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POVERTY IN DICTATOR GAMES:  
AWAKENING SOLIDARITY

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# Poverty in Dictator Games: Awakening Solidarity\*

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## Abstract

This paper investigates the effect of poverty and good intentions on dictator game giving. Previous experimental studies in which information was supplied to dictators about recipients have shown that dictator giving increases overall in this context. We develop a new design of standard informed dictator games with three main variants: 1) three recipients are used instead of one; 2) dictators are informed that their recipients are poor; 3) dictators give donations in the form of medicines instead of money. We have found that 46% of the experimental subjects (dictators) give the full amount of money (100% of the endowment) in the ‘poverty’ treatment, while in the ‘medicines’ treatment this percentage increases to 72%. Such extremely generous behavior has seldom been observed in the previous literature on dictator games.

**Keywords:** dictator giving, poverty effect, good intentions effect, medicines.

**JEL Class.:** C90, C91, D63, D64.

## 1 Introduction

Why do people give so little in dictator games? Could it be that they are not sufficiently motivated?

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In “anonymous” dictator games<sup>1</sup> (hereafter DG) – those in which the dictator has no information regarding the characteristics of the recipient (see Hoffman, McCabe, Shachat & Smith, [13] or Hoffman, McCabe & Smith, [12]- hereafter HMS) – voluntary contributions tend to be low, around 10% of the pie on average. This lack of generosity has been attributed to the anonymity of social distance, which discourages altruistic behavior.

However, in dictator games where information is supplied about recipients, the results are not much different. For example, in Burnham [4], where dictators viewed a picture of recipients, only 25% of subjects gave half the endowment! What is even more surprising is that 58% kept the full amount for themselves (see Table A.1, Appendix). In Eckel & Grossman [8], where the recipient was the Red Cross, only 17% gave half, 10% gave all and 27% gave nothing!

According to Frohlich, Oppenheimer & Moore [10], the lack of generosity is due to the fact that subjects do not believe the veracity of the experiment. To put it another way, subjects have reasonable doubts as to who will receive the money and whether or not the recipient does, in fact, exist. Frohlich *et al.* designed two experiments in which subjects were able to see their recipients. Their results indicated that this setting led to increased donations: 26% of the subjects in treatment 1 and 35% in treatment 2 donated half their endowment. Moreover, in Charness & Gneezy [6], subjects were told the name of their recipients. Surprisingly, 40% of subjects gave their recipients half of the endowment!

Until now, none of the experiments with informed dictators have attained sound results in terms of donations. In the studies by Burnham and Frohlich *et al.*, average donations account for about 20% of the pie, while in Charness & Gneezy and Eckel & Grossman donations are close to 30%. We are, therefore, still very far from reaching a fair division of the pie.

It is interesting to note that the most recent theoretical studies on altruism (the studies by Ferh & Schmidt [9] or Charness & Rabin [5] are obvious examples) consider inequity aversion to play a very important role in generous behavior. Moreover, Andreoni & Miller [1] argue that the social attributes of the game motivate generosity<sup>2</sup>.

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<sup>1</sup>The Dictator Game is a very simple game with two players. Player  $i$  (the dictator) must divide the pie between himself and player  $-i$  (the recipient). The dictator may divide the pie in the manner he sees fit, while the recipient may not make any claim to the money. Theoretically, the solution is obvious: player  $i$  keeps all and player  $-i$  receives nothing.

<sup>2</sup>The utility function proposed in this paper is:

$$U_i = U_i(\pi_i, \pi_{-i}; \gamma) \tag{1}$$

where  $\pi_i$  ( $\pi_{-i}$ ) denotes payoffs by player  $i$  ( $-i$ ) and  $\gamma$  game (social) attributes.

However, in the absence of information about players' incomes, inequity aversion is limited to the payoff, that is, to unfair divisions. In this context, the social attributes of the game are limited, especially when taking into account the amounts given in this type of game: \$10.

But what happens when information is given about the recipients' (low) level of income? How will dictators act when they know that their recipient is poor?

Previous experiments have not delved into this line of research; an issue which is of obvious importance in real donations made to poor countries. Thus the objective of our study is to examine this question. With this aim, we propose an experimental design in which the subjects (dictators) know that the recipients are communities from poor countries. They do not know, however, either the name or the location of the country. In order to further reinforce inequity aversion, we use three recipients instead of one. Hence, each dictator must simultaneously divide the pie among three recipients. Finally, donations are restricted to giving the full endowment or nothing to each of the recipients.

Our research combines real and hypothetical experiments and, as will be seen, no differences are observed between them. Three treatments of a multi-recipient DG design are used in which divisions are restricted. The first treatment is a 'no-info' treatment in which no information is given about the recipient; the second is the 'poverty' treatment which includes information about the recipient's income (he is poor); and the third is the 'medicines' treatment in which dictators are informed that donations will be sent in the form of medicines and not money.

The experimental results are as follows: in the 'no-info' treatment (treatment 1) average donations are 10% of the total, similar to what has been observed in other experiments. In the 'poverty' treatment (treatment 2) average donations increased to 66% of the total, a result that has not been previously observed in informed dictator games. Finally, in the 'medicines' treatment (treatment 3), we attain an average donation of 80% of the total endowment!

In Section 2 the motivation and design of the experiment is discussed. The results of the study are examined in Section 3 while conclusions are reached in Section 4.

## 2 Motivation, Design & Protocol

### 2.1 Motivation

Previous papers on informed dictator games<sup>3</sup> have focused on reinforcing recipients' existence, pro-social behavior or reducing social isolation. When comparing the results of these papers to those found by HMS, an increasing level of generosity is observed, although anonymity requirements remain unaltered.

With the exception of Eckel & Grossman [8], who obtain intermediate findings in terms of donations, none of the previous papers have focused on social dilemmas. Following the theoretical contributions of Fehr and Schmidt [9] and Andreoni & Miller [1], we propose an alternative DG design – the Poverty Dictator Game – that takes into account social attributes. Specifically, we inform the dictator that his rival is poor: a community from an undeveloped country.

When comparing this treatment with the baseline (no-info) treatment we expected to find an increasing level of donations. This variation will be called the POVERTY EFFECT.

Once the poverty effect is verified, in the third version of the design (the ‘medicines’ treatment) dictators are informed that their money will be donated in the form of medicines. As Frohlich et al. [10] points out, subjects do not believe that the recipient will actually receive the money they have donated. Outside of the lab, in the real world, people doubt that donations really help much, because a non-negligible part of the money disappears along the way. In our treatment, however, the money was given a specific purpose: to buy medicines. By doing so, we expect to motivate generosity; an effect we will call the GOOD INTENTIONS EFFECT.

In short, we conjectured that by including poverty and medicine conditions, the standard DG would be transformed into a social dilemma, placing individual preferences in confrontation with other-regarding preferences and thereby increasing dictator giving.

In the absence of information about partner's income, both altruism and inequity aversion could deviate the Nash solution towards an egalitarian division of the pie. Recall that in HMS this highly generous behavior is extremely rare, although in the case of informed dictator games this fair division occurs somewhat more often. However, unequal divisions of the pie to the recipient's advantage are rarely observed. We think that the use of poverty – that is, giving information about player  $-i$  income - not only motivates altruism

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<sup>3</sup>Other studies include those by Charness *et al.* [7] and Bohnet & Frey [3].

and inequity aversion, but social welfare criteria as well.

When using individual income rather than pure payoffs (where  $i$  player has  $m_i$  income and  $-i$  player has  $m_{-i}$  income) the individual utility function is:

$$U_i = U_i(m_i + \pi_i, m_{-i} + \pi_{-i}) \quad (2)$$

Let define  $w = w(m_i, m_{-i}) = m_i - m_{-i}$  as the difference between  $m_i$  versus  $m_{-i}$ . For positive values of  $w$  ( $w > 0$ ) it would be sensible to assume that player  $i$  (dictator) will donate some of his money if he has any social welfare criteria. When dictators are informed that their recipients are poor they not only know that  $w > 0$  but also realize that  $w \rightarrow \infty$ . In this case dictators with other-regarding preferences may give the full amount of money to their rivals. Note that if dictators have no information about their partners they could suppose that  $m_{-i} + \pi_{-i} \simeq m_i + \pi_i$ . In this case, only inequity aversion (on payoffs) or pure altruism would explain donations.

In sum, the use of poverty reinforces the social dilemma involved in dictator games.

## 2.2 Design

To study the effect of poverty on dictators' donations a dictator experiment was designed with three variants on the standard DG. The same basic structure was used in all the treatments with the exception of the information given to the subjects. The basic structure of the experiment is described in the first subsection below and the information is explained in the second subsection.

### 2.2.1 Basic Structure

**bs1:** Introduction: Individuals were invited to participate in an *investigation* about the distribution of non-divisible and finite commodities. As examples we used the allocation of one airport when three cities claim it; the building site for a bridge when there are several possible locations; or the distribution of human organs when several patients request them.

Note that the word 'experiment' was not used. As Frohlich et al. points out, when experimental subjects view the DG as a game they behave as players and go to the lab to earn money. To avoid this problem, the experimental

subjects were not recruited publicly, instead the experimenter visited their classes to run an *investigation*.

**bs2:** Subjects received three 5€ bills each (15€ total).

5€ bills were used instead of 1€ coins to constrain subjects' donations. Although we conjectured that this modification would increase donations, Bolton, Katok & Zwick (2 cards-1 game treatment) [2] obtained the opposite results when "bills" were used<sup>4</sup>.

**bs3:** Instructions: (1) You should divide this amount of money among three identical recipients ( $r_1, r_2, r_3$ ) and yourself; (2) none of the recipients can receive more than 5€; (3) any assignment - except that which violates rule 2 - is allowed, including keeping all of the money for yourself and leaving nothing to the recipients.

Why three identical recipients? We use three partners in order to motivate egalitarian rules. If the subject follows these rules he is forced to choose between selfish but egalitarian behavior (leaving zero to each one) or complete altruism (leaving 5€ to each one and keeping zero for himself). Using a repeated DG (2 cards-10 game treatment), Bolton *et al.* observe an increasing level of donations throughout the game. Our hypothesis is that if individuals are inequity averse, they should increase their donations when the number of recipients is larger.

### 2.2.2 Info Conditions

Although all three treatments share the same basic structure (bs1 to bs3), they differ in the type of information dictators receive about recipients. Although there are no differences between recipients 1, 2 and 3 in each treatment, three distinct information profiles are used across treatments.

[i1] 'No-info' treatment: No information is given about recipients (like HMS)

[i2] 'Poverty' treatment: Dictators are informed that their recipients are poor (i.e. from communities in underdeveloped countries)<sup>5</sup>.

[i3] 'Medicines' treatment: poverty condition + dictators are informed about the purpose of their donations: medicines.

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<sup>4</sup>In Bolton's *et al.* experiment, subjects were faced with two possible scenarios: \$10/\$0 (leaving zero to the recipient) or \$5/\$5 (equal division). Note that in both cases the dictator always received at least \$5. Therefore, his decision was either to earn \$5 plus or to pass it on to the recipient. In this study, 93% of the dictators kept all the money for themselves.

<sup>5</sup>As explained above, this type of information is not neutral. Subjects know that the

## 2.3 Protocol

In order to reduce the cost of the study, the research was performed in two parallel settings: an economic experiment with monetary incentives at the University of Cordoba, Spain; and a hypothetical questionnaire without any monetary rewards (survey) at the University of Jaén (100 km from the University of Cordoba). In both cases business students comprised the subject pool. The experiment was conducted in November 2002 and the survey in May 2003. Seventy-five observations were made in the first experiment and 138 in the second one.

### 2.3.1 The Economic Experiment

The experiment was run in two rooms with group 1 (40 experimental subjects) and group 2 (37 subjects). In each room subjects were asked to sit apart at the end of their row. When all the students were seated they were given an envelope. The envelope contained instructions, three 5€ bills, a questionnaire, a sheet with three numerical codes (their recipients) and, finally, a small envelope to leave their donations in. Each group was publicly informed that one individual had received an empty envelope in order to reinforce anonymity<sup>6</sup>. Instructions were explained orally.

In this experiment we used the basic instructions (bs1 to bs3) with the i3 information profile [poverty + drugs]. Thus, dictators were informed that their recipients were poor (communities from underdeveloped countries) and that their donations would be sent to those destinations in the form of medicines, not cash.

When the subjects finished assigning their donations they were asked to place their small envelope in an urn and leave the room. No personal data was required with the exception of gender.

The entire amount of money given by the dictators (855 €) was donated to an international medical NGO. This information was not made public.

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recipient exists, (see Frohlich *et al.*) thus imbuing the game with a social dimension in the following two manners:

1. Subjects know that the recipient needs the money, reinforcing not only inequity aversion and altruism but social welfare criteria as well.
2. The use of labels such as ‘poverty’, ‘underdeveloped countries’ or ‘medicines’ - induces the dictator to remember past experiences, TV images and so on. (see HMS, also Eckel & Grossman.

<sup>6</sup>This is why we have 75 observations rather than 77. Individuals who received an empty envelope were paid 10€.



### 2.3.2 The Hypothetical Experiment

The survey was conducted in four rooms. To perform the survey, we asked the whole population to conduct all the treatments (dictator game with info 1, info 2 and info 3). In order to assess any “rank effect”, different combinations of the info conditions were used. With this aim, each group received the information profile in a different order. Table 1 summarizes the distribution of treatments by groups:

	GROUP 1	GROUP 2	GROUP 3	GROUP 4
ROUND 1	NO-INFO	DRUG	NO-INFO	POVERTY
ROUND 2	POVERTY	NO-INFO	DRUG	DRUG
ROUND 3	DRUG	POVERTY	POVERTY	NO-INFO
$n$	$n_1=30$	$n_2=39$	$n_3=35$	$n_4=34$

TABLE 1: TREATMENT ORDER BY GROUP (SURVEY)

In each room, as in the economic experiment, subjects were placed in separate rows. When all of them were seated, they received an envelope with the basic instructions (bs1 to bs3) and three decision sheets. Instructions were then explained orally.

After this, dictators were informed about the first info condition (no-info for group 1, medicines for group 2, etc., see table 1). When all of them had filled out decision sheet 1, the second info condition (poverty for group 1, no-info for group 2, etc.) was explained. Finally, the third condition (medicines for group 1, poverty for group 2, etc.) was explained.

When they had finished the third and last round, the subjects were asked to put their decision sheets in the envelope and leave it in the urn. As in the economic experiment, no personal data, except gender, was collected.

## 3 Results

In this section, the results obtained in each treatment are analyzed, that is, no-info, poverty and medicines. The variable studied here is Dictator Giving: the amount of money that the dictator donates to the recipients. References are also made to the division of the pie. Before presenting these results, we propose the following classification of potential generous behaviors.

Let us define  $D$  as the total size of the pie;  $d_{-i}$  as the money that the dictator gives to players  $-i$ , and  $d_i$  as the money he keeps for himself. Hence:  $d_i + d_{-i} = D$ . Individual behavior is classified as follows:

**Definition 1** *Purely selfish individuals: Subjects who keep the full amount of money for themselves, that is,  $d_{-i} = 0$  (or  $d_i = D$ ).*

**Definition 2** *Generous individuals: Subjects who keep a larger portion of the endowment for themselves ( $d_i > d_{-i} > 0$ ).*

**Definition 3** *Hyper-fair individuals<sup>7</sup>: Subjects who divide the pie in favor of the recipient but keep some amount of money for themselves ( $d_{-i} > d_i > 0$ ).*

**Definition 4** *Altruistic individuals: Subjects who donate the whole pie ( $d_i = 0$  or  $d_{-i} = D$ ).*

Results are summarized in Tables 3 A, B and C and Figure 1. Recall that we have both experimental and hypothetical data. We used non-parametric tests to check if the data collected from the different surveys (including the economic experiments) were drawn from the same population. If confirmed, we are able to merge samples and reach conclusions for each treatment. Fortunately, this was the case.

### 3.1 No-Info Condition: Results from Questionnaires

The design used herein differs with respect to HMS anonymity experiments. Given that our modifications (bs1 to bs3, subsection 2.2.1.) could have an effect on the donations, the baseline treatment was used as a control. No information about partners was provided in this treatment.

According to our results, more than 25% of the subjects (30 to 128) behaved as hyper-fair or altruistic individuals in the ‘no-info’ treatment, donating 10 or 15€ to their recipients. However, “talk is free” when real money is not involved - as in our hypothetical experiment. Hence we conjectured that these subjects behaved kindly towards their experimenter and decided to delete them from the sample. Consequently, the population sample was reduced to 98 subjects for all the treatments.

Table 2 illustrates dictators’ donations by group. Column 1 shows the possible donation amounts (15€, 10€, 5€ or 0€). Columns 4-7 show the number of subjects per donation in each group. The Kruskal-Wallis non-parametric test for  $k$ -unrelated samples indicates that there is no difference in distribution across groups<sup>8</sup>, meaning that all four groups are drawn from

<sup>7</sup>I take this definition from Gintis *et al.* [11].

<sup>8</sup>This test is adequate for  $k$  unrelated samples. It uses the null hypothesis:

$$H_0 : \mu_1 = \mu_2 = \dots = \mu_k.$$

When  $H_0$  is not rejected, the  $k$  samples are drawn from the same population.

the same population and we are entitled to merge samples. Hence, in this treatment, no rank-effect is observed.

$d_{-i}$	TOTAL		BY GROUPS			
	FREQ.	%	GR.1	GR.2	GR.3	GR.4
15	0	0	0	0	0	0
10	0	0	0	0	0	0
5	28	28,6	6	9	7	6
0	70	71,4	18	19	14	19
$N$	98	$n_i$	24	28	21	25
MEAN	1,43		S.D.	2,27		
MEDIAN	0		KRUSKAL-WALLIS	$\chi^2_3=0,806$		
MODE	0			P-VALUE=0,84		

TABLE 2: DONATIONS IN NO-INFO TREATMENT

Column 2 shows the descriptive statistics and frequencies for the whole sample. The average donation in the ‘no-info’ treatment is 1.43€ (out of a total of 15€). Thus, on average, dictators donate less than 10% of their endowment.

The results obtained using the basic structure (bs1 to bs3) and the ‘no-info’ profile (i1) are similar to those reported in HMS. Note that subjects who behave extremely generously have been deleted from the sample in order to fit these findings to those reported in previous papers.

From this point on, only purely selfish and generous subjects (see previous classification) were used in treatment 1 to study the effect of poverty and good intentions on the pie division.

According to many authors, such as Frochlich *et al.*, the selfish or unequal division of the pie by the dictator may be explained by the lack of information about the recipient. When dictators do not know to whom they are giving their money, the credibility of the experiment diminishes. Furthermore, in the absence of information about recipients, generous behavior is not hardly motivated (see Eckel & Grossman).

This issue will be explored in depth in the subsection below.

### 3.2 The Poverty Condition: Results from Questionnaires

As explained above, the ‘poverty’ treatment is similar to the previous treatment, with the exception that information is provided to the dictator regarding recipients’ poverty.

Table 3 and Figure 1 refer to informed dictator giving. The Kruskal-Wallis test indicates that all four subsamples were drawn from the same population and have the same distribution. No rank-effect was observed.

On average, dictators donate two-thirds of the pie (9.24€). Surprisingly, 40% of the dictators give the full endowment to their recipients, meaning that close to 40% of the population is altruistic. Furthermore, dictators who donate a larger amount of money than they keep for themselves (hyper-fair plus altruistic subjects) account for 66,3% of the sample. Thus, two-thirds of the population divide the pie in an unequal manner to benefit the recipients when they are informed about the recipient’s poverty condition! Consequently, less than one-fourth of the population behave as purely selfish individuals.

When comparing these results to the results of the ‘no-info’ treatment, the ‘poverty effect’ (see Figure 1) becomes quite obvious. In order to make a cross comparison of the treatments, differences among distributions were checked using non-parametric tests for related samples. Table A2 (appendix) illustrates the analysis of dependences across treatments. Both the Signs and Wilcoxon tests reject ( $p - value < 0.01$ ) the null hypothesis of same distribution, suggesting treatment effect. As shown, when information about the recipients’ poverty is provided, dictators significantly increase their donations.

**Result 1:** The use of the poverty condition leads dictators to divide the pie unfairly to the benefit of the recipients.

With the exception of Frohlich *et al.* and Eckel & Grossman, who respectively report that 5% and 10% of dictators donate the full endowment (see FOM1-01 and EG-96, table A1 appendix), there is no record of subjects donating the entire endowment in the literature on informed dictator games.

**Result 2:** Compared to the previous literature, the percentage of altruistic dictators notably increases under the poverty condition. Therefore, the number of subjects whose behavior is purely selfish drops significantly (22%).

$d_{-i}$	TOTAL		BY GROUPS			
	FREQ.	%	GR.1	GR.2	GR.3	GR.4
15	40	40,8	9	11	9	11
10	25	25,5	8	6	6	5
5	11	11,2	2	5	1	3
0	22	22,4	5	6	5	6
$N$	98	$n_i$	24	28	21	25
MEAN	9,24		S.D.	5.9		
MEDIAN	10		KRUSKAL-WALLIS	$\chi^2_3=0,126$		
MODE	15			P-VALUE=0,98		

TABLE 3: DONATIONS IN POVERTY TREATMENT

Why do subjects become generous under the poverty effect? Figure 1 shows the effect of poverty on dictator giving. Note that the players we analyzed in the ‘no-info’ treatment behaved selfishly, yet in the ‘poverty’ treatment the entire population clearly became more generous. This would seem to suggest that the ‘poverty’ label reinforces not only inequity aversion and altruism but also social welfare goals. Furthermore, as this generous behavior was shown by originally selfish subjects, we conjecture that poverty not only leads to increased donations but encourages generosity as well.

### 3.3 Medicines Condition: Results from the Questionnaires and Experiments

The aim of the last treatment is to study how dictators’ behavior varies when they know: i) a concrete characteristic of the recipient (e.g. that he is poor) and ii) how the money is used (e.g. to buy medicines).

This variation is not trivial. Subjects know where their money is going and are therefore able to judge if the purpose to which it shall be put is appropriate or not. Our design differs from that of Eckel & Grossman along two dimensions: 1) we do not identify any particular organization; and 2) the purpose of the money is known: to buy medicines.

The results of this treatment are shown in Table 4 and Figure 1. Note that both survey and experimental results are used for the treatment; recall

that subsamples 1 to 4 come from the surveys, while subsamples 5 and 6 refer to the experimental sessions. The Kruskal-Wallis test does not reject the null hypothesis of same distribution for our 4 surveys – $KW(S)$ – and for our 6 samples –surveys + experiments,  $KW(X)$ . Hence, all six subsamples are drawn from the same population and no rank-effect is observed.

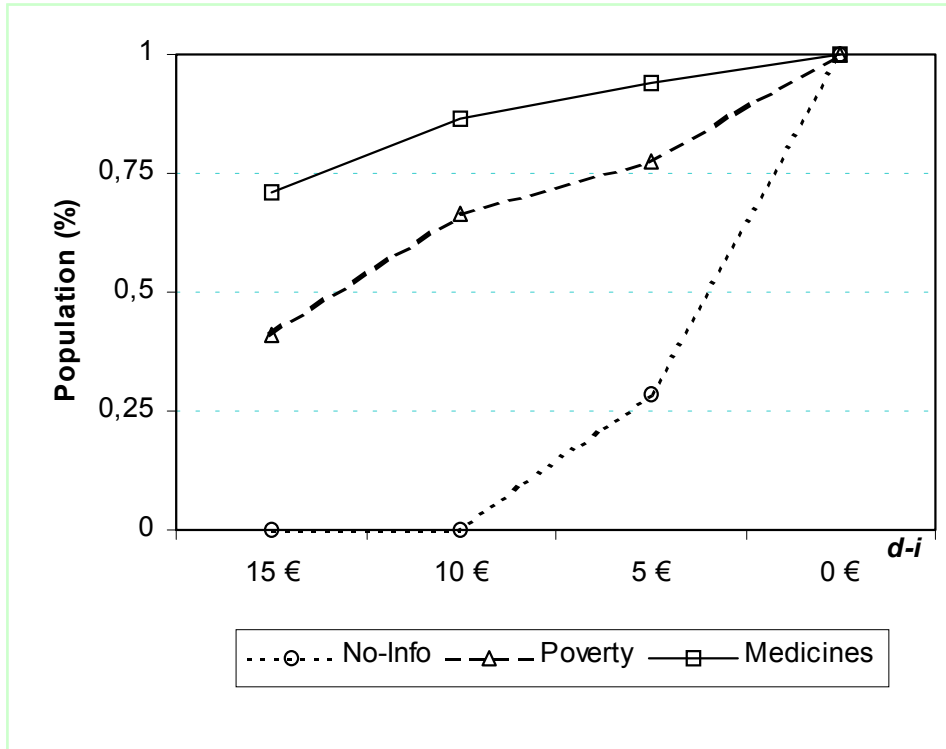


Figure 1: Accumulated frequencies by treatments.

If the experimental results share the same distribution as the survey observations, it is legitimate to compare the results of this treatment with previous ones.

On average, dictators keep less than 10% of the money for themselves. The use of medicines instead of money leads to overall increased generosity.

Furthermore, the number of subjects (altruistic individuals) who donated the full endowment is overwhelming, some 71%.

The analysis of dependences across treatments reveals that treatments 2 and 3 are not drawn from the same population. Both the Signs and Wilcoxon tests reject ( $p - value < 0.01$ ) the null hypothesis of same distribution. Table A2 (appendix) illustrates these tests and other possible combinations, demonstrating that there is treatment effect. The combination of poverty with medicines modifies behavior with respect to poverty alone.

Recall that in the ‘poverty’ treatment the percentage of altruistic dictators was 40% (vs. 71% in the ‘medicines’ treatment). In this treatment, the average donation increased from 65% to 90% of the endowment, while the number of selfish individuals declined from 22% to 5,8% (10/173 subjects) (see Figure 1).

**Result 3:** When dictators know that their money will be spent on medicines, on average, they do not divide the pie equally.

**Result 4:** Under the ‘good-intention’ effect the percentage of altruist dictators is overwhelming and the number of selfish dictators is insignificant.

$d_{-i}$	TOTAL		BY GROUPS				EXPERIMENTS	
	FREQ.	%	GR.1	GR.2	GR.3	GR.4	EXP.1	EXP.2
15	123	71,1	18	16	14	19	29	27
10	27	15,6	2	9	5	2	5	4
5	13	7,5	1	2	1	1	4	4
0	10	5,8	3	1	1	3	1	1
$N$	173	$n_i$	24	28	21	25	39	36
MEAN	12,35		S.D.	4,60				
MED.	15		K-W(S)	$\chi^2_3=1,43$		K-W(X)	$\chi^2_5=2,28$	
MODE	15		P-VAL.=0.98			P-VAL.=0.80		

TABLE 4: DONATIONS IN MEDICINES TREATMENT

Why? My personal view is that greater confidence is gained when subjects know that a specific need will be met by their giving. When subjects are informed that their donations will be used for a determined purpose they are reassured that their money will be spent appropriately, thus engendering less doubts.

In our case, subjects know that the money will be used to buy medicines. Hence, not only is there is no doubt as to how their money will be spent, but the vast majority of the population approves this use of their money. That is what we call the ‘good-intentions’ effect.

Frohlich *et al.* argues that a large percentage of selfish behavior observed in previous research is caused by a lack of confidence as dictators not only

have doubts as to the existence of recipients, but how the money will be spent. Our paper seems to confirm this argument. Therefore, as Eckel & Grossman have suggested, the use of the ‘poverty’ label seems to reinforce generosity.

## 4 Conclusions

In recent years the number of experimental and theoretical papers devoted to the study of generous behavior has risen significantly. Theoretical contributions have focused on inequity aversion, reciprocity and pure altruism to explain deviations from the Nash prediction. Although experimental research has used several games to examine generosity, the Dictator Game is, unquestionably, the most important reference for this phenomenon.

Few experimental dictator games provide dictators with information regarding recipients, although experimental studies suggest that when information is supplied, dictator giving increases. Hence, our study is an effort to follow up on this line of research.

Our dictator game is designed to include multiple recipients, 5€ bills instead of 1€ coins and three information profiles about recipients. The three information profiles comprise a ‘baseline’ treatment (no-info condition) in which no information is supplied about the recipient, a ‘poverty’ treatment indicating that the recipient is poor, and a final treatment in which subjects are informed that the recipient is not only poor but that donations will be sent in the form of medicines instead of money.

Our results indicate that both poverty and good intentions affect the way in which the dictator chooses to divide the pie. A comparison of the treatment findings show that:

- The number of selfish individuals decreases across treatments: 71,4% ( $T_1$ ), 22,4% ( $T_2$ ), 5,8% ( $T_3$ )
- The number of altruistic subjects increases across treatments: 0% ( $T_1$ ), 40% ( $T_2$ ), 71% ( $T_3$ )
- Average donations also increase across treatments: 28% ( $T_1$ ), 65% ( $T_2$ ), 90% ( $T_3$ )

Consequently, we do believe that in order to motivate generous behavior it is not only recommendable to inform dictators about recipients’ income, but also to specify what the money will be spent on. Nevertheless, poverty seems to have a greater effect on dictator giving.



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## Appendix

	INFO ON RECIPIENT	DICTATOR GIVING				
		0%	1% – 49%	50%	51% – 99%	100%
HMSS-94	—	64%	28%	5%	3%	0%
HMS-REP	—	58%	33%	8%	0%	0%
EG-96	RED CROSS	27%	42%	17%	4%	10%
CG-01	NAME	27%	30%	40%	3%	0%
FOM2-01	EXISTENCE	35%	24%	35%	6%	0%
FOM1-01	COLLEAGUE	48%	26%	26%	0%	5%
B-03	PHOTO	58%	17%	25%	0%	0%

TABLE A1: DESIGNS & RESULTS

2 SAMPLES TEST:		POVERTY	DRUGS
WILCOXON	NO-INFO	$Z = -7,61*$	$Z = -8,70*$
SIGNS	NO-INFO	$Z = -7,32*$	$Z = -9,80*$
WILCOXON	POVERTY	--	$Z = -4,34*$
SIGNS	WILCOXON	--	$Z = -4,64*$

K SAMPLES TEST:		NO-INFO VS. POVERTY VS. DRUGS
FRIEDMAN		$\chi^2_2=138.9*$
W-KENDALL		$\chi^2_2=138.9*$

(\*) $p - value < 0,01$

TABLE A2: DIFFERENCES AMONG TREATMENTS