Analysis Plan for "Advice and behavior in a dictator game: An experimental study"

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1. Treatment differences: Effect of advice on decisions

We first test whether participants are more likely to choose the advised choice. We directly compare the rates of selfish choices between the *fair (selfish)* treatment and the *baseline* treatment. In doing so, we aim to reveal the effect of advice on participants' choices in moral dilemmas. We test these effects using the Fisher's exact test or Chi-squared test:

$$H_0\text{: rate of sefish choice}_{baseline} = \text{rate of sefish choice}_{fair\ advice}$$

$$H_0: rate\ of\ sefish\ choice_{baseline} = rate\ of\ sefish\ choice_{selfish\ advice}.$$

Our conjectures are that the rate of selfish choices is lower (higher) in the *fair (selfish) advice* treatment compared to the *baseline* treatment.

Next, having separately tested the effects of fair and selfish advice on participants, we aim to investigate the difference between the impacts of fair and selfish advice.

If we fail to reject the first hypothesis (that is, we find that $\text{rate of sefish choice}_{baseline} = \text{rate of sefish choice}_{fair\ advice}$), and reject the second hypothesis (that is, we find that $rate\ of\ sefish\ choice_{baseline} < rate\ of\ sefish\ choice_{selfish\ advice}$), then we can conclude that only the selfish advice has a stronger effect than the fair advice.

If we reject both of the above hypotheses, then we need to further analyze whether selfish advice has a stronger effect than the fair advice. To do so, we will run a regression analysis. Consider the OLS model

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$$Choice = \alpha + \beta Selfish + \gamma Advice + \delta(Selfish \times Advice) + \mu$$

where $Selfish$ is a dummy variable for the *fair* and *selfish* treatments, which equal to 1 when it is the *selfish* treatment. $Advice$ is a dummy variable indicating whether participants receive advice, equal to 1 when they receive advice, 0 otherwise. Considering the findings in the existing literature and our hypotheses, fair and selfish advice are expected to influence participants' choices in different directions compared to receiving no advice. Therefore, to test the difference between the impacts of fair and selfish advice, we utilize the binary variable $Choice$, which take on a value of 1 when participants choose the fair (selfish) option when $Selfish$ equals 0 (1). We estimate the differential effect of fair and selfish advice using the null hypothesis $H_0: \delta = 0$.

Our conjecture is that the difference in rates of fair choices between the *baseline* and *fair advice* treatments is smaller than the difference in rates of selfish choices between the *baseline* and *selfish advice* treatments. In the results, if we find that δ is not significantly different from 0, then the effects of fair and selfish advice are not significantly different. If δ is significant and positive, then the effect of selfish advice is stronger than the effect of fair advice. If δ is significant and negative, then the effect of fair advice is stronger than the effect of selfish advice.

2. Social value orientation and decisions

We classify participants based on the Social Value Orientation (SVO) test. We will exclude participants whose choices may be random or noisy according to the consistency assessment. Subsequently, we classify participants into aggressive, competitive, individualistic, cooperative, and altruistic types, following the methodology outlined in Offerman et al. (1996) and He et al. (2017). Alternatively, considering the distribution of participants' types and for a clearer analysis, we can also further divide all subjects into two primary categories: *non-social* types (comprising participants classified as aggressive, competitive, and individualistic) and *social* types (encompassing participants labelled as cooperative and altruistic), following the classification scheme of He et al. (2017).

Based on the classification, we investigate the relationships between participants' social types and their decisions in dictator games. We first estimate

$$Selfish\ Choice_T = \alpha_T + \beta_T Type_T + \mu_T$$

where variable $Type$ is the classified types (either altruistic=1, cooperative=2, individualistic=3, competitive=4, aggressive=5, or *social*=0, *non-social*=1), and T indicates treatments (Baseline, Selfish advice, or Fair advice). Running three independent regressions for all three treatments, we can first estimate the effect of SVO types in each treatment.

Next, we estimate the interacted effects of SVO types and treatments in one regression, which includes the SVO type variable, the treatment variable, as well as the interacted variable.

$$Selfish\ Choice = \alpha + \beta Type + \gamma_1 Selfish + \gamma_2 Fair$$
$$+\delta_1(Type\ \times Selfish) + \delta_2(Type\ \times Fair) + \mu$$

where variable $Type$ is the classified types (either altruistic=1, cooperative=2, individualistic=3, competitive=4, aggressive=5, or *social*=0, *non-social*=1), $Fair$ and $Selfish$ are two dummy variables for the *fair* and *selfish* treatments (both equal to 0 if subjects are in the Baseline treatment). $Type\ \times Selfish$ and $Type\ \times Fair$ are interaction terms of the corresponding dummy variables.

3. Demographic test

We investigate whether individual characteristics have any effects on their choices. We take regressions to estimate

$$Selfish\ Choice_T = \alpha_T + \beta_T Age_T + \gamma_T Male_T + \delta_T\ Grade_T + \theta_T\ Eco_T + \mu_T.$$

Here, variable $Male_T$ and Eco_T are dummy variables, where Eco_T equals 1 indicates that participants major in economics-related subjects. We test $H_0\!: \beta_T = 0$, $H_0\!: \gamma_T = 0$, $H_0\!: \delta_T = 0$, and $H_0\!: \theta = 0$.

4. Balance test

Moreover, we can conduct the Kruskal-Wallis rank test to examine the equality of the distribution of participants' individual characteristics as well as their SVO types across treatments based on the classifications in section 2.

References

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