative irrespective of its empirical results.

Redistributive behavior

- Redistributive behavior takes the effect of circumstances on choices into account.
- Redistributive behavior does not take this effect into account.

Test: If redistributive behavior takes the effect of circumstances on choices into account, we should see more redistribution towards the disadvantaged worker in treatment 3 compared to treatment 1 and in treatment 4 compared to treatment 2.

Inference

- Participants understand that circumstances affect choices.
- Participants neglect that circumstances affect choices.

Preferences

- Participants view choice-based inequality that derives from differences in circumstances as unfair.
- Participants view these inequalities as fair.

Test: These four hypotheses can be tested by analyzing the beliefs about the effect of circumstances on choice and by studying the belief manipulation (treatment 5 versus 3 and treatment 6 versus 4). If we see more redistribution towards the disadvantaged worker in treatment 5 compared to treatment 3 and/or treatment 6 compared to treatment 4, we learn that (i) participants did not fully take the effect of circumstances on choice into account (inference) and (ii) view the resulting inequalities as unfair (preference). If we see no change in redistributive behavior, it is more likely that (i) participants understand the effect of circumstances (inference), but view the resulting inequalities as fair (preference).

3 Main outcome variable

The main outcome variable is the difference in the shares p that are distributed to the workers: $\Delta_s p = \frac{p_1 - p_2}{p_1 + p_2}$, where Δ_s means "share difference" and worker 1 is the advantaged worker (i.e. the worker with the higher piece-rate or piece-rate expectations).[1]

Respondents make redistribution decisions in seven different scenarios that vary the amount of tasks that each worker completed.[2] A scenario can be described by $\Delta_s e = \frac{e_1 - e_2}{e_1 + e_2}$, the difference in

[1] There is no advantaged worker in treatment 1. Here, I randomly assign the workers to a position.

[2] The eighth redistribution decision cannot be compared across treatments, and is therefore not analyzed.

the shares of completed tasks. I denote the redistribution behavior of respondent i in treatment t and effort scenario e by $\Delta_s p_{ite} = \Delta_s p_{it}(\Delta_s e)$.

4 Statistical tests

It bears emphasis that not only statistical significance but also the effect sizes itself are important for the interpretation of the results. A significant but quantitatively negligible effect requires a different interpretation than a sizeable significant effect. Also, failure to reject a hypothesis is neither uninteresting nor uninformative if the null effect is estimated with sufficient precision (see hypotheses). Thus, I pay special attention to the effect size and statistical precision of the estimates by interpreting the confidence intervals.

Average treatment differences To test for the equality of redistributive behavior across treatments (see hypotheses), I plan to run the following regression which estimates the expected payment share difference, $\mathrm{E}\left(\Delta_s p_{it}(\Delta_s e)\right)$, for each $\Delta_s e$ and t:

$$\begin{aligned}\Delta_s p_{ite} &= \boldsymbol{\beta} \times \mathbf{1}\{i, t, e\} + \varepsilon_{ite} \\ &= \left(\beta_{te}\right)_{t\in T,\, e\in E} \times (1_{ite})_{t\in T,\, e\in E} + \varepsilon_{ite}\end{aligned}$$

where i is an individual, t is a treatment (and T the set of all treatments), e denotes the different effort share levels $\Delta_s e$ (and E the set of all effort share levels), and 1_{ite} is an indicator function that takes the value one only if observation ite is for treatment t and effort share level e. Standard errors are clustered on the respondent level.

To analyze the difference in redistributive behavior across two treatments t and t', I then test two hypotheses with F-tests and t-tests:

$$\beta_{te} = \beta_{t'e} \quad \text{jointly for all } e \tag{1}$$

$$\beta_{te} = \beta_{t'e} \quad \text{separately for each } e \tag{2}$$

The joint test (1) provides a highly powered joint assessment of differences between the treatments. As a complement, the separate tests (2) provide a more detailed assessment of treatment differences and allow to assess the magnitude and direction of the effects. They are two-sided, and their p-values will be adjusted for multiple hypothesis testing, using the Benjamini-Hochberg procedure to control the false discovery rate. Please note that the hypotheses make a directional predictions.

Heterogeneity I plan to test for heterogeneity in treatment effects along the following dimensions: gender (male versus female), education (college versus no college), political identity (democrat versus republican), empathy, locus of control, and income. I will adjust the tests for multiple hypothesis testing, using the Benjamini-Hochberg procedure.

5 Exclusion criteria

Survey responses will be excluded from the analysis if the respondent

- does not complete the first 7 redistribution decisions
- has already participated in the study
- spends to little time on reading the experimental instructions in part 1 before the treatment variation is introduced (drop respondents with less than 30 seconds reading time)

6 Collected data

The following data have already been collected and, to maximize power, will be included in the final analysis.

- Pilot: May 2020, about 200 observations (only redistribution decisions, only T1, T2, T3, T4).