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## Altruism and information\*

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### Abstract

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Experimental literature has accumulated evidence on the association of personal characteristics 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 to analyze the impact of social class, political orientation and gender on the level of giving; our experimental design allows us to reveal the effect of providing information by itself, with respect to the baseline treatment of no information, and separately from the effect of the informational content. These results could be relevant to any design intended to measure the impact on altruism of different manipulations of the Dictator Game.

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**Keywords:** economic experiments, information, wealth, gender, ideology, inequity aversion, giving.

**JEL Class.:** C91, D64, I30.

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## I - INTRODUCTION

One distinctive feature of humans is their ability to help unrelated individuals (strangers) even in one-shot sporadic interactions. Understanding why people donate to strangers is an essential element of the human pro-social puzzle. The 25 years of laboratory research in altruism using the Dictator Game (DG hereafter) has provided a number of insightful answers (see Engel, 2011, and the references therein): sense of inequity aversion, identity, warm glow, guilt aversion (due to the recipient's expectations), social pressure or social distance, are all forces behind social behaviour. 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 be correlated with giving. Among them, social class (Hoffman, 2011; Piff et al., 2010; Bechler, Green and Myerson, 2015), political ideology (Zettler and Hilbig, 2010), religion (Brañas-Garza, Espin and Neumann, 2014; Forbes and Zampelli, 2013; Eckel and Grossman, 2004; Anderson and Mellor, 2009), fairness criteria (Konow, 2000) and gender<sup>1</sup> (Andreoni and Vesterlund, 2001; Croson and Gneezy, 2009; and Eckel and Grossman, 1998). Recent evidence shows that intuition favors altruism (see Rand et al. for a meta-analysis).

On the other hand, experimental results indicate that not only the donor's attributes 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 Engfeld, 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). Subjects are also sensitive to the sex of the recipient: women receive higher donations than men (Dufwenberg and Muren, 2000; 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

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<sup>1</sup> Aguiar *et al.* (2010) shows that women are also expected to be more generous. Brañas-Garza et al. (2018) replicates the result in the field among MTurkers.

may trigger a different behavior towards in-group members and outsiders (see Charness, Rigotti and Rustichini, 2007; and Chen and 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)<sup>2</sup>.

The main contribution of this paper is that we launch an experimental setting that allows us to reveal for the very same individual the effect of providing information by itself, 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 the very same subject reacts to different information sets on attributes and a comparison of their relative strength.

Another important feature of this research –compared to previous 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, 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.

At the beginning of the experiment donors were reminded their actual social categories (wealth, gender and political orientation). Then they faced several DG in which they had different pieces of

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<sup>2</sup> 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.

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-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 affect donations. Following Charness, Rigotti and Rustichini (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.

An important finding is that providing information, regardless of its nature or content, has a positive effect on donations. The structure of the paper is as follows. Section 2 presents the experimental design, its implementation, and a description of the treatments and procedures. In Sections 3, 4 and 5 we present the results related to information on gender, wealth and political orientation. Finally, Section 6 concludes.

## **II - METHODS: EXPERIMENTAL DESIGN AND PROCEDURES**

### *II.a) 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. Three important features of the design should be considered:

- Donors took the 16 decisions in a random order to control.
- 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.

### *II.b) Implementation*

The experiment was conducted at Universidad de la República (Uruguay). It was announced via posters and verbal information in regular class time. Most of the subjects were undergraduate students of Political Science, Sociology, Social Studies and Economics.

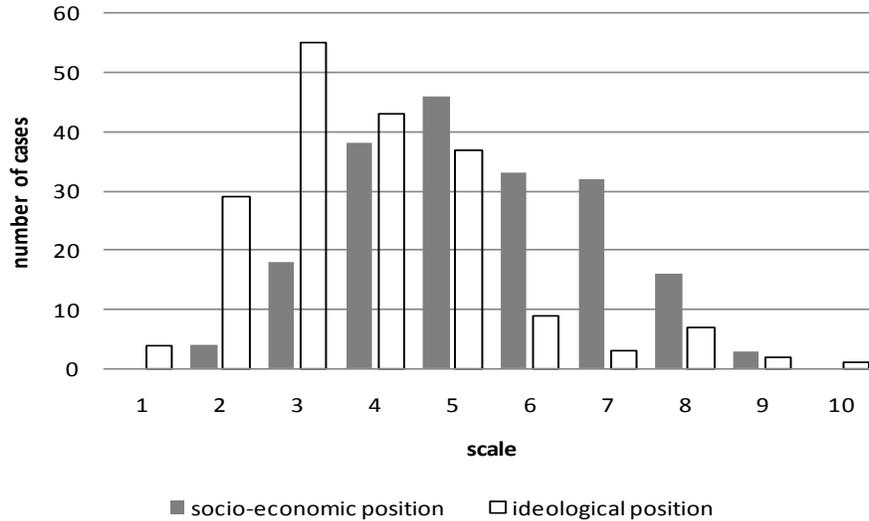
In order to elicit the natural groups, we asked the students interested in participating to fill a questionnaire in which they answered questions about the (perceived) socio-economic position of their family (which we call wealth), their personal political orientation and gender. The first two variables 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 recruited 192 participants. The histograms in Figure 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 were 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*.

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.

**Figure 1:** Histograms of wealth and ideology



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.<sup>3</sup> 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 inviting to allocate 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 will never be a dictator. The task was explained in one sheet of a printed booklet. 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.

<sup>3</sup> 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.

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).

### *II.c) 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 *TI* 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 *TI* 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 the decision under incomplete information should be in between the average donation when recipient is a man and when it is a woman. 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 should trigger favoritism for in-group over out-group. Thus, under this hypothesis, denoting  $TI_{j\_in}$  and  $TI_{j\_out}$  the donations under *TI* 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  $(TI_{j\_in} - TI_{j\_out})$  to be positive at least for some social categories.

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. But the image of the group is at stake; moreover, following the prescriptions associated with a group strengthens identity and therefore increases utility (see Akerloff and 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 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.

#### *II.d) 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.

### III - METHODS: EMPIRICAL STRATEGY

#### III.a) 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  $TI_{s\_in}$  the donor knows that the recipient is of the same sex as herself, and in  $TI_{w\_out}$  the donor knows that the recipient belongs to the opposite social category of wealth.

#### III.b) 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 to 10 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 income includes:

- a dummy variable that distinguishes *Poor* from *Rich*;
- a set of five dummy variables that identify the treatments related to income  $TI_{i\_in}$ ,  $TI_{i\_out}$ ,  $T2_i$ ,  $T3_{i\_in}$ ,  $T3_{i\_out}$ ; and
- the interactions between the income 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 income 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.

For the assessment of group membership we compare the difference of the marginal effects of  $TI_{j\_in}$  and  $TI_{j\_out}$ , 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  $(T3_{s\_in}-T1_{s\_in})$  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  $(T3_{s\_out}-T1_{s\_out})$ , that is, the reaction when donor and recipient belong to different groups. Finally, we also use the marginal effect to calculate  $(T3_{s\_in}-T3_{s\_out}) - (T1_{s\_in}-T1_{s\_out})$ , 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.

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. To illustrate how we measure the effect of information as distinct from the effect of the informational content consider the following example.

### *III.c) Example*

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  $\alpha_A$  and  $\alpha_B$  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  $\frac{1}{2}$  probability that the recipient is type *A* and  $\frac{1}{2}$  the recipient is *B*, his decision is to give an amount  $x$  to maximize expected utility:

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

From the first order condition we obtain:

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

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  $i$ .

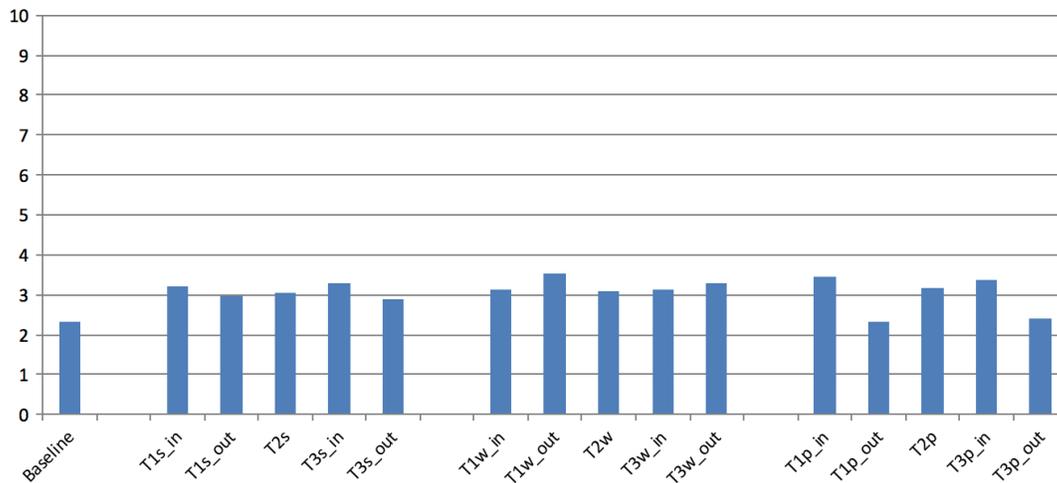
From these equations, since  $\alpha_A > \alpha_B$ , and  $U'(10-x)/U'(x)$  is increasing in the amount donated  $x$ , if the subject is certain that the recipient is type  $A$ , he would give more than  $x$ ,  $x_A > x$ , and if he knows the recipient is type  $B$  he would give less than  $x$ ,  $x_B < x$ . 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  $x_B$ .

#### IV - RESULTS

Figure 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).

**Figure 2: Average donations**



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.

**Table 1:** Average donation and the percentage of selfish decisions in each treatment.

	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	29.6
T2	3.0	28.4	3.1	26.4	3.2	20.7
T3	3.3	21.6	3.2	28.7	2.9	26.9

Note: In the baseline the average donation is 2.3 bills and the percentage of selfish decisions is 44.3.

To estimate the treatment effects we run a Tobit regression; the estimated parameters 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.<sup>4</sup>

*IV.a). The effect of information about Sex*

Table 2 reports the marginal effects of information about sex.

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<sup>4</sup> 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.

**The effect of information disclosure.** We show the estimated marginal effects of  $TI_{s\_in}$  and  $TI_{s\_out}$ , 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  $TI_{s\_in}$  and  $TI_{s\_out}$ ? 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  $TI_{s\_in}$  is 1.8) than for *Men* (0.7). *Men* give more than *Women* to the out-group:  $TI_{s\_out}$ .

These different results for *Women* and *Men* concerning group membership are highlighted when we calculate the difference between  $TI_{s\_in}$  and  $TI_{s\_out}$  (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 and Muren, 2006; Holm and Engfeld, 2005). This makes that when we subtract  $TI_{s\_out}$  from  $TI_{s\_in}$  for all the subjects we do not find a significant difference, hiding the different behavior by gender.

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

	All	Men	Women
<b>A. Information by itself</b>			
Marginal effects <sup>a/</sup>			
$T1_{s-in}$	1.4***	0.7**	1.8***
$T1_{s-out}$	1.2***	1.7***	1.0***
<b>B. Group Membership</b>			
$T1_{s-in}-T1_{s-out}$ <sup>b/</sup>	0.2	-1.0***	0.8***
<b>C. Saliency</b>			
$T2_s$ <sup>a/</sup>	1.1***	0.8**	1.3***
$T3_{s-in}-T1_{s-in}$ <sup>b/</sup>	0.1	0.1	0.0
$T3_{s-out}-T1_{s-out}$ <sup>b/</sup>	-0.2	-0.3	-0.2
$(T3_{s-in}-T3_{s-out}) - (T1_{s-in}-T1_{s-out})$ <sup>b/</sup>	0.3	0.4**	0.2

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

Notes:

<sup>a/</sup> the marginal effect is the estimated increase of the donation due to the treatment (related to the baseline)

<sup>b/</sup> Difference of marginal effects

**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 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.*, 2010, Branas-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  $TI$ , saliency increases the relative donation *Men/Woman*. *Men* still favor the out-group over the in-group, but the gap narrows.

#### *IV.b). The effect of information about Wealth*

The sensitivity of donations to income, 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 when 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; Branas-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  $TI$ . 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  $TI_{w\_out}$  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  $TI_{w\_in}$  and  $TI_{w\_out}$  the effect should cancel out. But  $TI_{w\_in}$  is larger than the absolute value of  $TI_{w\_out}$ . This is due to the fact that providing information has a positive effect by itself.

***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  $(TI_{w\_in} - TI_{w\_out})$  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  $(TI_{w\_in} - TI_{w\_out})$  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.

For the *Poor* subjects,  $(TI_{w\_in} - TI_{w\_out})$  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.

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

	All	Rich	Poor
<b>A. Information by itself</b>			
Marginal effects <sup>a/</sup>			
$T1_{w\_in}$	1.2***	-0.6	3.1***
$T1_{w\_out}$	1.5***	4.4***	-1.6***
<b>B. Group Membership</b>			
$T1_{w\_in} - T1_{w\_out}$ <sup>b/</sup>	-0.3	-5.0***	4.7***
<b>C. Saliency</b>			
$T2_w$ <sup>a/</sup>	1.3***	1.5***	1.0***
$T3_{w\_in} - T1_{w\_in}$ <sup>b/</sup>	0.1	0.6*	-0.5*
$T3_{w\_out} - T1_{w\_out}$ <sup>b/</sup>	-0.2	-0.6	0.3
$(T3_{w\_in} - T3_{w\_out}) - (T1_{w\_in} - T1_{w\_out})$ <sup>b/</sup>	0.2	1.2**	-0.8***

\* p<0.1; \*\* p<0.05; \*\*\* p<0.01

Notes:

<sup>a/</sup> the marginal effect is the estimated increase of the donation due to the treatment (with respect to the baseline)

<sup>b/</sup> Difference of marginal effects

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 Charness and 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.

#### *IV.c). 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).

**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 ( $TI_{p-out}$  is null), although in the case of *Strong Left-wing*  $TI_{p-out}$  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.

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

	All	Right-wing	Left-wing	Strong Right-wing	Strong Left-wing
<b>A. Information by itself</b>					
Marginal effects <sup>a/</sup>					
$TI_{p-in}$	1.8***	1.3***	2.1***	1.9***	2.0***
$TI_{p-out}$	0.0	0.7	-0.4	-0.4	-0.7*
<b>B. Group Membership</b>					
$TI_{p-in}-TI_{p-out}$ <sup>b/</sup>	1.9***	0.7	2.5***	2.3**	2.7***
<b>C. Saliency</b>					
$T2_p$ <sup>a/</sup>	1.4***	1.3***	1.5***	1.7***	1.4***
$T3_{p-in}-TI_{p-in}$ <sup>b/</sup>	-0.1	-0.6	0.1	-1.2	0.3
$T3_{p-out}-TI_{p-out}$	0.3	0.0	0.5	0.9	0.5
$(T3_{p-in}-T3_{p-out}) - (TI_{p-in}-TI_{p-out})$ <sup>b/</sup>	-0.4	-0.6	-0.4	-2.0	-0.2

\* p<0.1; \*\* p<0.05; \*\*\* p<0.01

Notes:

<sup>a/</sup> the marginal effect is the estimated increase of the donation due to the treatment (related to the baseline)

<sup>b/</sup> Difference of marginal effects

## V. DISCUSSION

We conduct an experiment to study 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.

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 mistaken 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 attributed mistakenly to the 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*, but the rise is higher for the former than for the latter. *Poor* favor the *Poor* and discriminate against the *Rich*.

Two social categories favor out-group over 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 seems to capture 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. Interestingly, we see a positive effect of Treatment 3 for *Rich* and *Men*, for which a group membership effect is not captured by Treatment 1.

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## Appendix 1

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### INSTRUCTIONS (originally in Spanish)

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Around 200 students have been invited to participate in this experiment, which is part of a Research Project in the Department of Economics of the School of Social Sciences (dECON). The purpose is to analyze how people take decisions in certain contexts.

We will ask you to perform a series of tasks where you have to take decisions. The instructions are simple. All your decisions will be anonymous and we will not be able to identify you. All the data will be anonymized. No one will know neither the decisions you took nor the results obtained by any participant.

Following the instructions and performing the tasks, you will have the chance to earn a certain amount of money. This amount will be calculated and paid to you **confidentially**.

You can ask any questions you may have by raising your hand. Any other type of communication with other participants is strictly prohibited.

Recall that in the questionnaire that you previously filled, we asked for information concerning your economic status and political preferences. Using the information from all participants, we have labelled each one as: left wing if the person belongs to the 50% of people who are more to the left and right wing if the person belongs to the 50% of people who are more to the right. From now on, we will use these labels “left wing” and “right wing” to refer to these preferences.

Similarly, we have labelled as Poor those in the 50% of people with lower income and Rich those in the 50% of people with higher income.

## THE TASK

In this task you will have a partner. There are participants in this room (which we call type A participants) and other participants in a different room (type B participants). You are of type A.

Your partner will be a type B participant chosen at random among the people in the other room. You will not know who your partner is, neither now nor after (never). Moreover, your partner will never know who you are.

Type A participants, and you in particular, have to perform the following task

*"You have been provisionally endowed with 200 pesos, for you and your partner (type B). You have to take a very simple decision: decide the portion, if any, of the 200 pesos you want to transfer to your partner. Your decision can be any amount between \$0 and \$200 expressed in bills of \$20."*

Please, circle the amount you want to transfer to your partner:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

Now you are going to make that decision X times. That is, several times (X) you have to decide the amount of money (if any) that you are going to transfer to the type-B participant. Each time your partner will be a different person. Furthermore, you must know that type B participants are never type A.

Of all the decisions you make, we will choose one randomly and only that decision will be implemented. That means that you will earn the amount of money from that decision, and your partner in that particular decision will earn the amount of money that you transferred. Your type B partner is really going to receive the amount of money that you transfer.

Please, do not talk to any other participant until the session is finished. Now, you will face the decisions, one at a time.

## Task 1

For this task, you will be randomly matched with a type B participant. Remember that neither now nor later (ever) will you know who your partner is, and your partner will never know who you are.

Below there is some information **about your partner**. The characteristic circled in the list is the only thing you will know about your type B partner. If there is no characteristic circled in the list then you will not know anything about your partner.

### Information about your partner

Man

Woman

Poor

Rich

Left-wing

Right-wing

With this information about your type B partner, you have to carry out the task. Decide the part, if any, of the 200 pesos that you want to transfer to your partner. Please, circle the amount you want to **transfer**:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

## Task 2

For this task, you will be randomly matched with a type B participant. Remember that neither now nor later (ever) will you know who your partner is, and your partner will never know who you are.

Notice that below there is some information **about yourself**, as you reported in the registration questionnaire. We will give this information to your partner. The characteristic circled in the list to the left is the only thing that your type B partner will ever know about you. If there is no characteristic circled in the list then your partner will not know anything about you.

### Information about yourself

Man

Woman

Poor

Rich

Left-wing

Right-wing

Knowing that B will have that information about you, you have to carry out the task. Decide the part, if any, of the 200 pesos that you want to transfer to your partner. Please, circle the amount you want to **transfer**:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

### Task 3

For this task, you will be randomly matched with a type B participant. Remember that neither now nor later (ever) will you know who your partner is, and your partner will never know who you are.

Below there is some information **about your partner**. The characteristic circled in the list is the only thing you will know about your type B partner. If there is no characteristic circled in the list then you will not know anything about your partner.

Notice that below there is also some information **about yourself**, as you reported in the registration questionnaire. We will give this information to your partner. The characteristic circled in the list to the left is the only thing that your type B partner will ever know about you. If there is no characteristic circled in the list then your partner will not know anything about you.

#### Information about yourself

- Man
- Woman
- Poor**
- Rich
- Left-wing
- Right-wing

#### Information about your partner

- Man
- Woman
- Poor
- Rich**
- Left-wing
- Right-wing

With this information about your type B partner, and knowing that B will have that information about you, you have to carry out the task. Decide the part, if any, of the 200 pesos that you want to transfer to your partner. Please, circle the amount you want to **transfer**:

\$0    \$20    \$40    \$60    \$80    \$100    \$120    \$140    \$160    \$180    \$200

## Appendix 2.

### Results of the Tobit estimation of donations

Variables	Coefficients	Standard Errors
Rich	-0.086	0.664
T1w_in	3.123	0.384 ***
Rich * T1w_in	-3.747	0.486 ***
T1w_out	-1.614	0.552 ***
Rich * T1w_out	6.018	0.619 ***
T2w	1.043	0.291 ***
Rich * T2w	0.460	0.452 ***
T3w_in	2.671	0.448 ***
Rich * T3w_in	-2.715	0.474 ***
T3w_out	-1.310	0.536 **
Rich * T3w_out	5.117	0.652 ***
Right-wing	0.744	0.652 ***
T1p_in	2.128	0.343 *
Right-wing * T1p_in	-0.786	0.460
T1p_out	-0.409	0.381
Right-wing * T1p_out	1.069	0.579 *
T2p	1.481	0.326 ***
Right-wing * T2p	-0.208	0.369 ***
T3p_in	2.235	0.395 ***
Right-wing * T3p_in	-1.470	0.440 ***
T3p_out	0.056	0.365
Right-wing * T3p_out	0.592	0.397
Male	-1.020	0.723 ***
T1s_in	1.781	0.352 ***
Male * T1s_in	-1.047	0.341 ***
T1s_out	1.002	0.305 ***
Male * T1s_out	0.685	0.378 *
T2p	1.274	0.366 ***
Male * T2s	-0.468	0.351 ***
T3s_in	1.799	0.339 ***
Male * T3s_in	-0.944	0.391 **
T3s_opp	0.834	0.290 ***
Male * T3s_out	0.580	0.377
Displeased with Rich/Poor label	0.226	0.790
Displeased with Right/Left label	0.312	0.678 **
Constant	1.362	0.676 ***
/sigma	3.207	0.220 ***
Observations	1402	

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1