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Altruism and information☆

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ABSTRACT

Experimental literature has accumulated evidence on the association of social identity to a higher or lower level of prosocial behavior. There is also evidence that donations are affected by the mere provision of information about the recipients, whatever its nature or content. In this paper, we present a unified experimental framework (within-subjects) to analyze the impact of different information sets (that concern social class, political orientation or gender) on the level of giving; our experimental design allows us to reveal the effect of three information sets, with respect to the baseline treatment of no information, and separately from the effect of the informational content. A between-subjects replication in M-Turk provides results in the same direction, although the treatment effects are much weaker. These results could be relevant to any design intended to measure the impact on altruism of different dimensions of social identity.

1. Introduction

One distinctive feature of humans is their willingness to help others even in one-shot sporadic interactions. Understanding why people donate to strangers is an essential element of the human pro-social puzzle. The last decades of laboratory research in altruism using the Dictator Game (DG hereafter) have provided a number of insightful answers (see Engel, 2011, and the references therein): innate sense of inequity aversion, identity, warm glow, guilt aversion (due to the recipient's expectations), social pressure or social distance and personality traits, are all forces behind social behavior. These motivations are complementary and depending on the experimental framing, one or several may become more relevant.

Previous research has also shown that there are certain factors that modulate altruism - compared to the baseline of an anonymous DG. On the one hand, there are factors related to the donor's personal characteristics that have been found to correlate with giving. Among them, social class (Gilens & Thal, 2018; Hoffman, 2011; Piff, Kraus, Côté, Cheng, & Keltner, 2010; Dimick, Rueda, &

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Stegmueller, 2017), social distance (Mironova and Whitt, 2014; Whitt and Wilson, 2007; Bechler, Green and Myerson, 2015; Charness, Haruvy, & Sonsino, 2007; Hoffman, McCabe, & Smith, 1996), political ideology (Fowler and Kam, 2007; Zettler and Hilbig, 2010; Balliet, Tybur and Wu, 2018), religion (Hoffmann et al, 2019; Brañas-Garza, Espin, & Neuman, 2014; Forbes & Zampelli, 2012, 2013; Eckel & Grossman, 2004; Anderson and Mellor, 2009), sense of fairness (Konow, 2000) and gender[1] (Andreoni & Vesterlund, 2001; Croson & Gneezy, 2009; Eckel & Grossman, 1998, 2001; Rand, Brescoll, Everett, Capraro, & Barcelo, 2016). Donations are also affected by conformity: when donors observe previous donations, they tend to imitate the modal donation (Sasaki, 2019). Other work has shown the effect on altruism of moral emotions (Gummerum, et al, 2010; Brañas-Garza, 2007), the source of the endowment (Thielmann and Hilbig, 2019) or personality traits and motivations (Zhao, Ferguson, & Smillie, 2016; Allgaier et al, 2020; Thielmann & Hilbig, 2018; Gangadharan et al, 2018; Gandullia et al, 2020). Changes in the price of giving (e.g. a tax refund) affect donations, and a motivational crowding out effect may decrease donations when incentives other than intrinsic motivation are present (see Müller and Rau, 2020). Briscese (2019) has analyzed the impact on charitable giving of different defaults in an RCT with a microlending NGO. The main finding is that defaults that depend on the subject's past decisions can be more effective to increase giving. Recent evidence also shows that intuitive decision making favors altruism (see Rand et al. 2014 for a meta-analysis).

On the other hand, experimental results indicate that not only the donor's attributes and circumstances matter but also the available information on the recipient's characteristics modulate altruism. For instance, individuals are more likely to increase their donations when they are aware that the recipients are poor (Eckel & Grossman, 1996; Holm and Engseld, 2005; and Brañas-Garza, 2006) or they are socially close (Leider et al., 2009; Brañas-Garza et al., 2010; Bohnet and Frey, 1999; and Rege and Telle, 2004). Herzenstein and Posavac (2019) show that the propensity to donate to local versus international charities varies when subjects perceive their own financial resources as scarce. Subjects are also sensitive to the sex of the recipient: women receive higher donations than men (Dufwenberg & Muren, 2006; and Engel, 2011) and there is an effect of the recipient knowing the sex identity of the donor (Eckel and Grossman, 2002).

Thus, previous research has established that the personal characteristics both of dictator and recipient matter for giving. Personal attributes may define membership to a social category, which may trigger a different behavior towards in-group members and outsiders (see Charness, Rigotti, & Rustichini, 2007; and Chen & Li, 2009). Lastly, it has also been shown that subjects are concerned about their own privacy and consequently are quite sensitive to the conditions of anonymity of dictator and recipient (Hoffman et al., 1994; Charness and Gneezy, 2008; Frohlich, Oppenheimer and Moore, 2001). [2]

The main contribution of this paper is to reveal the effect of different information sets in the same experimental setting, with respect to the baseline treatment of no information, and separately from the effect of informational content concerning wealth, sex and ideology.

Using a within-subjects Dictator Game experiment, we elicit the personal attributes of the participants that define their social category (natural groups) and we compare the outcome under different information sets available to the donor and recipient. We build a unified experimental framework to test the effect of these factors, by changing the information provided in each treatment to donor and recipient. Social preferences may follow a differential pattern depending on the combination of characteristics of the donor and the recipient and we measure the relative effects. For this purpose, in our within-subjects design participants take decisions under several informational conditions and those decisions appear sequentially in a random order; this allows us to study how subjects react to different information sets on attributes and a comparison of their relative strength.

Another important feature of this research –compared to previous DG laboratory experiments- is the use of natural groups. Previous work on in-group and out-group differences in behavior has introduced the minimal group paradigm (Tajfel et al., 1971), inducing the membership that generates the weakest cohesion required to produce discrimination. Instead, in our experiment the groups correspond to the actual characteristics of donors and recipients,[3] which were collected before the experiment took place, and relate to wealth (*Poor* and *Rich*), gender (*Men* and *Women*), and political orientation (*Right-wing* and *Left-wing*). All these personal characteristics were self-reported in an online questionnaire during the recruitment process.

The choice of sex, political orientation and wealth as social categories was made taking into account the existing experimental literature. In particular, there is previous work on the effect of a "gender label" on altruism (e.g. Aguiar, Brañas-Garza, Cobo-Reyes, Jiménez, & Miller, 2009; Brañas-Garza et al., 2018) and the literature on the effect of wealth and political orientation on altruism is extensive. Thus, these social characteristics seem the most relevant labels for comparison purposes. Moreover, they provide an appropriate mix between binary categories (gender) and continuous self-reported variables (wealth, political orientation).

At the beginning of the experiment, donors were reminded of their actual social categories (wealth, gender and political orientation). Then they faced several DG in which they had different pieces of information about the recipient or about the donor's information available to the recipient. In the baseline case, no additional information was provided.

In *Treatment 1* (T1) the dictator was informed about a social category of the recipient. According to the theoretical literature on identity and in-group and out-group effects, for some social categories we expect that donations to in-group members be higher than donations to out-groups (for example, political orientation); this could be the result of favoring their in-group at the expense of the out-

[1] Aguiar, Brañas-Garza, Espinosa, and Miller (2010) shows that women are also expected to be more generous. Brañas-Garza et al. (2018) replicates the result in the field among MTurkers.

[2] A possible explanation is that anonymity has a cost in terms of credibility (see Frohlich, Oppenheimer and Moore, 2001) so that providing more information about the recipient may make donations more credible and promote giving.

[3] Other papers that use natural groups in laboratory experiments include Aaldering and Böhm (2020), Weisel and Böhm (2015) and Espinosa, Fatás and Ubeda (2019).

group. However, for other social categories we expect inequity aversion to increase donations when the recipient is poor, in line with previous results in the literature.

We also expect that the introduction of saliency in group membership affects donations. Following Charness et al. (2007), a group is salient if the members of the group not only know their membership but also believe that others know it. In *Treatment 2* (T2), subjects were told that the recipient would know their membership to a particular social category. Note that in this treatment, what is at stake is the concern about the image of the group to which the subject belongs but not the welfare of in-group or out-group since the donor ignores the social category of the recipient.

In *Treatment 3* (T3), we made saliency even stronger by giving all the information about membership in a social category to the donor and the recipient. In this treatment, two aspects of identity are involved: in-group favoritism and out-group discrimination as well as the status of the group.

Our main contribution is to reveal the effect of different information sets, namely, (a) no knowledge, (b) the recipient knows, (c) the donor knows, and (d) both the recipient and the donor know. Some previous work has studied the effect of a particular information on the characteristics of the donor or the recipient, but we provide a unified framework to analyze the four information sets. The fact that we use a unified framework allows comparability that otherwise would not be possible.

An important finding is that providing information, regardless of its nature or content, has a positive effect on donations. This has methodological implications for the measurement of the effect on altruism of several features since part of the observed effect could be due to the mere provision of information rather than the revealed characteristic.

Since our experiment has a within-subjects design and the participants took all the treatments, some demand effects or image concerns may be present. To further analyze the validity of the results, we run an experiment on MTurk with a between-subjects design for the information sets concerning sex. The results of the between-subjects experiment show weaker effects.

The structure of the paper is as follows. Section II presents our within-subjects experimental design, its implementation, and a description of the treatments and procedures. In Section III we describe our empirical strategy to identify the effects of the information sets. Section IV contains the main results. Section V presents some validity checks using a between-subjects experiment. Finally, Section VI concludes.

2. Methods: Experimental design and procedures

2.1. Main features of the design

The experiment consists of 16 dictator games that differ in the information sets provided to dictators and recipients. There is a baseline treatment where no information is provided; in the other three treatments, participants have an additional piece of information. Each subject faces the treatments in a different random order (within-subject design). Thus, we have information about 16 randomly sorted decisions taken in the same controlled location, with instructions presented in a similar fashion. This allows us to have a unified framework to explore the effect of information on donations. The information refers specifically to wealth, sex and political orientation. It is worth noting these features of our design:

- Donors took the 16 decisions in a random order to control for potential order effects.
- Dictators are informed that only a randomly chosen decision would be paid.
- Natural groups. No artificial labels or groups were used, but the actual attributes of dictators and recipients defined membership to a social category.

2.2. Implementation

The experiment was conducted at Universidad de la República (Uruguay). It was announced via posters and verbal information in regular class time. Students interested in participating had to write an e-mail to an address created specifically for the experiment. We contacted all of them and asked them to submit a questionnaire via web; after the submission, they were going to be notified of place,

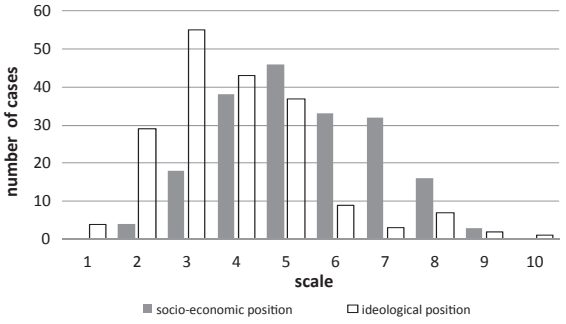


Fig. 1. . Histograms of wealth and ideology.

date and hour of the experimental session.

In order to elicit the natural groups, the questionnaire included items about the (perceived) socio-economic position of their family (which we call wealth), their personal political orientation and gender. The first two variables were collected in a 10-step scale where 1 was extremely Poor / extreme-Left and 10, extremely Rich / extreme-Right. Anonymity was always respected. The participants were identified by an e-mail address given by them and we did not ask their names.

We invited all individuals who submitted the questionnaire. Most of the subjects were undergraduate students of Political Science, Sociology, Social Studies and Economics. We recruited 192 participants. The histograms in Fig. 1 show the distribution of wealth and ideology of the 192 registered subjects (115 women and 77 men). The median and mode of wealth are 5; for ideology, these statistics are 4 and 5, respectively.

Using self-reported information, we classified the subjects as follows: those below the median of the wealth distribution were labeled as *Poor* and those above the median were labeled as *Rich*. The subjects who had reported a position-value identical to the median value where randomly assigned to the *Poor* or *Rich* group. Analogously, we labeled the subjects as *Left-wing* or *Right-wing*. We additionally registered the subject's self-reported sex: *Female*, *Male*.

Subjects were randomly assigned to the roles of donors and recipients. The dictator game took place in two sessions in which all participants were donors. Recipients participated in two other sessions with tasks unrelated to this experiment.

The dictators' sample is composed of 88 subjects (51% are Rich, 36% are Right-wing and 32% are Men). The under-representation of Right-wing subjects is due to their higher absenteeism rate but the under-representation of men responds to the sex composition of the registered students.

The day of the experiment, subjects were given verbal and printed instructions. The first information they received was their social category of wealth, political orientation and sex.[4] We also explained to them the method we used for classification. Those disappointed with their label were allowed to mention it but not to change their status –we will call it *unhappy* (see section III). In fact, 33% did not feel themselves identified with the resulting category of *Rich*, 9% with *Poor*, 44% with *Right-wing* and 4% with *Left-wing*.

The general dictator game consisted of subjects allocating 10 bills of 20 Uruguayan pesos each (around 10 American dollars in total) between the participant and a randomly chosen student who was not in the same room and would never be a dictator. The task was explained in one sheet of a printed booklet. Participants were told to follow the order of the booklet and there were monitors checking compliance. Following List (2007) instructions, the possible payoffs were presented on a line on the sheet and the subjects had to mark their decision with a circle.

The amount of money ranged from 0 pesos (left-end) to 200 pesos (right-end) restricting donations to multiples of 20, that is: 0, 20, 40, 60, 80, 100, 120, 140, 160, 180, 200.

The average dictator's earnings were 142.5 *pesos* (7.13 bills) and the average recipient earnings were 57.5 *pesos* (2.87 bills).

2.3. Treatments

The experiment includes a baseline and three information treatments. In the baseline, the dictator only knows his or her own social categories. Under treatment 1 (*T1*), the subjects know from the recipient group only one of the social categories *("I know about the recipient")*. Thus, *T1* comprises six tasks: donation to a *Woman*, a *Man*, a *Rich*, a *Poor*, a *Left-wing* and a *Right-wing*, regardless the donors' characteristics.

Donations under *T1* allow us to test hypotheses about the effect of information and the effect of informational content. First, note that if information about the recipient has a positive effect on donations, donations in *T1* should be greater than in the baseline whatever the content of the information (see section III for an example). For instance, if the average of donations in *T1* when the information is "*the recipient is a man*" and donations when the information is "*the recipient is a woman*" is greater than the average of donations in the baseline, we can conclude that information about gender per se has a positive effect regardless the specific gender. In the baseline, donors already know that the recipient is either a man or a woman, so that (if information about the recipient had no effect on donations) the decision under incomplete information should be in between the average donation when recipient is a man and when it is a woman (this is shown more formally in section III.c). Thus, the difference between donations in *T1* and the baseline is an appropriate indicator to assess the hypothesis that the mere provision of information has an effect.

Second, the group membership effect is related to the information content and it could trigger favoritism for in-group over out-group (unless one group has lower status than the other). Thus, under this hypothesis, denoting $T1_{j_in}$ and $T1_{j_out}$ the donations under *T1* of members of social category *j* (*j* = *sex, wealth or political orientation*) to the members of the in-group and out-group, respectively, we expect ($T1_{j_in}$ - $T1_{j_out}$) to be positive if donations are only led by group membership concern.

In *T2*, we introduce saliency announcing to the donors that their type will be known by the recipient *("the recipient knows about me")*. Thus, *T2* comprises three tasks according to the donor actual features: *Woman* or *Man*, *Rich* or *Poor* and *Left-wing* or *Right-wing*. In this treatment, the subject cannot distinguish between in-group or out-group recipients; rather, it is the image of the group what is at stake; moreover, following the prescriptions associated with a group strengthens identity and therefore increases utility (see Akerlof & Kranton, 2000; and Aguiar et al., 2010). The prescription of being generous may be stronger for some groups, so this phenomenon would reinforce the effect of social image. We expect higher donations in *T2* than in the baseline because of social image and the

[4] Notice that each booklet had to be personalized. We identified each booklet writing the subject's e-mail on the first page of the booklet. After receiving the booklet, the student threw away that page in order not to be identified. A copy of the original booklet is available on request. The appendix contains the translation of the instructions for three of the 16 decisions.

pursuit of the social category prescriptions.

In T3, we increase saliency through shared information about the group membership of the donor and recipient. Specifically: a) the dictator and recipient have information about each other's group membership, and b) they know that both know this information. The treatment comprises six tasks as in *T1 ("I know about the recipient, I know that the recipient knows about me, I know that the recipient knows that I know")*. We expect higher donations in T3 than in the baseline and also higher than in *T1* due to stronger saliency through public information. Thus, we expect the difference ($T3_{j_in} - T1_{j_in}$) to be positive.

2.4. The booklet

All the tasks were presented in a booklet (one task per page, see Appendix 1). The sheet of each task had a similar appearance. In the *T1* sheets, the labels of the six groups (*Man, Woman, Rich, Poor, Right-wing, Left-wing*) were printed in a column under the title "*Information about your partner*". One of them was circled, indicating that the recipient was a subject with that specific attribute.

In the T2 sheet, the labels of the six groups were printed in a column under the title "*Information about you*". One of them was circled. The circle indicated the donor's characteristic that the recipient will know. No second column was provided.

T3 was presented in a sheet with two columns: on the left column the title was "*Information about you*" and on the right column, "*Information about your partner*" (see the Appendix 1). The circled characteristics indicated the attributes of the donor and recipient. All this information would be known by donor and recipient.

For the baseline treatment there was no circled characteristic.

3. Methods: Empirical strategy

3.1. Notation

We will denote sex as "*s*", wealth as "*w*" and political orientation as "*p*". The donations in tasks of treatment 2 will be denoted *T2s*, *T2w* and *T2p*. For in-group donations (e.g. males to males) we will use "*s_in*", "*w_in*" and "*p_in*". For donations to out-group subjects (e.g. from rich to poor) we will use "*s_out*", "*w_out*" and "*p_out*". For example, in $T1_{s_in}$ the donor knows that the recipient is of the same sex as herself, and in $T1_{w_out}$ the donor knows that the recipient belongs to the opposite social category of wealth.

3.2. Econometric analysis

In order to analyze decisions under different information sets, we build a database of 16 observations per subject (1408 observations) and we estimate a model where the dependent variable is the level of the donation.

As we observe levels of donations from 0 to10 bills, we treat the dependent variable as stemming from a latent variable that is observed in [0,10] and censored otherwise. We state that the latent variable depends on characteristics of the donor and the treatment.

There are three sets of explanatory variables, each one dealing with information about a characteristic (*s, w, p*). The set of variables concerning information about wealth includes:

- a dummy variable that distinguishes *Poor* from *Rich*;
- a set of five dummy variables that identify the treatments related to wealth $T1_{w_in}$, $T1_{w_out}$, $T2_i$, $T3_{w_in}$, $T3_{w_out}$; and
- the interactions between the wealth dummy variable and each of the treatments.

The sets that capture the effect of information about sex and political orientation comprise analogous variables. In addition, we have two dummy variables that indicate if the dictator is *unhappy* with the labels of wealth or political orientation.

We estimate a Tobit model. Since we use the same subjects for the different treatments, in all the estimations we adjust for within-cluster correlation to obtain a robust variance, as proposed by Froot (1989) and implemented by Rogers (1993) in STATA software. We interpret the marginal effects of $T1_{j_in}$ and $T1_{j_out}$ as indicators of the effect of information by itself.

For the assessment of group membership, we compare the difference of the marginal effects of $T1_{j_in}$ and $T1_{j_out}$, calculated from the Tobit model, interpreted as a measure of the increase of donations to in-group over out-group. The effect of saliency is revealed through the average marginal effects of T2 and T3. The marginal effect of $T2_j$ measures the increase of donations (in relation to the baseline) due to information on the donor's social category. The marginal effect $(T3_{s_in}\text{-}T1_{s_in})$ indicates the increase of donations due to revealing donor and recipient social category, in relation to just informing the donor of the social category of the recipient, when donor and recipient have the same membership. We also analyze $(T3_{s_out}\text{-}T1_{s_out})$, that is, the reaction when donor and recipient belong to different groups. Finally, we also use the marginal effect to calculate $(T3_{s_in}\text{-}T3_{s_out})$ - $(T1_{s_in}\text{-}T1_{s_out})$, that is, the change in the difference between the in-group over the out-group when we pass from only informing the donor of the recipient's social category to making public the social category of both donor and recipient. We report the results obtained using the whole sample of participants. As a robustness check, we also made the estimations for the sub-sample that did not declare to be *unhappy* with the labels of wealth or political orientation; we do not report the estimations (that are available on request) but we mention the main results in the text.

The assessment of the effect of information provision will be based on the average marginal effect of T1 for all groups (calculated from predictions of the Tobit model on the latent dependent variable), that is, the estimated increase of donations due to revealed information about the recipient.

In addition to this multivariate model estimation, we report the Cohen's d effect size related to the indicators of the effect of

information by itself, group membership and saliency. Cohen's d is obtained as the ratio of the mean donation difference between treatments and the standard deviation of donation. As we calculate it for the whole sample and by social categories, in some cases the subsample is lower than 50. In these cases we use a small sample correction factor equal to (N-3)/(N-2.25)*((N2)/N)$^{0.5}$.

3.3. Theoretical prediction when information per se has no effect

To illustrate how we measure the effect of information as distinct from the effect of the informational content consider a situation where each subject has to make a decision on how to share an endowment of size 10 with another individual randomly chosen from a population, where half the individuals are type *A* and the other half are type *B*. He has other-regarding preferences so that he cares about others' wellbeing, but the subject is not indifferent between types *A* and *B* and values type *A* utility with higher weight:

$$U(10-x)+\alpha_i U(x),$$

where *i* is the type of the recipient, $\alpha_A > \alpha_B$ and for the sake of simplicity we are assuming everyone has the same utility function *U*, with $U'>0$ and $U''<0$. The difference between α_A and α_B may reflect behavior differences towards in-group and out-group agents; or the social distance between the dictator and the recipient; or even inequity aversion with a larger weight if the recipient is perceived as a person with less resources than the dictator.

With no information, being aware that there is ½ probability that the recipient is type A and ½ the recipient is B, his decision is to give an amount *x* to maximize expected utility:

$$1/2[U(10-x)+\alpha_A U(x)]+1/2[U(10-x)+\alpha_B U(x)].$$

From the first order condition we obtain:

$$U'(10-x)/U'(x)=(1/2)\alpha_A+(1/2)\alpha_B.$$

where *x* denotes the amount given to a recipient of unknown type.

While in the case the type of the recipient *i* is known:

$$U'(10-x_i)/U'(x_i)=\alpha_i$$

where x_i denotes the amount given to type *i*.

From these equations, since $\alpha_A > \alpha_B$, and $U'(10\text{-}x)/U'(x)$ is increasing in the amount donated *x*, if the subject is certain that the recipient is type *A*, he would give more than *x*, $x_A > x$, and if he knows the recipient is type *B* he would give less than x, $x_B < x$. If this were the case, information per se would not increase nor decrease donations: giving would only increase or decrease with respect to the baseline depending on the informational content.

On the contrary, if we observe that $x_A > x_B > x$, we can attribute this to the effect of information disclosure, since from the previous argument x should be between x_A and x_B.

4. Results

Fig. 2 shows the mean donation for the 16 different information conditions, and in Table 1 we show average donations (in bills) and the percentage of selfish decisions (giving 0).

The average donation increases from 2.3 bills in the baseline to around 3 bills under T1, corresponding the highest (lowest) rise to the case in which the subject makes a donation to a recipient of the same (opposite) political orientation. Average donation also increases to around 3 bills when the recipient knows the membership of the donor (T2). Finally, results under T3 are similar to those under T1. Note that the percentage of selfish decisions (giving 0) in the baseline is higher than when the donors know the group-membership of the recipient.

To estimate the treatment effects we run a Tobit regression using the information of all donations using the individual as a cluster; the estimated parameters and standard errors are reported in Appendix 2. The estimations indicate that the donor's characteristics are irrelevant to explain donations in the baseline. Neither the discomfort with the socio-economic and ideological position labels are significant at the usual statistical levels. In the following subsections we present the marginal effects of each treatment.[5]

Besides, in each subsection we report the aggregate effect of all the treatments related to each social category. That is, we do an additional estimation in which we do not include the five treatment dummy variables per social category but just one.

4.1. The effect of information about sex

Table 2 reports the marginal effects of information about sex. Similar results were obtained when restricting the sample to participants that did not declare to be *unhappy* with the labels of wealth or political orientation.

[5] We also estimated the marginal effects obtained after an OLS regression; the estimated effects are close to the difference between the average donation under the treatment and the baseline. The statistical significant of the effects is similar to that under Tobit estimation.

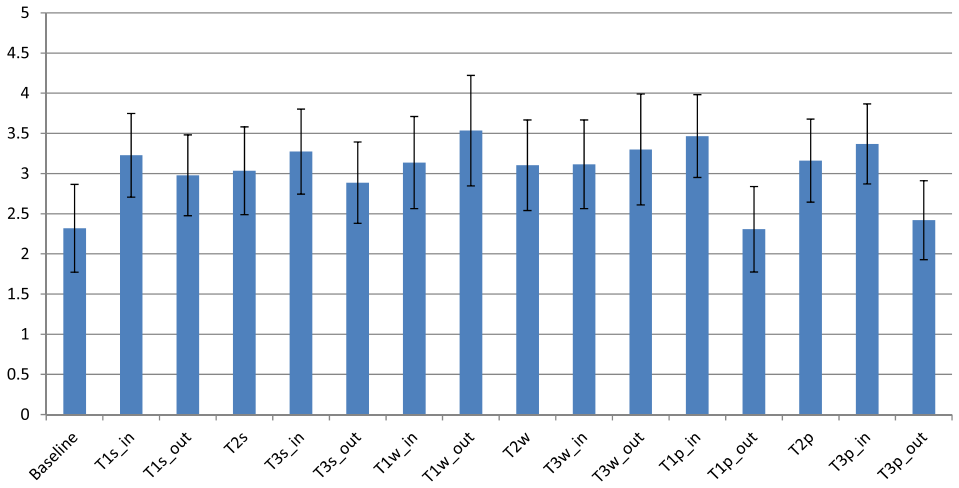


Fig. 2. . Average donations (in bills, 1 bill = 10% of endowment) and confidence interval at 95%

Table 1
Average donation and the percentage of selfish decisions in each treatment (confidence interval at 95% in brackets).

	Information about sex		Information about wealth		Information about politics	
	Donation	% selfish	Donation	% selfish	Donation	% selfish
T1	3.1	21.7	3.3	28.4	2.9	29.5
	[2.7; 3.5]	[16.2; 28.5]	[2.9; 3.8]	[22.2; 35.6]	[2.5; 3.3]	[23.2; 36.7]
T2	3.0	28.4	3.1	26.4	3.2	20.7
	[2.5; 3.6]	[19.9; 38.8]	[2.5; 3.7]	[18.1; 36.8]	[2.6; 3.7]	[13.4; 30.6]
T3	3.1	23.9	3.2	28.7	2.9	26.9
	[2.7; 3.4]	[18.1; 30.8]	[2.8; 3.6]	[22.5; 35.9]	[2.5; 3.2]	[20.8; 34.0]

Note: In the baseline, the average donation is 2.3 bills and the percentage of selfish decisions is 44.3. The confidence intervals at 95% are [1.8; 2.9] and [34.2; 54.9], respectively.

Before presenting the indicators of interest to our analysis, at the top of Table 2 we report the marginal effect of having participated in a treatment related to information about sex. They are positive for all participants and for women and men, separately.

The effect of information disclosure. We show the estimated marginal effects of $T1_{s_in}$ and $T1_{s_out}$, that is, the increase in donations (relative to the baseline) due to information on the recipient's sex (see block A in Table 2). The effects are positive and significant for *All*, for only *Men* and for only *Women*. In sum, these results indicate that both women and men increase their donations when they know the sex of the recipient, whatever the sex of the recipient.

As the donors have their sixteen tasks in one booklet so they can revise their decisions, and they are aware that the recipient can only be a male or a female, why would the donors give less in the baseline than both in $T1_{s_in}$ and $T1_{s_out}$? Giving information on the recipient seems to increase donations independently of the type of information. The usual argument is that information makes more credible the fact that donations will actually be implemented, encouraging the likelihood of giving and the level of donations (Frohlich, Oppenheimer and Moore, 2001). However, given our within-subjects design, credibility is likely to be constant throughout the experiment. Thus, information provision seems to have an effect separately from that of credibility.

In subsequent sections, we will also check this effect for wealth and political orientation.

This result indicates that the positive effect of information on giving should be separated from the effect of the content of the information given. That is, whenever some information is provided in an experiment, one should be aware of the fact that its effect on altruism may not be attributable to the content but to the mere provision of information.

Group membership. As reported in Table 2 (block A, top), both groups are more generous to *Women* than to *Men* (a similar result was also found by Engel (2011) in a *meta*-study of the dictator game). The in-group effect appears to be more important for *Women* (the estimated effect of T_{1s_in} is 1.8) than for *Men* (0.7). *Men* give more than *Women* to the out-group: $T1_{s_out}$ (p-value = 0.07).

These different results for *Women* and *Men* concerning group membership are highlighted when we calculate the difference between $T1_{s_in}$ and $T1_{s_out}$ (block B in Table 2). In brief, *Women* favor their own group over the opposite but *Men* do not follow this pattern: they show more solidarity towards *Women* than towards *Men*. Hence, we find a positive group-membership effect for *Women* and negative for *Men*. These results are similar to those obtained in previous research on gender differences (Dufwenberg & Muren, 2006; Holm & Engseld, 2005). The fact that the group-membership effects for *Women* and *Men* have the opposite sign implies that when we subtract $T1_{s_out}$ from $T1_{s_in}$ for all the subjects we do not find a significant difference, hiding the different behavior by gender.

Saliency. In T2 we manipulate the information to bring into play the image of the group: donors are informed that the recipient will know the sex of the person who is making the donation. We find a positive effect of this information on giving, higher for *Women* than

Table 2
Tobit regression: estimated marginal effects of information about sex.

Donations (in bills) 1 bill = 10% endowment	All		Men		Women		Difference (M-W)[d/]	
Information about gender	1.3	***	1.1	***	1.4	***	−0.3	
	[0.31]		[0.23]		[0.35]		[−0.12]	
A. Information by itself								
$T1_{s\text{-}in}$ [b/]	1.4	***	0.7	*	1.8	***	−1.1	**
	[0.50]		[0.38]		[0.56]		[−0.44]	
$T1_{s\text{-}out}$ [b/]	1.2	***	1.7	***	1.0	***	0.7	
	[0.37]		[0.80]		[0.25]		[0.29]	
B. Group Membership								
$T1_{s\text{-}in}$-$T1_{s\text{-}out}$ [c/]	0.2		−1.0	**	0.8	**	−1.8	***
	[0.14]		[−0.55]		[0.35]		[−0.72]	
C. Saliency								
$T2_s$ [b/]	1.1	***	0.8	*	1.3	***	−0.5	
	[0.37]		[0.36]		[0.38]		[−0.22]	
$T3_{s\text{-}in}$-$T1_{s\text{-}in}$ [c/]	0.1		0.1		0.0		0.1	
	[0.05]		[0.16]		[0.02]		[0.10]	
$T3_{s\text{-}out}$-$T1_{s\text{-}out}$ [c/]	−0.2		−0.3		−0.2		−0.1	
	[−0.07]		[−0.25]		[−0.04]		[−0.09]	
$(T3_{s\text{-}in}$-$T3_{s\text{-}out})$ - $(T1_{s\text{-}in}$-$T1_{s\text{-}out})$ [c/]	0.3		0.4	*	0.2		0.2	
	[0.09]		[0.36]		[0.05]		[0.11]	

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
[a/] Cohen's d size effect in brackets. Cohen's d effect is the difference in donation between treatment and baseline divided over the pooled standard deviation. For groups with sample size (N) < 50, the effect is adjusted by a small sample correction factor equal to (N-3)/(N-2.25)*((N-2)/N)^0.5.
[b/] The marginal effect is the estimated increase of the donation due to the treatment (related to the baseline).
[c/] Difference of marginal effects.
[d/] Difference between previous columns.

for *Men* ($T2_s$ in block C). This result would imply that social image is stronger for *Women*. Moreover, *Women* may be aware of the fact that they are more generous than *Men* (see Eckel and Grossman, 2001) and that they are expected to be more generous (Aguiar et al., 2009; Brañas-Garza et al. 2018), and pursuing that social norm they react more to information disclosure than *Men* (Pereda et al, 2017).

In sum, our results would indicate that gender identity feelings are stronger for *Women* than for *Men*, which is consistent with the previous result of the membership effect.

In *T3* we manipulate information in order to modulate saliency, by making public the group membership of donors and recipients. They know the sex of each other and they know that both have that information. We expect that common knowledge strengthen the effect of group membership. However, we do not find significant changes when we calculate the effect of *T3* over *T1* neither when giving to the in-group nor to the out-group. Nevertheless, the difference $(T3_{_in}$-$T3_{_out})$ - $(T1_{_in}$-$T1_{_out})$ is significant for *Men* (block C, bottom). Thus, though common knowledge does not seem to have a strong additional effect relative to *T1*, saliency increases the relative donation *Men/Woman*. *Men* still favor the out-group over the in-group, but the gap narrows.

4.2. The effect of information about wealth

The sensitivity of donations to wealth or social status of the recipient has been explained by fairness concerns. *Rich* subjects would perceive as fair to decrease their advantage and therefore they would give more to a *Poor* recipient. Fehr and Schmidt (1999) formalize fairness as a self-centered inequity aversion. Subjects suffer a loss of utility whenever they have an advantageous position and would sacrifice part of their resources to reduce the monetary gap, motivated by feelings of guilt (see Battigalli and Dufwenberg, 2007; Brañas-Garza, Rodriguez-Lara and Sanchez, 2017). When in a disadvantageous position, subjects suffer an even larger utility loss based on feelings of envy (see Cabrales and Ponti, 2015). In the light of these considerations, we will interpret the effect of the treatment consisting on providing information about wealth.

The effect of information disclosure. In block A of Table 3 we show the effect of *T1*. For *Rich* subjects we have results consistent with the hypothesis that there is a positive effect on donations just for giving information about the recipient, whatever the group. Indeed, the marginal effects are 4.4 and null when the recipient is *Poor* and *Rich*, respectively. Note that when the *Rich* subjects are told that the recipient is *Rich*, inequality concerns *à la* Fehr and Schmidt (1999) would imply lower donations than in the baseline (where recipients may be *Poor* or *Rich*), but just providing information increases donations which would compensate for the potential decrease.

The result is not the same for the *Poor* subjects. They decrease their donation when the recipient is *Rich* (the effect of $T1_{w_out}$ is −1.6) and increase it when the recipient is *Poor* (3.1). Note that because of the construction of the groups (that was explained to the participants) in the baseline about half of the recipients are *Poor* and the other half are *Rich*. Thus, the average giving to the in-group and the out-group should coincide with the baseline and in the sum of $T1_{w_in}$ and $T1_{w_out}$ the effect should cancel out. But $T1_{w_in}$ is larger than the absolute value of $T1_{w_out}$. This is due to the fact that providing information has a positive effect by itself.

Table 3
Tobit regression: estimated marginal effects of information about wealth.

Donations (in bills) 1 bill = 10% endowment	All		Rich		Poor		Difference (R-P) [d/]	
Information about wealth	1.4	***	1.9	***	0.9	***	1.0	***
	[0.32]		[0.52]		[0.10]		[0.49]	
A. Information by itself								
$T1_{w\text{-}in}$ [b/]	1.2	***	−0.6		3.1	***	−3.7	***
	[0.39]		[−0.13]		[1.04]		[−1.02]	
$T1_{w\text{-}out}$ [b/]	1.5	***	4.4	***	−1.6	**	6.0	***
	[0.36]		[1.42]		[−0.57]		[1.43]	
B. Group Membership								
$T1_{w\text{-}in}$-$T1_{w\text{-}out}$ [c/]	−0.3		−5.0	***	4.7	***	−9.7	***
	[−0.09]		[−1.36]		[1.11]		[−1.58]	
C. Saliency								
$T2_{w}$ [b/]	1.3	***	1.5	***	1.0	***	0.5	
	[0.43]		[0.54]		[0.24]		[0.51]	
$T3_{w\text{-}in}$-$T1_{w\text{-}in}$ [c/]	0.1		0.6		−0.5		1.1	**
	[0.04]		[0.28]		[−0.23]		[0.51]	
$T3_{w\text{-}out}$-$T1_{w\text{-}out}$ [c/]	−0.2		−0.6		0.3		−0.9	
	[−0.10]		[−0.20]		[0.19]		[−0.35]	
($T3_{w\text{-}in}$-$T3_{w\text{-}out}$) - ($T1_{w\text{-}in}$-$T1_{w\text{-}out}$) [c/]	0.2		1.2	*	−0.8	**	2.0	**
	[0.11]		[0.30]		[−0.32]		[0.57]	

Notes: * p < 0.05, ** p < 0.01, *** p < 0.001.
[a/] Cohen's d size effect in brackets. Cohen's d effect is the difference in donation between treatment and baseline divided over the pooled standard deviation. For groups with sample size (N) < 50, the effect is adjusted by a small sample correction factor equal to (N-3)/(N-2.25)*((N-2)/N)^0.5.
[b/] The marginal effect is the estimated increase of the donation due to the treatment (related to the baseline).
[c/] Difference of marginal effects.
[d/] Difference between previous columns.

Group membership. The estimated effects reported in block B of Table 3 indicate that information about recipient's wealth is not neutral and reflects inequality concerns.

Indeed the *Rich* increase their donation when the recipient is *Poor*, and ($T1_{w_in}$ – $T1_{w_out}$) is negative (−5.0) as expected by the fairness concerns. It is also possible that this increase in donations stems from a social identity that prescribes that "*the Rich should help the Poor*". That is, the behavior could also be the outcome of a social norm. Whatever the explanation, the negative value of ($T1_{w_in}$ - $T1_{w_out}$) indicates that we do not find an in-group / out-group effect. However, as we find a positive effect of *T2* (see below) we interpret that the inequality aversion or social identity effects are big enough to offset a potential positive impact of group-membership.

Table 4
Tobit regression: estimated marginal effects of information about political orientation.

Donations (in bills) 1 bill = 10% endowment	All	Right-wing	Left-wing	Diff. (R-L) [d/]	Strong Right-wing	Strong Left-wing	Diff. (sR-sL) [d/]
Information about political orientation	1.1***	1.0***	1.2***	−0.2	0.9**	1.1***	−0.2
	[0.25]	[0.33]	[0.21]	[0.15]	[0.27]	[0.16]	[0.15]
A. Information by itself							
$T1_{p\text{-}in}$ [b/]	1.8***	1.3**	2.1***	−0.8	1.9*	2.0***	−0.1
	[0.58]	[0.45]	[0.74]	[0.00]	[0.49]	[0.74]	[0.28]
$T1_{p\text{-}out}$ [b/]	0.0	0.7	−0.4	1.1	−0.5	−0.8	0.3
	[−0.01]	[0.24]	[−0.21]	[0.47]	[−0.10]	[−0.33]	[0.18]
B. Group Membership							
$T1_{p\text{-}in}$-$T1_{p\text{-}out}$ [c/]	1.9***	0.7	2.5***	−1.8*	2.4*	2.8***	−0.4
	[0.46]	[0.14]	[0.85]	[−0.41]	[0.50]	[0.84]	[0.10]
C. Saliency							
$T2_{p}$ [a/]	1.4***	1.3***	1.5***	−0.2	1.7***	1.4***	0.3
	[0.46]	[0.49]	[0.43]	[0.21]	[0.50]	[0.45]	[0.41]
$T3_{p\text{-}in}$-$T1_{p\text{-}in}$ [c/]	−0.1	−0.6	0.1	−0.7	−1.2	0.3	−1.5
	[−0.02]	[−0.12]	[0.10]	[−0.24]	[−0.20]	[0.21]	[−0.51]
$T3_{p\text{-}out}$-$T1_{p\text{-}out}$ c/	0.3	0.00	0.5	−0.5	0.9	0.5	0.4
	[0.07]	[−0.04]	[0.19]	[−0.20]	[0.25]	[0.18]	[0.25]
($T3_{p\text{-}in}$-$T3_{p\text{-}out}$) - ($T1_{p\text{-}in}$-$T1_{p\text{-}out}$) c/	−0.4	−0.6	−0.4	−0.2	−2.1	−0.2	−1.9
	[−0.06]	[−0.05]	[−0.08]	[−0.03]	[−0.27]	[0.00]	[0.51]

Notes: * p < 0.05, ** p < 0.01, *** p < 0.001.
[a/] Cohen's d size effect in brackets. Cohen's d effect is the difference in donation between treatment and baseline divided over the pooled standard deviation. For groups with sample size (N) < 50, the effect is adjusted by a small sample correction factor equal to (N-3)/(N-2.25)*((N-2)/N)^0.5.
[b/] The marginal effect is the estimated increase of the donation due to the treatment (related to the baseline).
[c/] Difference of marginal effects.
[d/] Difference between previous columns.

For the *Poor* subjects, ($T1_{w_in}$ - $T1_{w_out}$) is positive (4.7) as a result of fairness concerns, that in this case cannot be distinguished from a positive in-group effect and a negative out-group effect.

Saliency. Information about the dictator's wealth group has a positive effect no matter the group ($T2_w$ in block C). When the dictator is *Poor*, inequality concerns would imply a lower donation than in the baseline (after all, being poor is a good excuse for not giving). However, we observe just the opposite, donations increase.

The overall results hold when using the restricted sample (participants that did not declare to be *unhappy)*. However, the group membership effect and saliency on *Poor* subjects are a bit stronger in the restricted sample.

We might argue that the reaction of *Rich* subjects is triggered by guilt aversion (recipients would expect to receive a high donation if the donor is *Rich*; see Battigalli & Dufwenberg, 2007), but this argument would not explain why *Poor* subjects give more. In sum, the positive effect of *T2* on giving suggests that *Rich* and *Poor* behave as if they actually were concerned with their group-image.

Finally, there is an effect of making public all information over only informing the recipient's group [($T3_{_in}$-$T3_{_}^{out}$) - ($T1_{_in}$-$T1_{_out}$)] in block C of Table 3. In the case of the *Rich* subjects, the difference is positive (1.2). This is due to the increase in giving to the in-group ($T3_{_in}$- $T1_{_in}$). Thus, though the in-group effect is not strong enough to increase the donation ($T1_{w_in}$), the *Rich* subjects are concerned with how their peers perceive them.

On the contrary, for the *Poor* the group membership effect [($T3_{_in}$-$T3_{_out}$) - ($T1_{_in}$-$T1_{_out}$)] is negative. This is due to a decline of the donations to the *Poor* ($T3_{_in}$- $T1_{_in}$). It seems as if *Poor* donors find some relief when it is public that both are *Poor* and feel less compelled to give.

4.3. The effect of information about political orientation

We present the main results related to the treatments with information about political orientation in Table 4. Though this table is analogous to the tables presented below, there are two additional columns in which we report the outcome of an alternative estimation that accounts for the fact that some subjects felt unhappy with their label (the median of the political orientation was 4 in a scale from 1 to 10, so that subjects who marked 5 were labelled as *Right-wing*). In this estimation the *Strong Right-wing* partisans group is made up by subjects who marked 5 to 9 (no one marked 10) and were not displeased by being branded *Right-wing* (50% marked 5). On the other extreme, we label the subjects who reported levels 1, 2 or 3 *Strong Left-wing* partisans if they were not displeased by being branded *Left-wing*.

Thus, in the last two columns we dropped the subjects who were displeased by being branded *Right-wing* (who had all marked 5) and the *Left-wing* who marked 4 or 5. Note that according to the marks, we capture a higher frequency of extreme positions in the strong *Left* than in the strong *Right* group.

The effect of information disclosure. We find once again evidence of the effect of information by itself (block A in Table 4). For *Right-wing* subjects, the effect of information on giving is positive when the recipient is an in-group and null when the recipient is an out-group. The outcome is the same when we consider only the *Strong Right-wing* partisans, though they seem to be more sensitive to their in-group members. The picture is similar for *Left-wing* subjects. Donors behave as if in the baseline there was not a 50–50 probability that the recipient is *Right* or *Left* (though they knew these probabilities since the beginning of the experiment).

Concerning the magnitude of the effects, a left-wing subject donates 21% more when he knows that the recipient belongs to the in-group than in the baseline treatment, which means a donation of 44% of the endowment. In the case of right-wing subjects, the marginal effects are smaller, 13%, which amounts to an average donation of 36% of the endowment to a recipient in the in-group.

When we eliminate the subjects who did not agree with their assignment, the marginal effects (also reported in Table 4) are 20% and 19% respectively, that is, left-wing subjects gave 43% to subjects in their in-group, while right-wing subjects gave 42%. As expected, we found weaker marginal effects on donations to the out-group, left-wing subjects donated 7% less to the outgroup than in the baseline.

Group membership. We find a group membership effect for *Strong Right-wing* partisans and the two samples of *Left-wing* subjects. The range of increase in the donation is between 2 and 3 (block B in Table 4). Note that in general the group effect comes from a larger generosity to the in-group but not at the expense of the out-group ($T1_{p_out}$ is null), although in the case of *Strong Left-wing* $T1_{p_out}$ is negative and weakly significant.

Saliency. When subjects know their political orientation will be disclosed to the recipient, they all increase the donation (block C in Table 4). However, we do not find an effect of T3 over T1.

5. A between-subjects analysis on sex

The overall objective of this research is to determine the impact of information disclosure on individual donations. The information may concern the recipient, the donor herself or both, compared to a baseline with no information at all. The within-subjects design allows to measure the treatment effects at the individual level, i.e. the change in individual behavior under different conditions (Rubin, 1974). However, this design may be subject to demand effects or image concerns. When subjects are aware (or even just have a minimal taste) of the experimental objectives, they may wish - even subconsciously- to help or hurt the research and, consequently change their behavior. This may act as a confound which is not controllable (Zizzo, 2010).

The risk that there is some carryover effect between decisions is mitigated randomizing the order of the decisions by individual, to control for any order effects. However, even when decisions are randomly sorted, in a within-subjects experiment there may be some contamination across decisions, for instance, due to experience across the experiment. In sharp contrast, a between-subjects design, by applying the treatments to different decision makers, would avoid this contamination. Hence, the measurement of the average

treatment effect is cleaner; however, it is fair to admit that between-subjects experiments also have some drawbacks: the unobserved heterogeneity among participants, even with random assignment to treatments, introduces variability and therefore to identify the effects the sample sizes needed are much larger.

In this section, we extend our analysis to a between-subjects experiment focusing on one of the social categories in our study: gender. The reasons for this choice are twofold. First, subjects do not show disagreement with the self-reported label and, second, the potential heterogeneity of participants makes it more difficult to classify them as rich or poor, left or right, using the median of the sample.

We conducted the between-subjects experiment through Amazon Mechanical Turk in May 2020. Our database includes donations of 1204 participants (601 male and 603 female (see note of Fig. 3 for sample size by treatment).[6]

Participants reported their gender (male/female/other), year of birth and household income (11 range intervals). Instructions were similar to the ones of the previous experiment: participants were given an endowment of 1 USD and had to decide the amount that they wanted to transfer ($0.00, $0.10, …, $0.90, $1.00).

- In the baseline, the donors have no information about the recipient;
- In Treatment 1, donors have information about the gender of the recipient;
- In Treatment 2, donors know that their gender will be disclosed to the recipient;
- In Treatment 3, participants know the two pieces of information.

In Fig. 3, we show the average value of donations. On the left (right) panel, we show observations from male (female) participants. Donations are measured in dimes to ease the comparison with the within-subjects experiment (1 dime is 10% of the endowment). As in the previous analysis, we denote $T1_{in}$ the observed donations under Treatment 1 by men to men and by women to women. Similarly, $T1_{out}$ refers to donations made by participants under Treatment 1 to a recipient of the other gender.

Fig. 3 shows that male subjects are more sensitive to treatment effects than female subjects. Indeed, the baseline for men is the lowest (20% of the endowment) while the baseline for women is very high (34% of the endowment). The regression analysis explores treatment effects in more detail.

We estimated a tobit model of donations using the following independent variables: gender (male = 1); a dummy variable that takes value 1 when household income is over the median of participants; year of birth; and dummy variables for Treatments 1, 2 and 3. We also present a model that includes the interaction of treatment and gender. In Table 5, we report the estimated marginal effects for the between-subjects experiment, the (one-sided) p-value and the Cohen's d. In this section, we present one-tailed tests since the results of the within-subjects experiment provide us with a hypothesis on the direction of the effects.

The marginal effect of Treatment 1 (information disclosure about the recipient) is positive but not significant at 5% (p-value = 0.099; d = 0.08). The last two columns in Table 5 show differences between females and males; there is a weak effect of information disclosure for men (p-value = 0.055; d = 0.20) and clearly non-significant for women (p-value = 0.444; d = 0.04).

In Treatment 2, we measure the change in donations when the donor is aware that the recipient will know the social category of the donor. We find a weak positive effect of information disclosure about the donor (p-value = 0.056; d = 0.11). Again, the effect is stronger for male subjects (p-value = 0.017; d = 0.28) and vanishes for female subjects.

Finally, the differences between Treatment 3 and Treatment 1 are small both for male and female subjects, as it was the case in the within-subjects experiment.

In the previous within-subjects study, providing information about the sex of the recipient or the donor's has a positive effect on giving (whatever the informational content). In the between-subjects experiment, the average treatment effects go in the same direction than those previously reported from a within-subjects experiment but they are much weaker and, for the most part, not significant even with one-sided tests. The results in the between-subjects experiment do not allow us to validate in this setting the effect of information provision that we found in the within-subjects experiment. These differences in the size of the treatment effects may be traced to possible demand effects in the within-subjects experiment and the variability introduced by unobserved heterogeneity in the between-subjects study.

6. Discussion

We present experimental evidence on the effect of information disclosure about the social categories of donor and recipient in a dictator game. The design allows us to separate the effect of information provision and that of the informational content.

In a within-subjects setting, we find that providing information about any of the recipient's characteristic increases giving, regardless of the information disclosed. One implication of our results is that the effect of information per se, independent of its content, is not negligible and it could be confounded with the effect of the informational content. This result should be taken into account in experiments measuring differences in altruism under different conditions, which could be wrongly attributed to the

[6] It is worth noting that the within-subjects design might be underpowered for some of the tests. The lack of statistical power should not be a problem for significant coefficients; however, we might be not able to detect other effects that fail to appear as significant due to the lack of power. The MTurk experimental design is sufficiently powered. We decided to take the most conservative option: an average effect of 0.33SD with a power of 0.8 and a significance level of 90%. Therefore, the minimum sample size in these studies is $n = 200$ (100 baseline + 100 treatment). All our 12 subsamples contain 100 participants (see note of Fig. 3) so the minimum sample size is reached.

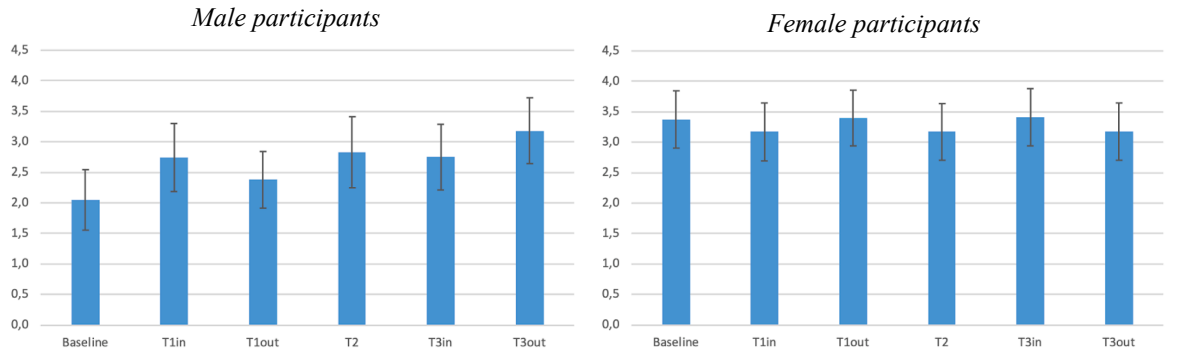


Fig. 3. . Between-subjects experiment. Average donation by gender. Confidence interval at 95%. *Note*: Sample size for males: Baseline ($n = 100$), $T1_{in}$ ($n = 100$), $T1_{out}$ ($n = 100$), T2 ($n = 101$), $T3_{in}$ ($n = 100$), $T3_{out}$ ($n = 100$); for females: Baseline ($n = 101$), $T1_{in}$ ($n = 101$), $T1_{out}$ ($n = 100$), T2 ($n = 100$), $T3_{in}$ ($n = 100$), $T3_{out}$ ($n = 100$).

Table 5
Between-subjects experiment. Tobit regression: estimated marginal effects of treatments.

Donation (in dimes) 1 dime = 10% endowment	All	Men	Women
Treatment 1			
without interaction T1*gender	0.4		
	(0.099)		
	[0.08]		
with interaction T1*gender	0.5	0.9	0.1
	(0.088)	(0.055)	(0.444)
	[0.08]	[0.20]	[0.04]
Treatment 2			
without interaction T2*gender	0.6		
	(0.056)		
	[0.11]		
with interaction T2*gender	0.7	1.4	0.0
	(0.050)	(0.017)	(0.482)
	[0.11]	[0.28]	[0.09]
Treatment 3 – Treatment 1			
without interaction T3*gender	0.3		
	(0.111)		
	[0.08]		
with interaction T3*gender	0.4	0.7	0.0
	(0.107)	(0.124)	(0.501)
	[0.08]	[0.15]	[0.01]

Note: p-value of one-sided test in parentheses; Cohen's d in brackets.

particular condition introduced but may be due just to the effect of providing information.

It is worth noting that we identify an effect of information disclosure that is distinct from its impact on credibility (Frohlich, Oppenheimer and Moore, 2001). The reason is that ours is a within-subjects design where the order of decisions is randomized and therefore it cannot be argued that credibility changes from decision to decision. Apparently, providing information triggers a mental imagery about the other that reinforces altruism (Dickert et al, 2016).

When informing the donor of a recipient's characteristic, the increase of donation to in-group over out-group ranged from −5.0 (*Rich*) to 2.7 (*Strong Left-wing*). In fact, political orientation is the social category that best suits the expected behavior from an in-group / out-group perspective. Both *Right-wing* and *Left-wing* subjects favor their in-group over the out-group, though the results are less robust for the *Right-wing* than for *Left-wing* individuals. This effect is due to generosity with in-group but not at the expense of the out-group, except in the case of *Strong Left-wing* partisans who favor *Left-wing* and discriminate against *Right-wing* subjects.

Two other social categories react with an in-group / out-group perspective: *Women* and *Poor*. *Women* increase donations to both *Women* and *Men* when they receive information about the sex of the recipient, but the rise is higher for the former than for the latter. *Poor* favor the in-group and discriminate against the *Rich*.

Two social categories favor the out-group over the in-group: *Men* and *Rich*. A combination of effects stemming from inequality aversion, social norms and group-membership may be behind this behavior.

Saliency introduced through Treatments 2 and 3 captures the effect of social identity. As expected, we find an increase of generosity when subjects know that their group, whatever the group, will be disclosed. The effect ranged from 0.8 (*Men*) to 1.7 (*Strong Left-wing*).

Thus, for all the considered social categories, identity shows up as a concern for the social image of the group.

The main purpose of our research was to uncover the effect of information disclosure on giving: how individuals react when they know some characteristic of the donor or when the recipient knows the social category of the donor, or when both are aware of their social categories. Our results in a within-subjects experiment indicate that information has a positive effect on giving, whatever the information provided and for all the social categories considered. However, the treatment effects in a between-subjects study for one of the social categories considered (sex) are weaker and we could not find solid evidence in this setting that information has a significant effect on giving. The question of whether these differences are due to demand effects when subjects are asked about their donations to several different types of profiles or to unobserved heterogeneity in the between-subjects design is left for further research.

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