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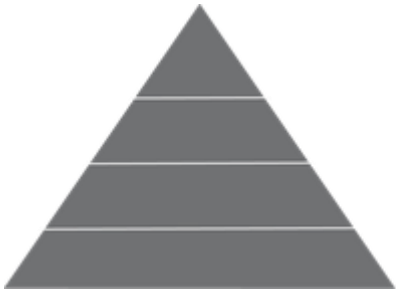

DFG Research Group 2104 at Helmut Schmidt University Hamburg
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Recognition of needs in a dictator game: Experimental evidence on information-sensitive giving behavior

Sabine Neuhofer[a], Fabian Paetzel[b,*], Manuel Schwaninger[a], Stefan Traub[b]

[a] *Department of Economic Sociology & FOR2104, University of Vienna.*
[b] *Department of Economics & FOR 2104, Helmut-Schmidt-University Hamburg.*

Abstract

We utilize a dictator game to analyze whether information about the neediness of recipients has an effect on transfers. Information about recipients which is provided to the dictators is varied between four treatments. We find a negative effect of both the recipient's income and the recipient's received social benefits on transfers. Recipient's requesting a relatively high payoff earn significantly less if no supporting information such as a long journey to the lab is provided. We conclude that (i) dictators are information-sensitive when they decide about transfers and (ii) the recognition of need depends strongly on whether supporting information is provided.

JEL: C92, D31, D63

Keywords: dictator game, information, need, experiment

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1. Introduction

Need-based justice belongs to the three most prominent fairness principles (Miller, 1999).[1] Numerous experimental and empirical papers found evidence for subject's behavior being stronger motivated by need concerns, than concerns about equality or equity (overviews can be found in (Konow and Schwettmann, 2016; Nicklisch and Paetzel, 2018). However, equality and equity (proportionality, entitlements) got established as fairness principles in the economics literature in the course of the last decades, less is known about need-based justice. As pointed out by Konow (2003), Traub et al. (2005), Konow and Schwettmann (2016), Nicklisch and Paetzel (2018) and others need-based justice is an under-researched topic in economics.

A possible reason why need is not as prevalent as equity and equality is that the application of need-based justice requires information about the neediness of a subject as well as an agreement about what constitutes a need in contrast to desires or wishes, often referred to by use of the term "social recognition" (Miller, 1999; Kittel, 2018). In contrast, equality can easily be applied by comparing endowments. The application of equity requires information about how endowments were "earned". Kittel (2018) emphasizes that need-based justice, more than the other fairness principles, necessitates information about particular circumstances of an individual and, thus, cannot be ubiquitously applied. Therefore, the present paper is dedicated to shed some new light on how needs are recognized and considered when subjects decide how much they want to give to recipients in a dictator game.[2]

We hypothesize that if information about the neediness of subjects is revealed, dictators will adapt their transfers to the recipients in line with the type and content of information provided. We argue that even in a stan-

[1] Other authors (Liebig and Sauer, 2016) differentiate between four basic fairness principles: equality, equity, entitlements and need.

[2] Compare Kittel (2018) and Liebig and Sauer (2016) who give systematic classifications under which circumstances which fairness principle is applied.

dardized dictator game[3] with a student sample, different degrees of neediness can be induced and are taken into account when dictators decide about how much to give to recipients.

In the experiment, we systematically vary information about recipients being provided to dictators. The experiment involves four treatments: In *CONTROL*, no information is given. In *INFO*, only some characteristics of the recipients, like income, social benefits, travel time to the lab and gender are revealed. In *NEED*, dictators are provided with information about the payoff requested by the recipients. In *INFO+NEED*, dictators are informed about both the individual characteristics and the requested payoff.

It turns out that transfers are sensitive to provided information about recipients. We find that transfers decrease with increasing income or social benefits of the recipient. Longer travel time to the lab gives rise to significantly higher transfers. Another finding is that if recipients request a relatively high payoff without the provision of additional information which supports her neediness, transfers are significantly lower. Only if recipients request a high payoff and provide supporting information about their neediness (e.g. long travel time to the lab), transfers do not shrink. We conclude that (i) dictators are information-sensitive when they decide about transfers and (ii) the fulfillment of payoff requests in terms of need strongly depends on provided additional information. It appears that the payoff request is in need of justification. If the information provided is a socially recognized determinant for the neediness of a person, then a dictator may be more likely to consider the requested payoff.

In the standard version of the dictator game, pairs of two are randomly assigned to the roles of a dictator and a recipient. The dictator is endowed with a fixed amount of payoff and is able to divide the pie between herself and an anonymous recipient (Kahneman et al., 1986). For a meta study of the dictator game see (Engel, 2011).

[3]We decided to utilize a dictator game because no strategic reasons play a role and results can be easily compared with other studies.

Our research question is closely related to Brañas-Garza (2006), Cappelen et al. (2013) and Eckel and Grossman (1996). This literature shows that transfers in a dictator game are higher if recipients are characterized as being poor or living in a poor country or being an established charity organization. While these findings offer several interesting and important insights, the characterization of a subject as being poor does not account for individual particularities, and, thus, cannot analyze the recognition of individual needs. Higher transfers can be caused with need-based justice or with e.g. an humanitarian act. We argue that only if dictators are provided with the information about individual particularities (instead of ubiquitous characterizations), the recognition of needs can be analyzed.

Providing individual information about recipients relates our work to dictator games which also involve revealing information about recipients to dictators. Overall, this literature shows that information decreases social distance and, thus, transfers increase. Bohnet and Frey (1999) allow for e.g. one-way identification where dictators can identify their respective recipients. Bohnet and Frey (1999) argue that the identification transforms anonymous, faceless entities into visible, specified human beings. Charness and Gneezy (2008) reveal the names of recipients in a dictator game. When names were revealed, dictators allocated a significantly larger portion of the pie. Another way to decrease social distance in a dictator game can be observed when recipients are allowed to send messages to the dictator (but not the other way around). Andreoni and Rao (2011) provide evidence that when recipients are allowed to communicate with the dictator, altruism is promoted. Providing the information about the requested payoff relates our work to Rankin (2006). Rankin (2006) finds that asking the dictator for a share of the cake enhances the sent amount. However, if the requested amount is too large relative to the amount the dictator would have given anyway, such request is crowded out.

2. Experimental Design

We study a variant of the dictator game, in which we vary between four treatments the information dictators receive about the recipients. After the participants read the common instructions, explaining the rules of the dictator game (Appendix C.1), they have to complete a short socio-economic questionnaire prior to the experiment (Appendix C.2). Only then the participants learn their role in the experiment (Appendix C.3) and play the dictator game.

The dictator game as such is played utilizing the strategy method. The dictators see eight profiles of recipients at the same time (on one screen) and divide 16 Euros between themselves and each recipient. We decided to provide all information about all recipients at the same time to allow for comparability between profiles. In the control treatment without information the dictators saw no profile (i.e. the standard dictator game without strategy method was played). In all other treatments, the profiles give information about the recipients. Only one out of the decisions is randomly chosen and paid, such that each dictator is exactly matched with one recipient. This procedure allows us to study whether the dictators within the same treatment are sensitive to the provided information.

In the meantime, the recipients are asked to put themselves into the shoes of a dictator and make hypothetical decisions, which are not payoff relevant, and shall state their expectations about the dictator's decisions, which are also not payoff relevant.[4] Finally, the participants are asked whether, and if so, which information has been most relevant for their decisions. The participants are paid in cash according to the division of the dictator in addition to a show-up fee of four Euros.

The four treatments differ with respect to the information provided to

[4]The main reason for elicitation of expectation was for securing anonymity. All subjects had to make the same number of clicks in the same period of time. With respect to non-incentivation of the elicitation, we decided to not report and analyze the expectation of recipients about dictator‘s behavior. Data are available upon request.

the dictators. In *NEED*, the requested payoff of recipients was provided. We elicited the requested payoff in questionnaire prior to the experiment (see Q12, Appendix C.2). We ask each subject about her individually requested payoff. The requested payoff is the lowest amount of money appropriate to recipients for this kind of work, considering the own personal circumstances. All participants answered this question by choosing an amount between zero and 100 Euro. We argue that the requested payoff can be seen as a proxy for the neediness of a participant. Whether the requested payoff is recognized by dictators is an empirical question (compare Conjecture 5 and 6 below).

In *INFO*, dictators receive information about gender, disposable income per month, social benefits received by the recipient, and the travel time to the lab and back (see Q1, Q7, Q9, Q10, Appendix C.2, the coding of information provided is added in square brackets).

In *INFO-NEED*, dictators receive the same information as in *NEED* and *INFO*. The last treatment, *CONTROL*, serves as control treatment, where we provide no information to dictators about the recipients.

We hypothesize that the information about recipients has an effect on giving behavior if the content of information supports the neediness of a recipient. Based on that idea, we should observe a negative relationship between the income level of recipients and the amount passed (*Conjecture 1 (income)*). Concerns about equality can be an alternative explanation for such a negative relationship between income and transfers.

With respect to neediness and the recognition of neediness, information on receiving transfers from the state should have a negative effect on transfers because need is already fulfilled. Transfers from the state which fulfill needs should be seen as income. We hypothesize a negative effect between fulfilled needs (level of social benefits) and transfers in the dictator game (*Conjecture 2 (transfers)*).

The time to approach to the lab should have a positive effect on transfers because this value can serve as a proxy about how strongly a subject needs money from participating in the experiment. One might also argue that

the invested time induces some sense of entitlements. Equity concerns can work as an additional or alternative explanation for the hypothesized positive relationship. Both lines of reasonings should result in higher transfers (*Conjecture 3 (time)*).

Gender should have no effect because gender cannot serve as a proxy for neediness. This information should work as a control because neediness should be orthogonal to gender (*Conjecture 4 (gender)*).

The requested payoff should have a negative effect on transfers because no further information about neediness is provided. Dictators should interpret this requested payoff as the reservation wage which reflects opportunity costs for participating (*Conjecture 5 (requested payoff)*). Rankin (2006) and Andreoni and Rao (2011) find that the effect on transfers should depend on the level of the requested payoff (inverted U-shaped).

If additional information is provided (income, social benefits, approaching time), we hypothesize that if both the requested payoff and additional information can be used as a proxy for neediness, transfers should be positively affected (*Conjecture 6 (requested payoff and info)*).

3. Results

We ran all sessions at the VCEE laboratory at the University of Vienna in 2017, utilizing the recruitment software ORSEE (Greiner, 2015). The experiment was fully computerized (Fischbacher, 2007). In total, 284 subjects took part in the experiment. We ran 18 sessions.[5]

Figure 1 indicates that transfers in *NEED*, *INFO* and *NEED-INFO* are on average higher than in *CONTROL* (panel A). Histograms per treatments can be found in Figure A.2 in the Appendix. The histograms show that

[5]We ran 4 sessions for each of the treatments *CONTROL* and *NEED* and 5 sessions for each of the treatments in which individual information of the recipients were provided (*INFO* and *INFO-NEED*). One session consisted of 16 subjects, except 2 sessions for *INFO-NEED*, here, only 14 subjects participated due to low appearance. This yields the following number of participants per treatment: *CONTROL*: 64; *NEED*: 64; *INFO*: 80 and *INFO-NEED*: 76.

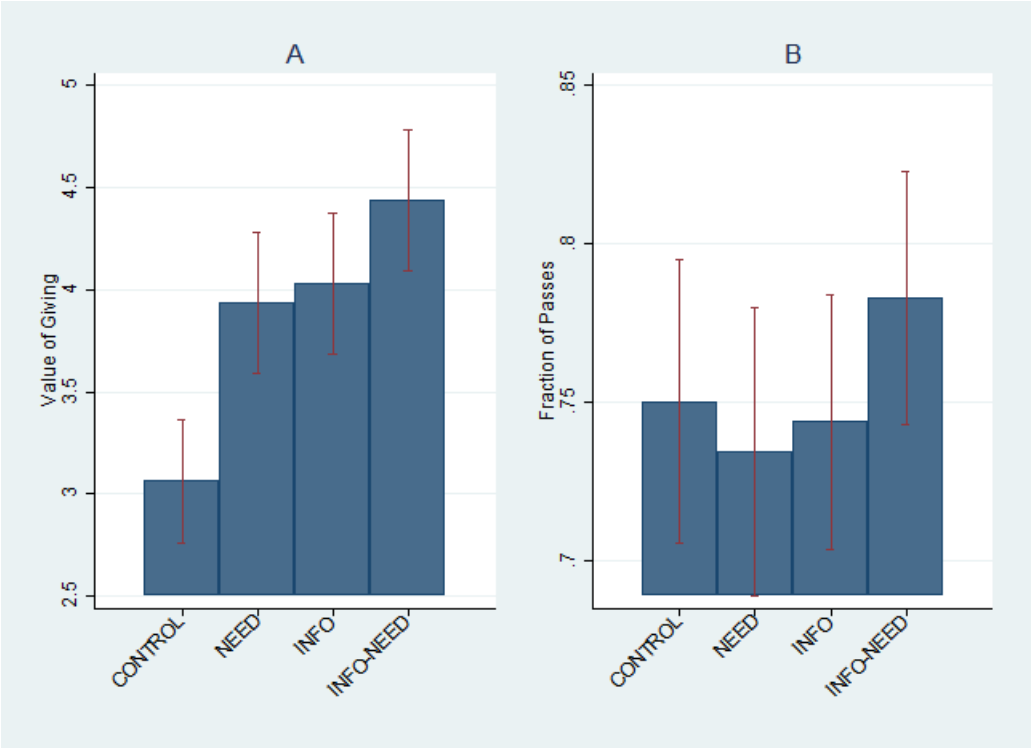

Figure 1: A: Average transfers per treatment; B: Fraction of giving a positive amount.

information (in contrast to *CONTROL*) yield more transfers which are higher than 8 (50%) of the endowment.

Using Mann-Whitney tests, we corroborate that transfers in *CONTROL* are significantly lower than in the remaining treatments.[6] In economic terms, these differences are relatively strong. On average, subjects pass about 30% more in *NEED* and *INFO* and about 50% more in *INFO-NEED* to recipients.[7] Differences in transfers between *NEED*, *INFO* and *INFO-NEED* are

[6] *CONTROL* vs. *NEED*: $p = 0.0178$; *CONTROL* vs. *INFO*: $p = 0.0230$; *CONTROL* vs. *INFO-NEED*: $p = 0.0001$.

[7] In comparison to the mean of passes from other dictator games which is 28.3% (Meta-study from Engel (2011)), the overall mean of passes in our experiment is similar.

not statistically different.[8] In panel B of Figure 1, the fraction of subjects who pass a positive amount is displayed. It is visible that the fraction of subjects who give a positive amount does not differ between treatments.[9] We could summarize that the fraction of passes does not differ between treatments but the amount differs between *CONTROL* and the remaining treatments. On average, information has no effect on the extensive margin (decision to pass) but on the intensive margin (level of passing).

Figure A.3 in the Appendix displays descriptive relationships between transfers and income, received transfers, time, gender and requested payoff. Figure A.3 shows that there are negative relationships between both income and giving and transfers and giving (compare the 2 first rows of panels). This corroborates both *Conjecture 1 (income)* and *Conjecture 2 (transfers)*. Figure A.3 visualizes the time effect. The time to get to the lab has a positive effect on transfers (compare the 3rd row of panels). This corroborates *Conjecture 3 (time)*. Gender does not have any effects on transfers (compare the 4th row of panels). *Conjecture 4 (gender)* is also corroborated.

The last row of panels in Figure A.3 indicates that there is no relationship between requested payoff and transfers in both treatments *INFO* and *INFO-NEED*. This seems to corroborate *Conjecture 5 (requested payoff)*, but contradicts *Conjecture 5 (requested payoff and info)*.

Considering that in *INFO*, 4 individual characteristics were shown to the dictators and 5 pieces of information were shown to the dictators in *INFO-NEED*, a comparison between some specific characteristics only provides some first impressions of the results. Only if we control for all pieces of provided information, we are able to analyze which information has an effect on giving behavior. Table 1 summarizes the main findings by utilizing

[8]Mann-Whitney tests: *NEED* vs. *INFO*: $p = 0.9741$; *NEED* vs. *INFO-NEED*: $p = 0.1987$; *INFO* vs. *INFO-NEED*: $p = 0.1645$.

[9]Mann-Whitney tests affirm insignificance of differences between treatments. In comparison to the fraction of passes from other dictator games which is 63.89% (Meta-study from Engel (2011)), the fraction of passes in our experiment is a bit higher but comparable.

Tobit-Panel-Models.[10]

Table 1: Estimation Results

		I	II	III
Treatments	d tmt NEED	0.634	0.067	0.683
		(1.187)	(1.183)	(1.265)
	d tmt INFO	0.967	0.550	2.702**
		(1.132)	(1.101)	(1.186)
	d tmt INFO-NEED	1.369	1.356	2.538**
		(1.135)	(1.114)	(1.229)
Information	recipient‘s income			-0.878***
tmt=INFO				(0.083)
	recipient‘s transfer			-0.349***
				(0.098)
	recipient‘s time			0.113
				(0.098)
	recipient‘s sex			-0.082
				(0.169)
tmt=NEED	recipient‘s need			-0.042***
				(0.012)
tmt=INFO-NEED	recipient‘s income			-0.645***
				(0.107)
	recipient‘s transfers			-0.335***
				(0.081)
	recipient‘s time			0.200**
				(0.101)
	recipient‘s sex			-0.191
				(0.183)
	recipient‘s need			0.004
				(0.005)
Own information		NO	YES	YES
Socio-demographics		YES	YES	YES
	constant	0.843	-0.745	-0.826
		(1.933)	(2.475)	(2.559)
	Wald-χ^2	18.888**	30.295***	280.285***

Table notes. Random-effects Tobit panel model. Dependent variable: Transfers in points. 142 subjects with 8 decisions each (n=1136). *$p \leq 0.1$, **$p \leq 0.05$,***$p \leq 0.01$. ¿

[10]We utilized Tobit-Models because the dependent variable is taken from the interval $[0, ..., 16]$. We used a panel structure because the same subject makes 8 decisions (strategy-method). For reasons of simplicity and interpretability, we did not consider a grand mean in the regressions.

Regression model I shows that there is no significant treatment effect between treatments when we control for socio-demographics. Remember that our conjectures are basically focused on the within-subject level (except *Conjecture 5 and 6*), and thus, we did not expect that on average transfers between treatments should differ. Regression model II shows that even if we control for own information about income, social benefits, approaching time and requested payoff, we do not find any significant treatment-effects.

Regression model III directly tests whether the individual information about a recipient has an effect on giving behavior. We find clear evidence for *Conjecture 1 (income) and 2 (transfers)*. The coefficients for recipient's income and recipient's transfers are negative and significant both in *INFO* and *INFO-NEED*. The evidence with respect to *Conjecture 3 (time)* is mixed (corroborated in *INFO-NEED* and rejected in *INFO*). As expected, gender does not have an effect on giving behavior (Conjecture 4 is corroborated).

The coefficient for recipient's requested payoff is negative in treatment *NEED* which corroborates *Conjecture 5*. It seems that higher requested payoff is used as a proxy for a high reservation wage instead of a high neediness. In contrast, the coefficient of recipient's requested payoff in *INFO-NEED* is not significant, but significantly higher than the coefficient in treatment *NEED*. A Wald-χ^2-test shows that the coefficients of requested payoffs in *NEED* (-0.042***) is significantly different from the coefficient of requested payoff in *INFO-NEED* (0.004), $p < 0.001$. *Conjecture 6* is corroborated. In summary, we find that only if additional information is provided, the requested payoff is not predominantly recognized as a reservation wage. It appears that additional information helps to legitimize the requested payoff as a need claim.[11]

[11]In additional regressions, we also checked several interactions. We checked wether interactions of requested payoff and specific information (income, transfer, gender, time) in *INFO-NEED* have an effect on giving behavior. It turns out that non of these interactions is significant. Moreover, we checked whether subjects with both very similar values for income, transfer, time and need and equal gender give more to these similar (same) respondents. It turns out that none of these interactions is significant. If transfers would have

In the post-experimental questionnaire, we elicited the importance of each information for the decision made. It turns out that the income of recipients is by far the most important piece of information (77.50% in *INFO* and *67.93%* in *INFO-NEED*). However, 10.69% of the subjects in *INFO-NEED* evaluate the stated need as being most relevant for deciding about transfers. Even though the importance of the information about the recipient's income is the predominant criterium, we also see that for a fraction of subjects, the information about the requested payoff is even more important.

4. Conclusion

We played a simple dictator game. We systematically vary information about recipients being provided to dictators. The experiment involves four treatments: In CONTROL, no information is given. In INFO, only some characteristics of the recipients, like income, social benefits, travel time to the lab and gender are revealed. In NEED, dictators are provided with information about the payoff requested by the recipients they are matched with. In INFO+NEED, dictators are informed about both the individual characteristics and the requested payoff.

On average, transfers are significantly higher if dictators receive some information about the recipient. This finding is in line with literature showing that providing information about recipients decreases social distance and increases transfers (Bohnet and Frey, 1999; Charness and Gneezy, 2008). In addition to that literature, we provided information about some values which could potentially reflect differences in neediness. Of course, the student sample is not socially needy, but differences in neediness among students exist.

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been higher between e.g. subjects with higher income or the same gender, such a behavior would be evidence for what is defined as homophily (Currarini et al., 2009). We explain the insignificance of the interactions by the fact that not only one specific information was displayed, but instead, all information about a respondent was provided.

We find that transfers are sensitive to provided information about recipients. We find that transfers decrease with increasing income or social benefits of the recipient. Longer travel time to the lab gives rise to significantly higher transfers. Another finding is that if recipients request a relatively high payoff without the provision of additional information which supports her neediness, transfers are significantly lower. Only if recipients request a high payoff and provide supporting information about their neediness (e.g. long travel time to the lab), transfers do not shrink. We conclude that (i) dictators are information-sensitive when they decide about transfers and (ii) the fulfillment of payoff requests in terms of need strongly depends on provided additional information as a way of legitimizing the need claim (which will only be recognized if the claim is socially recognized as such within the given social group or society).

Our findings add to the literature analyzing how information about recipients have an effect on transfers in a dictator game. To the best of our knowledge, our introduced pieces of information about recipients (income, social benefits, approaching time) and the combination of these pieces of information with the information about the requested payoff have not been analyzed so far in a dictator game, except gender. We find that gender of recipients does not have an impact on transfers. In contrast, Engel (2011) summarizes in his meta-study that if recipients are female, they receive significantly more from dictators; independent from the dictator's gender. We can only speculate, that if other information about recipients are provided, gender seems to become less important. This seems to be corroborated by our post-experimental questionnaire in which we ask subjects which piece of information was most important for their decision. In *INFO* (*INFO-NEED*), only 7.5% (0%) of subjects indicated recipient's gender as the most important piece of information for making the decision.

Our findings provide some evidence that giving behavior is affected by concerns about individual neediness of recipients. While the negative effect of income can be explained alternatively by equality concerns and the positive

effect of invested time can be explained alternatively with equity concerns, the remaining findings provide some interesting insights of how needs are recognized. We find that if someone's need is fulfilled, passed amounts are significantly lower; neediness is not recognized. If only the requested payoff is provided, subjects seem to interpret this piece of information as a reservation wage. A high requested payoff is not recognized as need and yields lower transfers. Only if information about income, received benefits and invested time is provided, the requested payoff can be recognized as need. We interpret our findings as a first step to better understand how information, recognition of needs and giving behavior are related.

With all necessary carefulness of extrapolating experimental work, we interpret our findings as evidence for the application of need-based justice in a simple dictator game. We argue that the neediness between the participants from our student sample is lower than differences of neediness in the real world. We think that our findings are methodologically important for experiments analyzing fairness and especially need-based justice. We provide a simple tool to consider neediness in a student sample.

Appendix A. Additional figures

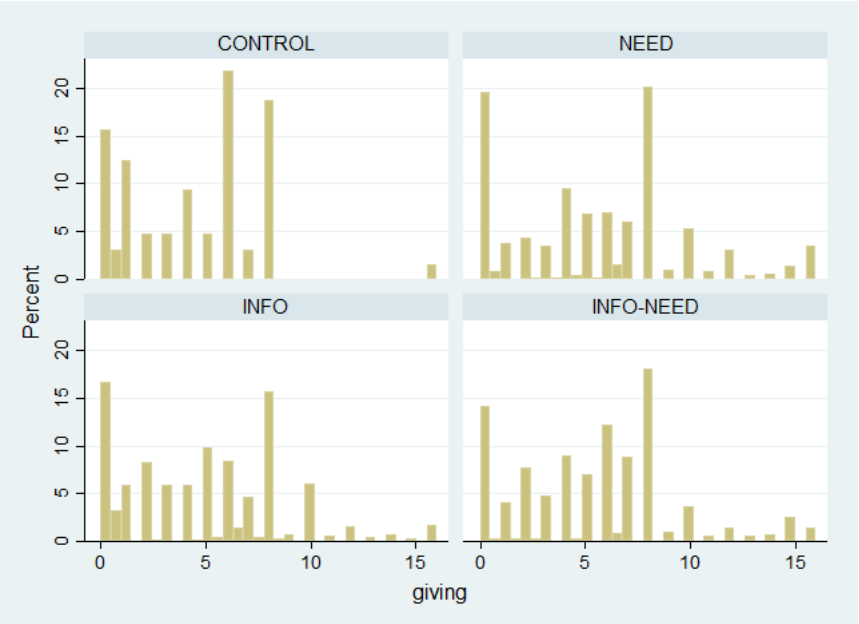

Figure A.2: Histogram of giving (in points) by treatment.

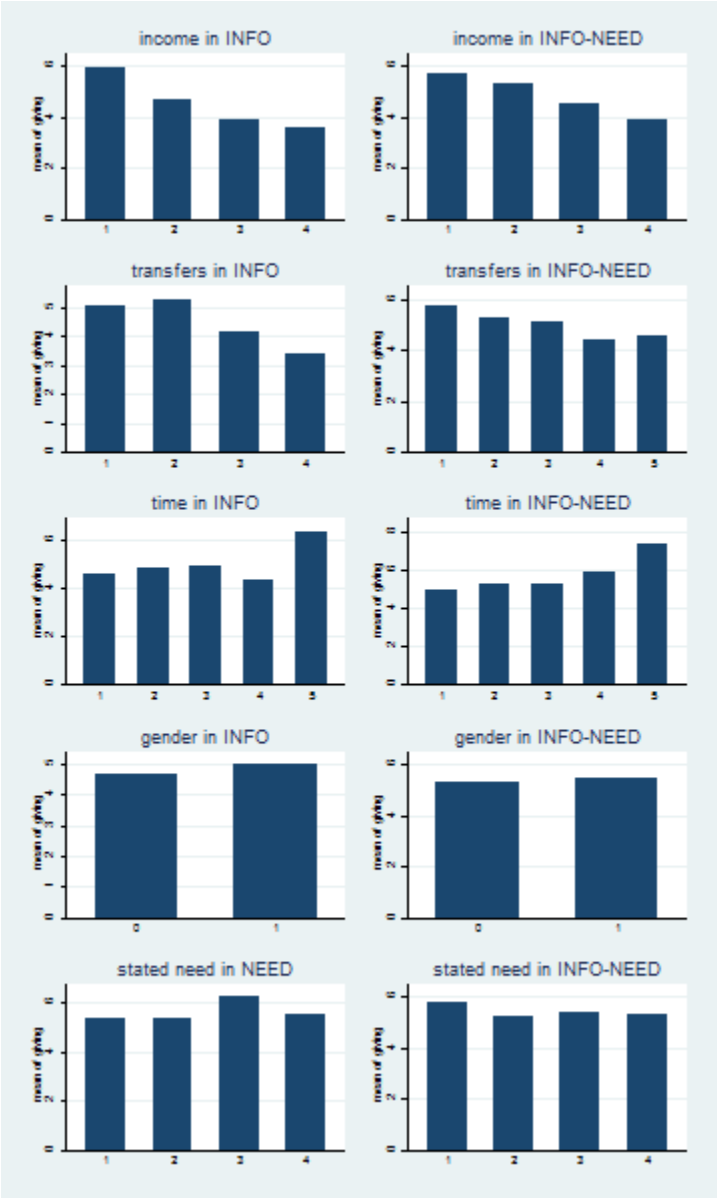

Figure A.3: Average transfers for each piece of information (income, transfers, time, gender) in INFO and INFO-NEED and for the stated need in NEED and NEED-INFO.

Appendix B. Additional regressions

Table B.2: Estimation Results

		I	II	III
Treatments	d tmt NEED	0.634	0.067	0.683
		(1.187)	(1.183)	(1.265)
	d tmt INFO	0.967	0.550	2.702**
		(1.132)	(1.101)	(1.186)
	d tmt INFO-NEED	1.369	1.356	2.538**
		(1.135)	(1.114)	(1.229)
Socio-demographics	age	0.114	0.123	0.126
		(0.079)	(0.079)	(0.079)
	semester	-0.062	-0.093	-0.101
		(0.120)	(0.117)	(0.121)
	experience	-0.133***	-0.122**	-0.122**
		(0.050)	(0.051)	(0.049)
	austria	0.618	0.751	0.746
		(0.863)	(0.860)	(0.873)
	economics	-2.427**	-2.195**	-2.220**
		(1.061)	(1.032)	(1.051)
Own information	own income		0.595	0.597
			(0.444)	(0.460)
	own transfer		0.838**	0.882**
			(0.371)	(0.373)
	own time		-0.439	-0.446
			(0.404)	(0.412)
	own need		0.006	0.005
			(0.063)	(0.063)
	own sex		0.731	0.744
			(0.807)	(0.822)
Information	recipient‘s income			-0.878***
tmt=INFO				(0.083)
	recipient‘s transfer			-0.349***
				(0.098)
	recipient‘s time			0.113
				(0.098)
	recipient‘s sex			-0.082
				(0.169)
tmt=NEED	recipient‘s need			-0.042***
				(0.012)
tmt=INFO-NEED	recipient‘s income			-0.645***
				(0.107)
	recipient‘s transfers			-0.335***
				(0.081)
	recipient‘s time			0.200**
				(0.101)
	recipient‘s sex			-0.191
				(0.183)
	recipient‘s need			0.004
				(0.005)
	constant	0.843	-0.745	-0.826
		(1.933)	(2.475)	(2.559)
	Wald-χ^2	18.888**	30.295***	280.285***

Table notes. Random-effects Tobit panel model. Dependent variable: Transfers in points. 142 subjects with 8 decisions each (n=1136). *$p \leq 0.1$, **$p \leq 0.05$,***$p \leq 0.01$. ¿

Table B.3: Estimation Results

	CONTROL	NEED	INFO	INFO-NEED
giving				
age	0.083	0.039	0.288	0.188
	(0.189)	(0.148)	(0.299)	(0.124)
semester	-0.228	0.171	0.122	-0.210
	(0.185)	(0.276)	(0.249)	(0.235)
experience	-0.117	0.060	-0.373***	-0.125
	(0.103)	(0.117)	(0.127)	(0.229)
austria	3.182**	-0.337	-0.321	0.583
	(1.370)	(1.835)	(1.906)	(1.585)
economics	-0.978	-2.581	-3.854**	-2.094
	(1.747)	(2.392)	(1.951)	(1.813)
own income	0.380	1.835**	0.777	0.218
	(0.745)	(0.854)	(0.824)	(1.080)
own transfer	1.514*	0.309	0.852	0.737
	(0.882)	(0.741)	(0.573)	(0.826)
own time	0.428	-1.738*	0.353	-0.718
	(0.594)	(0.940)	(0.779)	(0.909)
own need	0.126	-0.038	0.087	-0.212
	(0.100)	(0.105)	(0.163)	(0.156)
own sex	-0.410	0.920	2.157	1.654
	(1.480)	(1.592)	(1.478)	(1.469)
recipient‘s need		-0.042***		0.004
		(0.016)		(0.005)
recipient‘s income			-0.882***	-0.649***
			(0.088)	(0.115)
recipient‘s transfers			-0.353***	-0.339***
			(0.105)	(0.088)
recipient‘s time			0.112	0.203*
			(0.104)	(0.109)
recipient‘s sex			-0.086	-0.195
			(0.181)	(0.197)
constant	-3.868	2.377	-5.578	4.900
	(4.606)	(4.309)	(8.728)	(4.733)
Wald-χ^2	12.915	18.463*	169.810***	71.200***

Table notes. Random-effects Tobit panel model. Dependent variable: Transfers in points. *$p \leq 0.1$, **$p \leq 0.05$,***$p \leq 0.01$.

Appendix C. Instructions

Appendix C.1. Written instructions

Welcome to the experiment! You and all other participants will make several decisions today in which you can earn money. These instructions will explain the course of the experiment. It is important for you to read carefully, so that you fully understand each situation in the experiment. If you have any questions, do not hesitate to indicate so by raising your hand. A member of the staff of the lab will come to you and answer your questions personally.

Please do not ask any questions openly. You are not allowed to talk to the other participants during the experiment. Please raise your hand if you have any questions. For the scientific value of the experiment it is important to follow these rules.

At the end of the experiment you will be paid your earnings privately and in cash. Your earnings depend on your own decisions, and on the decisions of the other participants. You will not learn the identity of the other participants during the whole experiment and vice versa.

You cannot influence the duration of the came by making quick decisions, as the experiment can only proceed, if every participant has made her decision.

Course of the experiment

In this experiment one of two roles will be randomly chosen for you. Half of participants will play the role of "**allocators**", the others the role of "**receptors**"'. If you play the role of the allocator you provisionally receive 16 €. If you play the role of the receptor, you do not receive any money

provisionally.

The allocator has the option to split the money between herself and a receptor. Any amount of the provisional 16 €can be sent in steps of 50 cents.

The profit of the allocator is calculated by deducting the amount sent to the receptor from the provisional amount of 16 €.

The profit of the receptor equals the share the allocator sent to her.

Example 1: The allocator sends 4 €to the receptor. In this case the allocators payoff equals 12 €, the receptors payoff equals 4 €.

Example 2: The allocator sends 10 €to the receptor. In this case the allocators payoff equals 6 €, the receptors payoff equals 10 €.

Prior to this task you are asked to complete a questionnaire. You receive 4 €for completing the questionnaire in addition to the profit you make in the game.

Appendix C.2. Questionnaire

Q1. Your sex [male; female]
Q2. Age
Q3. In which country, did you spent most of your life?
Q4. Field of study
Q5. Semester
Q6. In how many experiments did you already participate (approximately)?
Q7. If you add all your sources of income, how much money do you have at your disposal per month? [0-600 Euro; 600-800 Euro; 800-1000 Euro; more than 1000 Euro]

Q8. How much do you work in addition to your studies?
Q9. How much money do receive from the state? (for example: student grants, family aid, scholarships) [0 Euro; 1-250 Euro; 250-500 Euro; 500-750 Euro; more than 750 Euro]
Q10. Summing up the time it took you to get to this facility and the time to go back, how much time did it take? (in minutes) [0 - 15 minutes; 15 - 30 minutes; 30 - 60 minutes; 60 - 90 minutes; more than 90 minutes]
Q11. This experiment will last for approximately 45 minutes. In general, how much money do you think is an appropriate and fair payment considering the time it takes? (in Euro)
Q12. Considering your personal circumstances, how much payment for this kind of work is only just appropriate for you personally? (in Euro) [continuous variable: 0-100]

Appendix C.3. Information on screens

You have been assigned to the role of the sender.

You will receive anonymized information of all participants that have been assigned to the role of the recipient. The next screen displays "profile cards" of eight recipients. You will receive information about each recipient, please consider the information carefully. Your task is to decide for each recipient individually, on basis of the information provided by the "profile cards", how much money this recipient should receive from you. At the end of the experiment one of your decisions is randomly chosen and effective. Please take your time to decide and compare the different information of each of the 8 recipients.

Please imagine that you can allocate an amount between 0 and 16 Euro to each recipient.

At the end of the experiment one of the decisions over the division of 16 Euro between the sender (you) and the recipient (another participant) will

be randomly chosen. You will receive 16 Euros minus the amount you chose to allocate to the randomly drawn recipient. It is ensured that each recipient is matched with exactly one sender.

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