Evidence on Need-sensitive Giving Behavior:
An Experimental Approach to the
Acknowledgment of Needs

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Abstract

We utilize a modified dictator game to analyze whether information about the need of recipients affects dictator giving behavior. Need information is presented as objective information about the recipients' living circumstances (income, public transfers, and travel time to the lab) and subjective information about the recipients' self-assessment of their need ("need request"). Classifying dictators according to their conditional transfers yields that 139 of the 246 (57%) dictators are need sensitive. The results show that recipient's income and travel time affect dictator giving behavior significantly. Furthermore, dictator giving increases when the need request is supported by the income information ("acknowledgment effect").

JEL C92, D31, D63

1 Introduction

Experimental economics has demonstrated that "concerns for altruism, fairness, and reciprocity strongly motivate many people" (Fehr and Schmidt, 2006, p. 616). Numerous theoretical models that incorporate the various types of other-regarding preferences have been developed (e.g., Andreoni, 1990; Rabin, 1993; Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000; Frohlich et al., 2004; Cappelen et al., 2007). The consideration of other-regarding preferences has substantially improved our understanding of human behavior and "[j]ustice now occupies a prominent place in theoretical and empirical economic research" (Konow and Schwettmann, 2016, p. 83).

There is also robust experimental evidence that people value multiple fairness principles, such as equality, efficiency, equity (proportionality), and need, and that "there is individual and even cultural variation in the interpretation of or weight placed on different fairness concepts" (Konow and Schwettmann, 2016, p. 99). The significance of *need* for individual fairness considerations has been experimentally shown in psychology (e.g., Lamm and Schwinger, 1980, 1983; Diederich et al., 2020), political science (e.g., Frohlich et al., 1987; Frohlich and Oppenheimer, 1992; Scott and Bornstein, 2009; Lorenz et al., 2017), sociology (e.g., Kittel et al., 2020), and economics (e.g., Yaari and Bar-Hillel, 1984; Konow, 2001, 2003; Schwettmann, 2012; Ahlert et al., 2012; Cappelen et al., 2013; Nicklisch and Paetzel, 2020).

In their survey on the philosophy of need-based justice, Siebel and Schramme (2020, p. 23) argue that theories of distributive justice have to "answer the question *who* should receive *how much* of *what?*". After having fixed the scope (the "who"), egalitarians would simply determine what resource has to be distributed equally for a distribution to be just. Analogously, for a distribution to be fair in terms of equity, reward must be proportional to a yardstick like effort (or some other input). Need-based justice, however, is more intricate than equality and equity as its currency (the "what") is need and its shape (the "how much") is need-satisfaction. That is, it is necessary to form a common understanding of what a recipient's need is (Miller, 1999). Forming this social (or political) understanding requires, firstly, an agreement about what constitutes a need in contrast to mere desires or wishes and, secondly, information about a person's (relative) living circumstances (Kittel, 2020). Only when both criteria are fulfilled, can needs be acknowledged and resources be distributed according to socially acknowledged needs.

In the aforementioned studies, the recipients' need is usually induced by the experimenter and subjects choose between allocations representing different fairness ideals. In addition to such approaches, we develop a laboratory experiment to systematically study the *acknowledgment* of needs that are

based on subjects' actual living circumstances outside the laboratory. In other words, we investigate whether and how giving behavior in the Dictator Game (DG) (Kahneman et al., 1986) is motivated by information about the recipients' need. To the best of our knowledge, the acknowledgment of need has thus far not been systematically studied in a laboratory experiment. We provide two types of information about recipients—objective information about their living circumstances (income, public transfers and travel time to the laboratory) and subjective information in terms of a "need request". Both objective information and the need request are elicited in a pre-experimental questionnaire.

We employ an *instrumental* definition of need, that is, subjects state how much they need of what in order to achieve a certain goal. In practice, the need request is implemented as the amount of money demanded as additional compensation for participation in the experiment considering one's individual circumstances. The exact question is as follows: "This experiment takes about one hour in total. You will receive a flat payment of 5 Euros for a fully completed questionnaire. Please consider your own income situation, whether you receive BAFÖG *[a public transfer to students]* and your travel times to and from the laboratory. In addition to the 5 Euros, what amount do you think is appropriate payment for your personal situation for a one-hour experiment? (You can specify between 0 and 16 Euros.)".

Whether a recipient's need request is morally relevant, and therefore puts pressure on the dictator to satisfy it, depends, among other things, on the moral significance of the goal. Therefore, all subjects were also asked for what purpose they would use the earnings from the experiment. An overwhelming majority of subjects answered that they were planning to spend the money on food or dining in the university cafeteria. Most subjects would probably agree upon that lack of food (and good company) is harmful to (mental) health and therefore spending money on food is a morally relevant goal. Harm avoidance is what distinguishes a mere demand from an acknowledged need (Miller, 1999).

We utilize the Impure Altruism Model (IAM) (Andreoni, 1989, 1990, 1993) to derive a typology of dictators. Dictators who positively react to the information stimulus on the recipients' subjective need, that is, dictators who are willing to acknowledge the need of their recipients, are called *need sensitive*. The model is tested experimentally using a sample of 492 student subjects. Additionally, we use the data of 288 participants in a survey which we conducted previous to the main experiment to provide a classification of subjects as relatively more or less needy.

The modified DG is ideal for this purpose because (i) strategic considerations are irrelevant, (ii) results can easily be compared with other DG studies,

and (iii) altruistic giving can be rationalized by the IAM. We assume that subjects are heterogeneous with respect to their fairness preferences. That is, by means of the experiment, we explore the share of dictators that can be classified by the IAM as egoistic, warm glowing, need sensitive, and punitive types. In order to do so, we estimate an individual conditional giving function for each dictator. Hence, for the subset of need sensitive dictators we can also analyze how subjects react to the different types of information and the interaction of objective and subjective information. We hypothesize in line with Kittel (2020) that acknowledgment of need is strongest when information about the living circumstances and the need request align with each other ("acknowledgment effect").

The main results are as follows. Based on the conditional giving functions, we classify 57% of the dictators as need sensitive. The remaining dictators are egoistic (17%), warm glowing (17%) or punitive (7%). The dominance of the need-sensitive type over the other types is a remarkable finding. Moreover, we show that, depending on the sequence in which information is presented, the recipients' personal traits (income and travel time to the laboratory) matter for dictator giving. With respect to the recipients' income, we find evidence for an *acknowledgment effect*. That is, when a recipient's need request is confirmed by her income situation, dictator giving increases significantly. However, in comparison to the standard DG, providing information about a recipient's living circumstances does not lead to an increase of average dictator giving.

We also find that egoistic dictators' political orientation is more likely to be on the right than the political orientation of need sensitive dictators. Warm glowing dictators are less likely to be female than need sensitive dictators. Need sensitive dictators have higher incomes than punitive dictators. Hence, the "typical" need sensitive dictator is female, has a relatively high income and places herself on the middle left on the political orientation scale.

Our study contributes to the literature on fairness in economics. We have utilized the workhorse experiment—the dictator game (Kahneman et al., 1986)—to analyze altruistic giving behavior. In the standard version of the dictator game without need information, pairs of two subjects 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 (for a meta study of the dictator game, see Engel, 2011). Several experimental studies show that the dictator's giving behavior may be influenced by different factors, one being general information about the recipient's welfare.

Our research is thus related, to the works of Brañas-Garza (2006), Cappelen et al. (2013) and Eckel and Grossman (1996). These studies show

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 necessarily say anything about existing (legitimate) need requests that can be socially acknowledged. However, in line with Miller (1999), we argue that a transfer from a person living in a rich country to a person living in a poor country is motivated by a humanitarian motive rather than by intragroup solidarity (which is associated with reciprocity and need-based justice).

Our research is also related to DGs that reveal certain pieces of information about recipients to dictators. Overall, this literature shows that this kind of objective information increases dictator giving. The argument is that the provision of information reduces social distance between dictator and recipient. Bohnet and Frey (1999) allow, for example, for 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 are revealed, dictators allocate a significantly larger portion of the pie. Note, however, that such procedures might diminish anonymity between dictator and recipient both within and after the experiment. In contrast to this, our experiment preserves anonymity throughout.

The revelation of information about recipients may be interpreted as a form of communication (see Bruttel and Stolley, 2020, for an overview). For example, Andreoni and Rao (2011) provide evidence that, when recipients are allowed to communicate with the dictator, altruism is promoted. Providing information about the *requested* payoff relates our work to Rankin (2006). He finds that asking the dictator for a share of the cake enhances the amount sent. However, if the requested amount is too large relative to the amount the dictator would have given anyway, such a request is crowded out. This result has been confirmed by Andreoni and Rao (2011) and Yamamori et al. (2008). Bruttel and Stolley (2020) show that giving is higher if the recipient sends a humorous message or if the message mentions why the money is needed.

Finally, on a methodological level, our study also connects to the literature on guilt aversion (Battigalli and Dufwenberg 2007, for a survey of experimental studies see Cartwright 2019). Theoretically, the acknowledgment of recipients' needs could also be driven by other motives than altruism. In the context of our experiment, guilt aversion would mean that dictators give because they do not want to let down the payoff expectations of recipients, that is, dictators have second-order beliefs about the beliefs of recipients

about how much they would be given by dictators. For instance, Bellemare et al. (2019) find a positive correlation between economic and psychological measures of guilt aversion when asking dictators to condition their choices in a binary dictator game on recipients' first-order beliefs using the strategy method.

Similarly, we also use the strategy method to condition dictator giving on recipients' need requests. The crucial difference between both approaches is, however, that we do not ask recipients for what they *believe* to be given by dictators, but for what they *need* in their personal situation (without any reference to dictators). Hence, in the beliefs-based approach, dictators acknowledge recipients' beliefs in order to avoid own feelings of guilt; in our demand-based approach, dictators acknowledge needs in order to avoid harm for the recipient (that is caused, say, by a lack of food). Even if recipients' beliefs and demands were identical, dictators would be expected to be more "kind" to recipients (at least for low demands) due to the disclosure of expectations (Bellemare et al., 2017). Moreover, we combine the recipients' subjective need requests with objective information about their living circumstances. In summary, though there are some similarities between both approaches, we are convinced that guilt aversion and the acknowledgment of needs are complementary approaches to explaining dictator giving.

To summarize, previous literature has shown that (i) information has an impact on dictator giving, (ii) humanitarian concerns matter for dictator giving in settings without reciprocal relationships, and (iii) recipients' requests are benevolently considered by dictators (if they are not too greedy). However, none of the aforementioned papers has analyzed how *need*-related requests made by recipients are *socially acknowledged* by dictators. This study thus aims to fill a gap in the literature by analyzing whether and how need information about recipients who have a close social relationship with the dictators triggers altruistic giving. While this paper focuses on small groups of two, it also contributes to the microfoundation of social policy. The principle of giving to someone in "need" is an integral part of solidarity communities and it is a necessary condition for the functioning of modern welfare states (e.g. Bowles et al., 2000; Mau, 2004). However, while small groups rely on knowledge about each other in order to avoid free riding, the welfare state has to resort to institutional mechanisms, such as means-tested benefits (Kittel, 2020).

The paper is organized as follows. Section 2 introduces a typology of dictators based on the Impure Altruism Model to derive working hypotheses. Section 3 describes the experiment. Section 4 presents the results. Section 5 offers some final reflections and a conclusion. The comprehensive Supplementary Online Appendix contains, apart from the instructions for the

experiment, further materials such as individual classification graphs of all dictators.

2 Theoretical Classification of Giving Behavior

In the first part of this section (Subsection 2.1), we introduce a simple model of dictator giving behavior. Based on a dictator game with perfect need information, we provide a typology of dictators. To be more specific, we distinguish between *egoistic*, *warm glowing*, *punitive*, and *need sensitive* dictators. In addition, the latter type exhibits either *increasing*, *constant*, *decreasing* or *hump shaped* need sensitivity. In the second part (Subsection 2.2), we study dictator giving with imperfect information. It is assumed that a recipient's need cannot directly be observed by the dictator. We analyze, for the need sensitive dictator type, how providing *objective* information about a recipient's living circumstances and *subjective* information about a recipient's self assessment of her need influences dictator giving behavior.

2.1 A Typology of Dictators

Chowdhury and Jeon (2014) emphasize that theories of altruism and social preferences, like pure altruism (Becker, 1974) impure altruism (Andreoni, 1989, 1990, 1993), inequality aversion (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000), and conditional altruism (Konow, 2010) explain and rationalize giving in the dictator game (see also for an overview Andreoni and Miller, 2002). The Impure Altruism Model (IAM) motivates altruistic giving via the dictator's interest in the recipient's well-being and additionally via selfish "warm glow" feelings. Inequality aversion assumes that inequality between dictator and recipient gives rise to a disutility that motivates altruistic giving. Konow (2010) replaces the warm glow with the disutility of a deviation of the dictator's giving from a norm and therefore combines elements of the IAM with inequality aversion.

The main research interest of this paper is to study whether and how a dictator's altruistic giving is motivated by information about the recipient's well-being in terms of her need. We therefore use the IAM as a theoretical starting point without denying that inequality and norms could influence the dictator's giving behavior as well. A dictator who positively reacts to the information stimulus on the recipient's need is called *need sensitive* in the following.

We consider a finite population of size $n \in \mathbb{N}$ of *recipients* who differ by their need $x \in X = [0, x_{\max}]$, where higher values mean greater need. We assume that X is bounded from below at zero. That is, there is no better state than complete need satisfaction (*no-negative-need* condition). Need is also bounded from above at $x_{\max}$. This is due to the fact that someone's potentially infinite desires are conditioned by the availability of finite resources (*no-plenty* condition). The distribution function of need is given by $F_X(x) = P(X \leq x)$. It determines the share of the population whose need does not exceed x. The density of need is given by $f_X(x) = P(X = x)$.

The *dictator* is endowed with a certain amount of money e. She is matched with a randomly chosen recipient with a need of x, and she can transfer an amount t to the recipient, where $0 \leq t \leq e$. In line with the Impure Altruism Model, we assume that the dictator maximizes a concave utility function $U(e - t, t, g(t|x))$. The first argument of the utility function captures the utility of the dictator's own consumption, the second argument captures the "warm glow of giving", and the third argument captures the dictator's "propensity to donate for altruistic reasons" (Andreoni, 1990, p. 466). With respect to the altruistic component $g(\cdot)$, we additionally assume that it is *conditioned* by the recipient's need x. Hence, under perfect information (P) about x, the dictator's optimal transfer is given by $t_{\mathrm{P}}^* = t(x)$.

We assume that the dictator's *giving function* $t(x)$ is a twice continuously differentiable function that can be approximated by a polynomial of the second degree in need
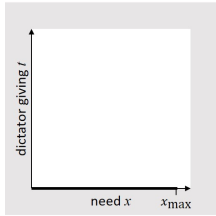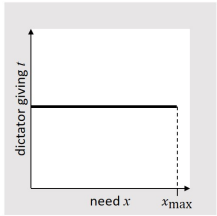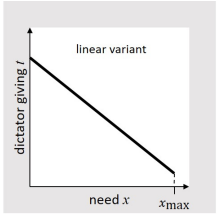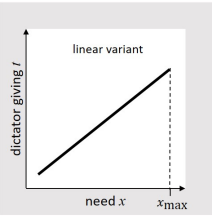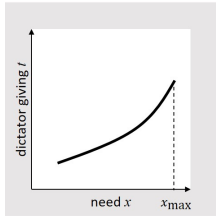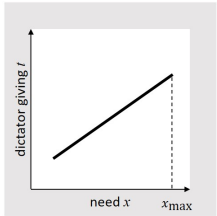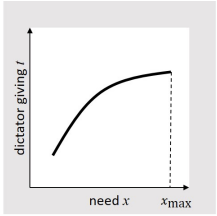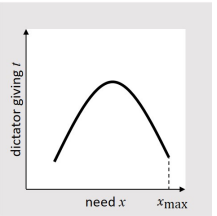
$$t = \beta_0 + \beta_1 x + \beta_2 x^2. \tag{1}$$

Regarding the impact of need on dictator giving, we distinguish four behavioral types that are shown in the upper panel of Table 1. An egoistic dictator gives nothing; a warm glowing dictator gives more than zero, but her giving is not conditioned by her recipient's need; a punitive dictator gives less, the more her recipient needs; a need sensitive dictator increases her giving in response to her recipient's need (at least for low levels of need).[1] Note that the punitive type is similar to a "spiteful" player (Levine, 1998) in that she receives a negative utility from the recipient's need. However, the punitive dictator still gives something to the recipient ($\beta_0 > 0$) when the recipient exhibits little need.

As to the need sensitive dictator, we also distinguish four subtypes that are shown in the lower panel of Table 1. Constant need sensitivity implies that the dictator's transfer $t_{\mathrm{P}}^*(\bar{x})$ to the recipient with average need $\bar{x} =$

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[1]Compare Charness and Rabin (2002) and Kerschbamer (2015) for more details about the classification of different social preference types like spiteful, inequality averse, and efficiency loving.

Table 1: A Typology of Dictators

A dictator is

if	Egoistic	Warm Glowing	Punitive	Need Sensitive
β_0	$= 0$	> 0	$> 0, > 0$	$—\,,\,—$
β_1	$= 0$	$= 0$	$< 0, \leq 0$	$> 0, \geq 0$
β_2	$= 0$	$= 0$	$—\,,\,< 0$	$—\,,\,> 0$

A need sensitive dictator exhibits

need sensitivity if	Increasing	Constant	Decreasing	Hump Shaped
β_2	> 0	$= 0$	< 0	< 0
and			$\beta_1 + 2\beta_2 x_{\max} \geq 0$	$\beta_1 + 2\beta_2 x_{\max} < 0$

$E_X(X) = \int_0^{x_{\max}} x f_X(x)dx$ equals her average transfer $\overline{t_P^*}$ if she is randomly

matched with all n recipients:

$$
\begin{aligned}
t_{\mathrm{P}}^*(\bar{x}) &= t_{\mathrm{P}}^* \left(\int_0^{x_{\max}} x f_X(x) dx \right) \tag{2} \\
&= \beta_0 + \beta_1 \cdot \int_0^{x_{\max}} x f_X(x) dx \\
&= \beta_0 \int_0^{x_{\max}} f_X(x) dx + \beta_1 \int_0^{x_{\max}} x f_X(x) dx \\
&= \int_0^{x_{\max}} (\beta_0 + \beta_1 x) f_X(x) dx \\
&= \int_0^{x_{\max}} t(x) f_X(x) dx \\
&= \overline{t_{\mathrm{P}}^*} \, .
\end{aligned}
$$

Increasing need sensitivity, implies $t_{\mathrm{P}}^*(\bar{x}) < \overline{t_{\mathrm{P}}^*}$ because $t(x)$ is a convex function. Analogously, decreasing need sensitivity implies $t_{\mathrm{P}}^*(\bar{x}) > \overline{t_{\mathrm{P}}^*}$ because $t(x)$ is a concave function. Irrespective of whether the dictator exhibits increasing, constant, or decreasing need sensitivity, her giving function reaches its maximum at $x_{\max}$. In contrast to this, the hump shaped sensitive dictator's giving function has an inner maximum. That is, the dictator "punishes" severe need and, therefore, she is a hybrid case between the decreasing need sensitive and the punitive dictator.

We hypothesize that a considerable share of dictators is need sensitive (**H1: Need Sensitivity**), that is, their altruistic giving is motivated by information about the recipients' need. In order to test this hypothesis, the dictator games introduced in Section 3 vary the amount and type of need information that is presented to the dictators. Furthermore, in order to control for other motives for altruistic giving, like inequality aversion, we collect data on the dictators' own need.

2.2 Dictator Giving with Imperfect Information

In the following, we focus on need sensitive dictators, because neither egoists nor warm glowing dictators care about their recipients' needs. Punitive dictators may be seen as the antipodes of need sensitive dictators. From now on, we assume that need is a *latent* variable, that is, need is not directly observable by the dictator. However, there is a third party—the experimenter— who is able to provide the dictator with information $y \in \mathbb{I}$ about a specific recipient's latent need x. More precisely, the experimenter presents the dictator with two types of information, namely, *objective* (O) and *subjective* (S) information, that is, $\mathbb{I} = \{y | y = \mathrm{O}, y = \mathrm{S}\}$.

Objective information contains, as in our experiment, information about the recipient's living circumstances: her *income*, whether or not she receives a *public transfer*, and how much time she has to devote to participating in the experiment (*travel time*). That is, objective information is a vector of three observable sociodemographic characteristics or indicators of need $\mathbf{z} = (\text{income}, \text{public transfer}, \text{travel time})$. A specific realization of need indicators is called *profile* in the following.

Subjective information contains a recipient's self-assessment of her need that has been reported to the experimenter by the recipient. That is, subjective information is a nonnegative number $x_r = [0, x_{\max}]$. We will call a specific self-assessment *need request* in the following.

Based on the power set of information, $P(\mathbb{I}) = \{\emptyset, \{O\}, \{S\}, \{O, S\}\}$, we build four information *scenarios*. *Baseline* (B) provides no information on the recipient at all (which is the standard dictator game), *Objective Info* (O) presents the recipient's profile $\{\mathbf{z}\}$, *Subjective Info* (S) presents her need request $\{x_r\}$, and *Full Info* (F) presents both the profile and the need request $\{\mathbf{z}, x_r\}$. If the need sensitive dictator has imperfect information about her recipient's need, she has to infer x from the available information (if there is any) by some thought process Ψ, $\hat{x}_k = \Psi(k)$, $k \in P(\mathbb{I})$ in order to determine her optimal transfer $t_k^* = t(\hat{x}_k) = t(\Psi(k))$.

Apart from exploring the distribution of dictator types and subtypes in the student population of the experiment, we are also interested in the impact of different types of information, and their interplay, on dictator giving. Need sensitive dictators are by definition expected to react to the information provided in scenarios O, S and F. If the dictator's thought process exhibits aversion against "need uncertainty", she will increase her giving in response to the amount of information provided by the experimenter. Hence, we hypothesize that dictator giving is lowest in the Baseline scenario and highest in the Full Info scenario, with the Objective Info and the Subjective Info in between (**H2: Information Sensitivity**).

While the above hypothesis refers to mean dictator giving (of need sensitive dictators) across different information scenarios, we will also explore the impact of objective and subjective need information on individual dictator giving in terms of marginal effects and interactions. In particular, we hypothesize that dictator giving increases by an extra amount if a relatively high need request is accompanied by confirming objective information about a recipient's need, that is, if the recipient has a low income, receives public transfers, and has a long travel time. We term this hypothesis the *acknowledgment effect* (**H3: Acknowledgement Effect**).

3 Experimental Design

In this section, we explain the experimental design. About a month before the main experiment took place, we conducted a survey among the subjects of another experiment in order to collect information on the distribution of three need-related variables in the subject pool of the WISO Laboratory in Hamburg, where our experiment was conducted. The survey is described in Subsection 3.1. The main experiment, described in Subsection 3.2 involved a pre-experimental questionnaire and two different treatments that were composed of four variants of the dictator game (DG). These variants, which are equal to the four information scenarios introduced in the preceding section, differed with respect to the information about the recipients that was provided to the dictators. The decision tasks are explained in Subsection 3.3. Subsection 3.4, finally, provides information about the procedure of the experiment.

3.1 The Survey

The survey was conducted about a month before the main experiment as part of another experiment. We asked the 288 participants of the survey about (i) their monthly disposable income in Euros, (ii) the amount of public transfers they received, for example, according to the German Federal Law for the Promotion of Education ("BAföG") in Euros, and (iii) how much time, in minutes, they had scheduled to reach and leave the WISO laboratory at the University of Hamburg. The median income was 700 Euros, 212 of 288 (73,61%) did not receive BAföG or a similar public transfer, and the median time was 40 minutes.

The purpose of the survey was to generate eight three-dimensional information *profiles* **z**. The profiles were used to classify each subject participating in the subsequent main experiment according to her need using the three indicators income, public transfer, and travel time. We used the median income to split the sample along the income dimension into subjects whose income did not exceed 700 Euros and subjects whose income exceeded 700 Euros. Analogously, we used the median of travel time to split the sample along the time dimension into subjects whose travel time did not exceed 40 minutes and subjects whose travel time exceeded 40 minutes. With respect to the public transfer dimension, we split the sample into needy BAföG receivers and non-needy non-receivers of BAFöG.[2] The eight cells of

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[2]Of course, one could argue that receiving a public transfer makes a person less needy, but BAföG is granted only to students whose parents have a relatively low income and therefore cannot afford to support their studying children. Whether or not a dictator

the three-dimensional classification scheme $\mathbf{z} = $ (income [$\leq 700 \; €,> 700 \; €$], public transfer [No, Yes], travel time [≤ 40 min., > 40 min.]) each refer to a certain subgroup of subjects.

3.2 Structure of the Main Experiment

Prior to the main experiment, all 492 subjects completed a short socio-economic questionnaire. Among other questions, they had to provide the same information with respect to income, public transfer, and travel time as the participants of the preceding survey.[3] As described in the previous subsection, the subjects were assigned to one of the eight profiles based on their characteristics. Note, however, that the profile assignment was not announced in advance.

In the main experiment, we utilized the DG to study whether dictator giving behavior is sensitive to information using the four information scenarios— *(B)aseline, (O)bjective Info, (S)ubjective Info, (F)ull Info*—explained in Section 2. Figure 1 gives an overview of the four scenarios. Objective information contained the above-mentioned details about a recipient's individual circumstances, which were collected using the pre-experimental questionnaire. These eight profiles were presented to the dictators in the form of *vignettes.*

Subjective information was provided in terms of the recipient's *need request,* $x_r = \{0, 1, 2, \ldots, 16\}$ Euros. In the pre-experimental questionnaire, we asked each recipient to state how much payment he or she would consider appropriate, given his or her personal circumstances (including disposable income, public transfer, and travel time). The exact wording to elicit the need request in terms of a monetary compensation was as follows: "This experiment takes about one hour in total. You will receive a flat payment of 5 Euros for a fully completed questionnaire. Please consider your own income situation, whether you receive BAFÖG *[a public transfer to students]* and your travel times to and from the laboratory. In addition to the 5 Euros, what amount do you think is appropriate payment for your personal situation for a one-hour experiment? (You can specify between 0 and 16 Euros.)"[4]

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actually rates a recipient who receives BAföG as more needy than someone who does not, is an empirical question that will be investigated by our experiment.

[3]See Appendix D.5. Answers to questions Q8 (income), Q9 (public transfers), and Q12 (time) were used to assign subjects to their corresponding profiles. The original questionnaire in German can be found in D.7.

[4]We derived this exact wording from several pre-tests among colleagues and student-assistants to secure as accurately as possible that participants would state what they "need" as a monetary compensation for participation in the experiment considering their specific circumstances. If this question is completely irrelevant to the participants, we should find no effects on giving.

The dictators knew the exact wording of this question and that the recipients received, like all participants, 5 Euros as a show-up fee for participating in an one-hour long experiment. Recipients had to state a nonnegative integer number not exceeding 16 Euros (the endowment of the dictator), $t(x_r)$.

		Objective Information 1 of 8 profiles: income $\{\leq, >\}$ 700 Euros public transfer {no, yes} travel time $\{\leq, >\}$ 40 minutes	
		No	*Yes*
Subjective Information need request: $x_r = \{0,1,2,...,16\}$ Euros	*No*	Baseline (B)	Objective Info (O)
	Yes	Subjective Info (S)	Full Info (F)

The figure shows the four information scenarios of the dictator game that were made up of the power set of information $P(I) = \{\emptyset, \{O\}, \{S\}, \{O, S\}\}$.

Figure 1: The four Information Scenarios of the Dictator Game

In order to create two different information *treatments*, the four information scenarios were implemented in two different sequences: $\{B, O, F\}$ and $\{B, S, F\}$. The flow chart in Figure 2 illustrates the treatment structure. First, all 492 subjects completed the pre-experimental questionnaire. Then, half of them was randomly assigned to the dictator role ($n = 246$) and the other half was assigned to the recipient role ($n = 246$). Each dictator was matched with only one recipient for the entire duration of the experiment (1:1 matching between dictators and recipients).

About half of the dictators was randomly assigned to the BOF treatment ($n = 125$) and the other half was assigned to the BSF treatment ($n = 121$). All dictators first participated in the Baseline scenario; all dictators completed the experiment with the Full Information scenario. Between *Baseline* and *Full Information*, the BOF dictators were presented the *Objective Info scenario (O)*, and the BSF dictators were presented the *Subjective Info scenario (S)*. Hence, our treatment structure allows us to analyze both the marginal effect of each type of information and the influence of the information sequence.

3.3 Decision Tasks

In scenario *Baseline*, which was played first by all dictators, they received no information about the recipient and played a standard dictator game. Dictators were endowed with $e = 16$ points (1 point=1 Euro) and could
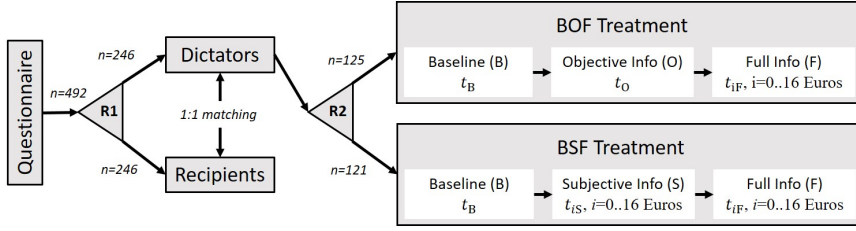
The figure shows a flow chart of the experiment. All subjects completed the pre-experimental questionnaire (and were assigned to one of eight profiles). Subjects were randomly assigned (randomization R1) to the dictator role or the recipient role. Each dictator was matched with one recipient. Dictators were randomly assigned (randomization R2) to the BOF or the BSF treatment. The variable t_B denotes the dictator's transfer to the recipient in the standard dictator game in the Baseline scenario. t_O denotes the dictator's transfer in the Objective Info scenario. t_{iS} denotes the dictator's transfer for need request $i = \{0, 1, 2, \ldots, 16\}$ Euros in the Subjective Info scenario. t_{iF} denotes the dictator's transfer for need request $i = \{0, 1, 2, \ldots, 16\}$ Euros in the Full Info scenario.

Figure 2: Flow Chart of the Experiment

choose to transfer any positive integer $t_B \in \{0, 1, 2, \ldots, 16\}$ to the recipient. Accordingly, the payoff in B was $16 - t_B$ for the dictator and t_B for the recipient.

In scenario *Objective Info*, which was played second only by those subjects who were randomly assigned to the BOF treatment, each dictator received objective information about her recipient. Objective information was provided by means of a vignette showing one of eight profiles. The 1:1 matching secured that each dictator was presented with the same profile for the entire duration of the experiment. As in *Baseline*, dictators were endowed with $e = 16$ points and could choose to transfer any positive integer $t_O \in \{0, 1, 2, \ldots, 16\}$ to the recipient. Accordingly, the payoff from O was $16 - t_O$ for the dictator and t_O for the recipient.

In scenario *Subjective Information*, which was played second only by those subjects who were randomly assigned to the BSF treatment, each dictator received subjective information about her recipient. However, instead of directly presenting the recipient's actual need request x_r (which was assessed by means of the pre-experimental questionnaire), we utilized the strategy method in order to generate, for each dictator, a full set of 17 conditional transfers t_{iS}, $i = \{0, 1, 2, \ldots, 16\}$. As in *Baseline*, dictators were endowed, in each of the 17 giving decisions, with $e = 16$ points and could choose to transfer any positive integer $t_{iS} \in \{0, 1, 2, \ldots, 16\}$ to the recipient. The 1:1 matching secured the uniqueness of the actual need request (x_r) for the entire duration of the experiment. Accordingly, setting $i = x_r$, the payoff from S

15

was $16 - t_{x_rS}$ for the dictator and t_{x_rS} for the recipient.

In scenario *Full Information*, which was played last by all dictators, each dictator received both types of information. As in *Objective Info*, one specific profile vignette was displayed. As in *Subjective Info*, the strategy method was utilized to generate a full set of 17 conditional transfers t_{iF}, $i = \{0, 1, 2, \ldots, 16\}$. As in *Subjective Info*, dictators were endowed, in each of the 17 giving decisions, with $e = 16$ points and could choose to transfer any positive integer $t_{iF} \in \{0, 1, 2, \ldots, 16\}$ to the recipient. The 1:1 matching secured the uniqueness of the profile and the actual need request (x_r) for the entire duration of the experiment. Accordingly, setting $i = x_r$, the payoff from F was $16 - t_{x_rF}$ for the dictator and t_{x_rF} for the recipient. A sample screen showing the implementation of the strategy method and the display of objective information is presented in D.9 in Figure 1.[5]

We used the strategy method only with respect to the need request and not with respect to the recipient's eight profiles in order (i) to keep the number of decisions at an acceptable level (in Full Info each dictator would have had to state 136 transfers) and (ii) to reduce the complexity of the decision task (as it is much easier to state 17 conditional transfers in increasing order of the need request than to "rank" eight three-dimensional profiles according to their need).[6] Moreover, the conditional transfers of each dictator will be used to classify the dictators into the four main types and, if applicable, the four need sensitive subtypes by fitting a quadratic giving function to their data (see equation 1).

3.4   Procedure

After completing the pre-experimental questionnaire, subjects were provided with written instructions. The instructions for each scenario were handed out one after the other in accordance with the sequence of scenarios determined by the treatment. Subjects knew that the experimental session would consist of three parts, but they did not know the content of the future parts of the experiment before the instructions were provided.[7]

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[5]Note that we randomly varied the presentation of the need request in vertical or horizontal order.

[6]We derived this design choice from several pre-tests among colleague and student assistants. In these pre-tests, it turned out that ranking different profiles with respect to the three pieces of information as objective information is a complex task for participants. Therefore, we decided to match each dictator with only one recipient and vary only subjective information utilizing the strategy method.

[7]See D for the instructions of treatment BOF (D.1) and treatment BSF (D.2). The original instructions in German can be found in D.3 for treatment BOF and in D.4 for treatment BSF.

At the beginning of the main experiment, right after the questionnaire, the computer program randomly selected the subjects either as dictators or as recipients. Roles remained fix during the entire experiment. While the dictators' decisions were incentivized as explained above, recipients were asked to put themselves in the shoes of a dictator and to make hypothetical decisions, which were not payoff relevant.[8] Additionally, after completing the last scenario, Full Info, all subjects were asked which information had been most relevant for their decisions. At the end of the experiment, the program selected one of the three scenarios for each dictator-recipient pair, implemented the dictator's transfer, and converted the earned payoffs into Euros. The laboratory assistants paid the participants separately and in private.

One might argue that in our dictator game, subjects are forced to consider need by either utilizing the strategy-method or providing subjective information. We relegate such an argumentation to the general debate about conceivable experimenter demand effects in experiments. In order to minimize experimenter demand effect (De Quidt et al., 2018; Zizzo, 2010) we avoid loaded language and the WISO Laboratory minimizes interactions between subjects and experimenter. In general, we stick to the procedure of the standard dictator game to allow comparability with previous findings.

The sessions were conducted in the WISO Laboratory in Hamburg between October 2018 and June 2019. The experiment was fully computerized using z-Tree (Fischbacher, 2007) and the participants were recruited using hroot (Bock et al., 2014). The experimental sessions all lasted less than one hour. The participants earned on average 13 Euros, including the 5 Euros show-up fee.

4 Results

We present the results of the experiment in four parts. In Subsection 4.1, we analyze mean dictator giving by treatment and scenario, and we present histograms of dictator giving by scenario. In particular, we focus on *information sensitivity* (**H2**) and the *acknowledgement effect* (**H3**). This part of the analysis is based on all dictators' *actual* giving (and not on their conditional transfers). In Subsection 4.2, we carry out a classification of all dictators according to their *conditional* transfers in the Full Info scenario. Here, we focus on need sensitivity (**H1**). Moreover, using a multinomial logit regression model, we explore differences between the dictator types with respect to

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[8]We elicited the recipients' expectation in order to secure anonymity (all subjects had to make the same number of clicks in the same period of time).

the dictators' personal traits. In Subsections 4.3 and 4.4, we return to testing (**H2**) and (**H3**) on the subset of need sensitive dictators. The analysis of the marginal effects of objective and subjective information in Subsection 4.3 is based on the actual giving of need sensitive dictators in scenarios O, S, and F. Finally, in Subsection 4.4, we study the interactions between objective and subjective information in the Full Info scenario by treatment.

Recall that, in the beginning of the main experiment, after all 492 subjects had completed the pre-experimental questionnaire, we randomly assigned them either to the dictator or to the recipient role.[9] Thereafter, we performed a one-to-one random matching of dictators and recipients (246 pairs). Finally, 125 pairs were assigned to the BOF treatment and 121 pairs were assigned to the BSF treatment. The imbalance is due to no-shows in some sessions.

4.1   Dictator Giving by Treatment and Scenario

First, we focus on dictators' actual transfers. Figure 3 displays dictator giving by treatment and scenario. The bar graph in the upper panel shows the means of dictator giving separately for both treatments and the four different scenarios. The lower panel shows histograms of dictator giving by scenario (that is, for Baseline and Full Info, cases are aggregated across treatments). Since case numbers are not identical across scenarios, the vertical axis shows relative frequencies instead of absolute case numbers.

The means and 90% confidence intervals of dictator giving are $\bar{t}_B = 4.840$ $[4.374, 5.306]$, $\bar{t}_O = 4.776$ $[4.265, 5.287]$, $\bar{t}_{x_rF} = 5.376$ $[4.776, 5.976]$ in the BOF treatment and $\bar{t}_B = 4.851$ $[4.378, 5.325]$, $\bar{t}_{x_rS} = 5.116$ $[4.562, 5.669]$, $\bar{t}_{x_rF} = 4.685$ $[4.143, 5.220]$ in the BSF treatment. There are no significant treatment effects in the comparison of Objective Info and Subjective Info or across BOF and BSF dictators presented with Full Info; there are significant within-subjects treatment effects though. In the BOF treatment, dictators significantly increase their transfers if subjective information is added to objective information in the Full Info scenario. In the BSF treatment, dictators significantly decrease their transfers if objective information is added to subjective information. This effect also leads to the clearly visible but insignificant difference of 0.69 $[-0.116, 1.496]$ Euros between actual dictator giving in the BOF and the BSF treatment in the Full Info scenario. This observation will be taken up again in Subsection 4.4 when we investigate the interplay between objective and subjective information in the Full Info scenario by treatment.

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[9]The successful randomization of subjects into roles and treatments is demonstrated in the Supplementary Material.
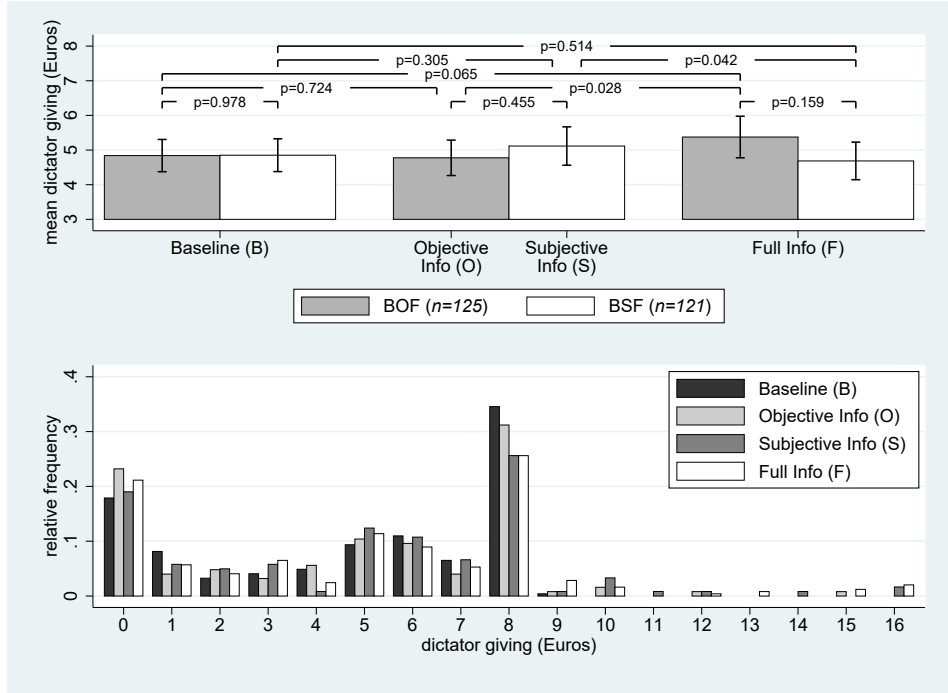
*The figure shows mean dictator giving by treatment and scenario (upper panel)
and histograms of dictator giving by scenario (lower panel). Upper panel: Error
bars represent 90% confidence intervals for the mean. p value of a Welch test
(between subjects) or a paired sample two-tailed t test (within subjects). Lower
panel: $n = 246$ in Baseline and Full Info, $n = 125$ in Objective Info, $n = 121$
in Subjective Info.*

Figure 3: Dictator Giving by Treatment and Scenario

The histograms in the lower panel of Figure 3 show the usual pattern
of dictator giving. In all scenarios, there are spikes at zero and the equal
split. Furthermore, in particular in the scenarios with information, a small
number of dictators gives away more than half of their endowments. In
Baseline, the distribution of dictator giving is independent of the treatment
($\chi^2(9) = 7.535$, $p = 0.582$), supporting the successful randomization of dic-
tators to treatments BOF and BSF. The same applies to the Full Info sce-
nario ($\chi^2(14) = 9.748$, $p = 0.780$). Hence, in the histogram, we aggregate
both treatments with respect to giving in Baseline and Full Info. There
is also no significant difference between Objective Info and Subjective Info
($\chi^2(15) = 13.739$, $p = 0.545$). Testing for independence of dictator giving in
BOF ($\chi^2(28) = 28.633$, $p = 0.431$) and in BSF ($\chi^2(32) = 31.558$, $p = 0.489$)
across the respective three scenarios does not lead to a rejection of the null
hypothesis.

To summarize this subsection, the analysis of the impact of information about recipients' need on *mean* dictator giving and on the distribution of dictator giving does not support our initial hypothesis that providing objective or subjective information, or both, would lead to higher dictator giving (**H2**) and/or an *acknowledgment effect* (**H3**). The ordering in which information is provided to dictators, however, seems to matter for dictator giving.

4.2 Type Classification of Dictators

In this subsection, we analyse our main research question of whether a dictator's giving is need sensitive. For this purpose, we classify each dictator according to her *conditional* giving in the Full Info scenario, t_{iF}, $i = 0, \ldots, 16$ Euros, into the four main types *egoistic*, *warm glowing*, *punitive*, and *need sensitive* defined in Section 2. Need sensitive dictators will further be classified into *increasing*, *constant*, *decreasing*, and *hump shaped* need sensitivity.

Adding an error term to equation (1), we fitted a quadratic regression curve separately for each dictator using OLS

$$\mathbf{t}_F = \beta_0 + \beta_1 \mathbf{x}_r + \beta_2 \mathbf{x}_r^2 + \epsilon, \, \epsilon \sim \Phi \tag{3}$$

to her conditional transfers $\mathbf{t}_F = (t_{0F}, t_{1F}, \ldots, t_{16F})$, where $\mathbf{x}_r = (0, 1, 2 \ldots, 16)$. Based on the size, sign, and significance of the β coefficients, the dictator was then classified as one of the four main types and, if applicable, to one of the four need sensitive subtypes. Five dictators could not be classified.[10]

Table 2 summarizes the results of the classification procedure following the rules defined by Table 1 in Section 2.1. The individual classifications can be comprehended from Figures 7 to 14 in the Appendix. The table shows that 17.1% of the dictators are classified as egoistic, 17.1% as warm glowing, and only 7.3% as punitive. A majority of dictators is classified as need sensitive (139, 56.5%). Among the need sensitive dictators, a majority of (83, 59.7%) exhibits decreasing need sensitivity. The remaining dictators exhibit either increasing (8.6%), constant (11.5%), or hump-shaped need sensitivity (20.1%). Hence, this analysis clearly supports **H1**.[11]

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[10]Five additional subjects had to be classified manually as it was not possible to assign them automatically using this procedure. The STATA do file as well as the individual classifications are available from the authors on request.

[11]As a robustness check for the classification of dictators, we perform the same classification exercise with the subset of 121 dictators from the BSF treatment in the Subjective Info treatment based on the conditional transfers t_{iS}. Then, we check whether the classification of a dictator changes between scenarios S and F due to the presentation of the profiles in the Full Info scenario. The individual classifications in the Subjective Info scenario can be seen in Figures 15 to 22 in the Appendix. The overall classification of dictators is shown

Table 2: Dictator Classification by Type

Dictator Type	Condition					Actual Giving	
	β_0	β_1	β_2	n	%	mean	90% CI
All	—	—	—	246	100.0	5.04	$[4.63, 5.44]$
Main Types							
Egoistic	$= 0$	$= 0$	$= 0$	42	17.1	0.24	$[-0.08, 0.56]$
Warm Glowing	> 0	$= 0$	$= 0$	42	17.1	7.19	$[6.39, 7.99]$
Punitive	> 0	< 0	—	18	7.3	2.39	$[1.33, 3.45]$
	> 0	≤ 0	< 0				
Need Sensitive	—	> 0	—	139	56.5	6.11	$[5.68, 6.54]$
	—	≥ 0	< 0				
Need Sensitive Subtypes ($\beta_1 > 0$)							
Increasing	—	> 0	> 0	12	8.6	6.92	$[4.39, 9.44]$
Constant	—	> 0	$= 0$	16	11.5	6.75	$[4.76, 8.74]$
Decreasing	—	> 0	< 0	83	59.7	6.17	$[5.77, 6.57]$
Hump Shaped	—	> 0	$\ll 0$	28	20.1	5.21	$[4.33, 6.10]$

A β coefficient is equal to zero if the null hypothesis of $\beta_i = 0$ cannot be rejected at least at the 10% significance level. Hump Shaped if the dictator's giving function has an inner maximum. Actual giving in Euros.

In total, recipients receive 5.04 Euros in the Full Info scenario (which is the joint mean of $\bar{t}_{x_r F}$ in BOF and BSF from Figure 3). Warm glowing dictators, on average, give the most (7.19 Euros, that is, a bit less than half of their endowments). Egoists give, by definition, almost nothing (0.24 Euros)—remember that the classification is stochastic based on the p values of the β coefficients rather than normative and, hence, we allow for small insignificant deviations from zero at the individual level. Punitive dictators give only 2.39 Euros on average. Need sensitive dictators take a middle position (6.11 Euros). While decreasing, constant, and increasing need sensitive dictators are fairly similar in their average giving, hump-shaped need sensitive dictators stand out a bit due to their lower giving amounts (see Table 2).

Figure 4 shows the mean conditional dictator giving and 90% confidence

in Figure 23 in the Appendix. Tables 6 (main types) and 7 (subtypes) provide two-way tables of the classification of the dictators in scenarios S and F. The figures and tables confirm that our procedure for the classification of dictators is robust. The relative case numbers of the different dictator types and subtypes are almost identical. 107 (88.7%) of the 121 dictators receive the same main type in both scenarios (χ^2 independence test: $p = 0.000$). 53 (76.8%) of the 69 need sensitive dictators receive the same subtype in both scenarios (χ^2 independence test: $p = 0.000$).

intervals by dictator type. A glance at the upper panel of the figure shows that (i) egoists' giving function is flat and very close to zero; (ii) warm glowing dictators' giving function is also flat and close to the equal split; (iii) punitive dictators' giving function has an intercept of a bit less than 8 Euros and exhibits a negative slope of about 50 Eurocents per Euro requested by the recipient; (iv) the average need sensitive dictator exhibits a concave conditional giving function, reaching its maximum at a need request of about 12 Euros.
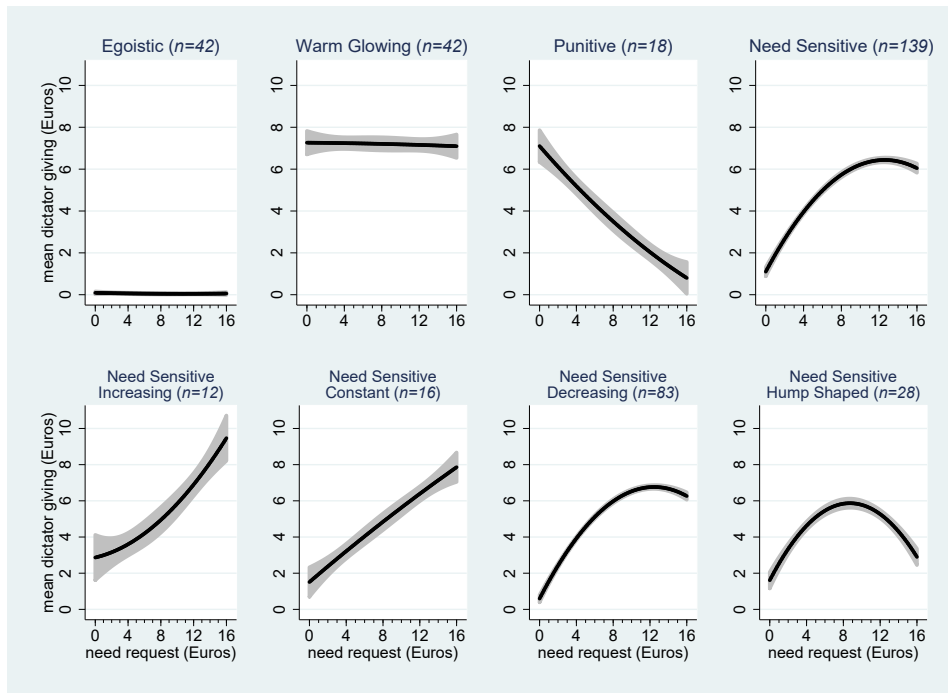
The figure shows a quadratic fit and 90% confidence interval of conditional dictator giving by dictator type. The upper panel shows the four main types of dictators, the lower panel shows the four subtypes of need sensitive dictators.

Figure 4: Conditional Dictator Giving by Dictator Type

The lower panel shows (v) a convex shape of increasing need sensitive dictators' giving function; (vi) a linearly increasing shape for constant need sensitive dictators; and (vii) a concave shape for decreasing need sensitive dictators, where the hump is a statistical artefact due to the quadratic fit—as can be seen in Figure 12, almost all decreasing need sensitive dictators increase their giving until it reaches a "plateau"; (viii) the hump-shaped conditional giving function reaches its maximum at a need request of 8 Euros. Recipients, who requested more than half the "cake", are punished with lower transfers.

22

Note that the assignment of the dictators to the four main categories is independent of the treatment with the three objective information indicators.[12] That is, dictators' conditional giving behavior and therefore their classification as egoistic, warm glowing, punitive, or need sensitive was exogenous with respect to having been treated with a specific vignette. Since we focus only on need sensitive dictators when investigating the marginal effects of subjective and objective information, and their interactions in Subsections 4.3 and 4.4, the independence of type assignment and information treatment is essential.

The support of **H1** enables us to look more deeply into the characteristics of the different dictator types. Table 3 presents the results of a multinomial logit regression using the dictator type as the endogenous variable (with Need Sensitive as the baseline category) with session clustered standard errors. The table shows that (i) egoistic dictators' political orientation is—according to their self assessment—more right ($+0.167$) than need sensitive dictators (-0.813);[13] (ii) warm glowing dictators are significantly less likely to be female (38.1%) than need sensitive dictators (62.6%); and (iii) that punitive dictators exhibit a distinctly lower likelihood of having an income of more than 700 Euros (38.9%) than need sensitive dictators (64.0%). In contrast to the other types, the typical need sensitive dictator, therefore, is female, has a relatively high income, and places herself on the middle-left on the political orientation scale.

4.3 Marginal Effects of Objective and Subjective Information

In this subsection, we focus on the marginal effects of objective and subjective information on *actual* dictator giving for the subset of 139 need sensitive dictators. Recall that objective information in terms of the recipients' profiles (income, public transfer, travel time) was provided to dictators assigned to the BOF treatment as the second scenario (Objective Info); it was provided to dictators assigned to the BSF treatment as the last scenario (Full Info), with Subjective Info as the second scenario. Hence, we pool the 68 need sensitive dictators from the BOF treatment with their actual giving t_O and the 71 need sensitive dictators from the BSF treatment with their actual giving t_{x_rF}.

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[12]Income: $\chi^2(3) = 3.243$, $p = 0.356$; public transfer: $\chi^2(3) = 5.000$, $p = 0.171$; travel time: $\chi^2(3) = 5.304$, $p = 0.151$.

[13]The negative correlation that more conservative voters are more selfish is well documented in the literature (compare e.g. Müller 2019 and Kerschbamer and Müller 2020).

Table 3: Multinomial Logit Regression of Dictator Types

Need Sensitive vs.	Egoistic	Warm Glowing	Punitive
Own Income	-0.437	-0.490	-0.771*
> 700 €	(0.329)	(0.349)	(0.463)
Own Public Transfer	-0.131	0.461	-0.191
"Yes"	(0.454)	(0.345)	(0.569)
Own Travel Time	-0.132	0.183	0.273
> 40 min.	(0.461)	(0.402)	(0.479)
Female	-0.336	-0.929***	-0.315
"Yes"	(0.438)	(0.277)	(0.545)
Age (Years)	-0.0563	0.0673	0.00303
	(0.0699)	(0.0421)	(0.0551)
Siblings	0.281	0.166	0.552
"Yes"	(0.393)	(0.603)	(0.629)
Experience (No.	0.0235	-0.00424	-0.0251
of Experiments)	(0.0164)	(0.0135)	(0.0210)
Political Orientation	0.263***	0.164	0.236
(L = −5, . . . , R = 5)	(0.0993)	(0.112)	(0.162)
Constant	0.256	-2.409**	-1.704
	(1.763)	(1.156)	(1.412)
Pseudo R^2		0.067	

*The table shows the results of a multinomial logit regression using the dictator type as the endogenous variable with session clustered standard errors (in parentheses). Baseline category: Need Sensitive. N = 241 subjects. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$*

We estimate the marginal effects of objective information, as well as the treatment effect of being additionally treated with subjective information in the BSF treatment, by means of a fully interacted tobit model.[14] The profile variable and the treatment enter the model as dummy variables; the need request enters the model as a continuous variable. That is, the model estimates for each profile–treatment combination a slope coefficient of the need request (i.e., 16 slope coefficients altogether). Then, we compute the average marginal effects of income, public transfer, and travel time (for given need request and treatment) on dictator giving and compare them across the two treatments.

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[14]For the regression table, see model (1) in Table 4 in the Appendix. We also control for dictator giving in the Baseline scenario and several personal traits, see model (1) in Table 5 in the Appendix.

We proceed analogously with subjective information[15] and then compute the average marginal effect (slope coefficient) of the need request (for given profile and treatment) on dictator giving and compare the slope coefficients of the two treatments.

Figure 5 shows the marginal effects of objective and subjective information by treatment. The bar graphs refer to income (upper left panel), public transfer (upper right panel), and travel time (lower left panel). The range plot refers to the need request (lower right panel).

Objective information in terms of the recipient's income has a highly significant impact on dictator giving in the BOF treatment and no impact in the BSF treatment. In the BOF treatment, dictators on average give 1.69 [0.99, 2.35] Euros more to recipients who have an income not exceeding 700 Euros. The public transfer variable is insignificant in either treatment group. Travel time is marginally significant in BOF and significant in BSF. Interestingly, BOF dictators give a bit less to recipients who exhibit a longer travel time (−0.64 [−1.30, 0.01] Euros), while BSF dictators acknowledge a longer travel time with a higher transfer (1.13 [0.07, 2.20] Euros). The lower left panel shows that the estimated average slope coefficient β of the need request is rather similar in both treatments. It is about 29 Eurocents per Euro requested in BOF and about 25 Eurocents per Euro requested in BSF. Their difference is insignificant (−0.04 [−.09, .02] Euros per Euro requested).

The preceding analysis has shown that the ordering and the type of information displayed to *need sensitive* dictators significantly mattered for their giving decisions. Hence, when we take individual heterogeneity into account by focussing only on the subset of need sensitive dictators (instead of looking at average dictator behavior in the full sample as in Subsection 4.1), hypothesis **H2** is clearly supported by our data.

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[15]Subjective information in terms of recipients' need requests was provided to dictators assigned to the BOF treatment in the Full Info scenario (i.e, the last scenario) and to dictators assigned to the BSF treatment in Subjective Info (i.e, the second scenario). Hence, we pool the 68 need sensitive dictators from the BOF treatment with their actual giving $t_{x_r \text{F}}$ and the 71 need sensitive dictators from the BSF treatment with their actual giving $t_{x_r \text{S}}$. Again, we estimate the marginal effects of subjective information, as well as the treatment effect of being additionally treated with objective information in the BOF treatment, by means of a fully interacted tobit model. For the regression table, see model (2) in Table 4 in the Appendix. We also control for dictator giving in the Baseline scenario and several personal traits, see model (2) in Table 5 in the Appendix.
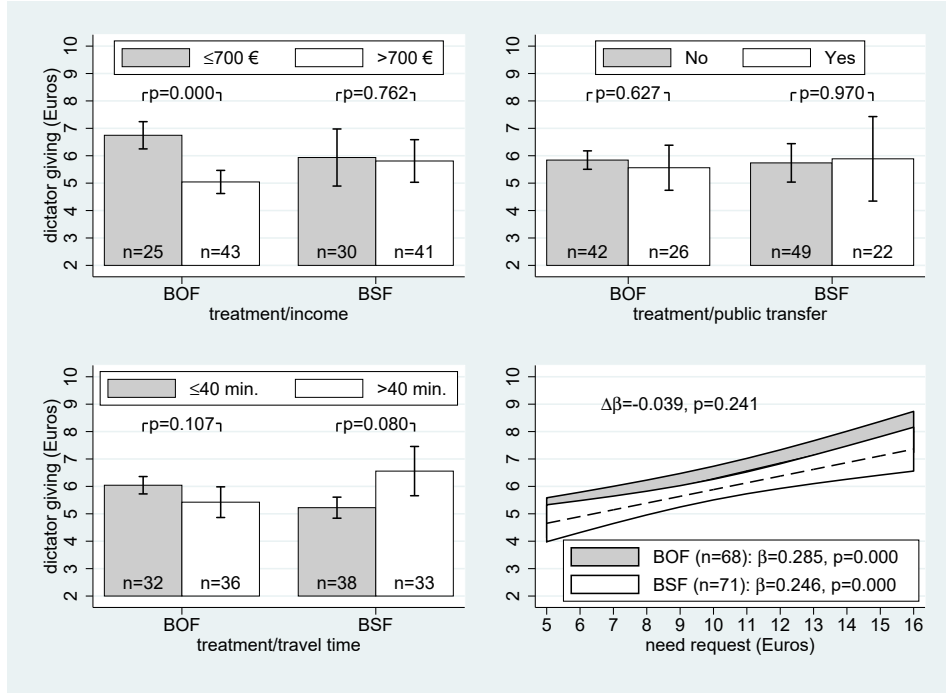
The figure shows the marginal effects of being presented with a ≤ 700 € or > 700 € income profile (upper left panel); with a "No" or "Yes" public transfer profile (upper right panel); with a ≤ 40 min. or > 40 min. travel time profile (lower left panel); and with the recipient's need request (the minimum need request was 5 Euros, the maximum 16 Euros) on actual dictator giving in Euros in the BOF and the BSF treatments. Upper panels and lower left panel: p value of a two-tailed t test; lower right panel: p value of (the difference of the) estimated slope coefficient(s) β ($\Delta\beta$) and 90% confidence interval for the mean. $n = 139$ need sensitive dictators. Tobit regression with session clustered standard errors. For the regression table, see models (1) and (2) of Table 4.

Figure 5: Marginal Effects of Objective and Subjective Information

4.4 Interactions between Objective and Subjective Information

In this subsection, we turn to the interaction effects between objective and subjective information in the Full Info scenario. Thus, we again focus on the *acknowledgment effect* (**H3**). We conduct a tobit regression analysis of effects of the interacted profiles, treatments, and need requests on actual dictator giving for all 139 need sensitive dictators.[16] In contrast to the previous

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[16]For the regression table, see model (3) in Table 4 in the Appendix. We also control for dictator giving in the Baseline scenario and several personal traits, see model (3) in Table 5 in the Appendix.

subsection, we use—for both treatments—the actual dictator giving t_{x_rF} in the Full Info scenarios. That is, we analyze and compare the giving of dictators who have been treated with objective *and* subjective information (albeit in a different sequence).
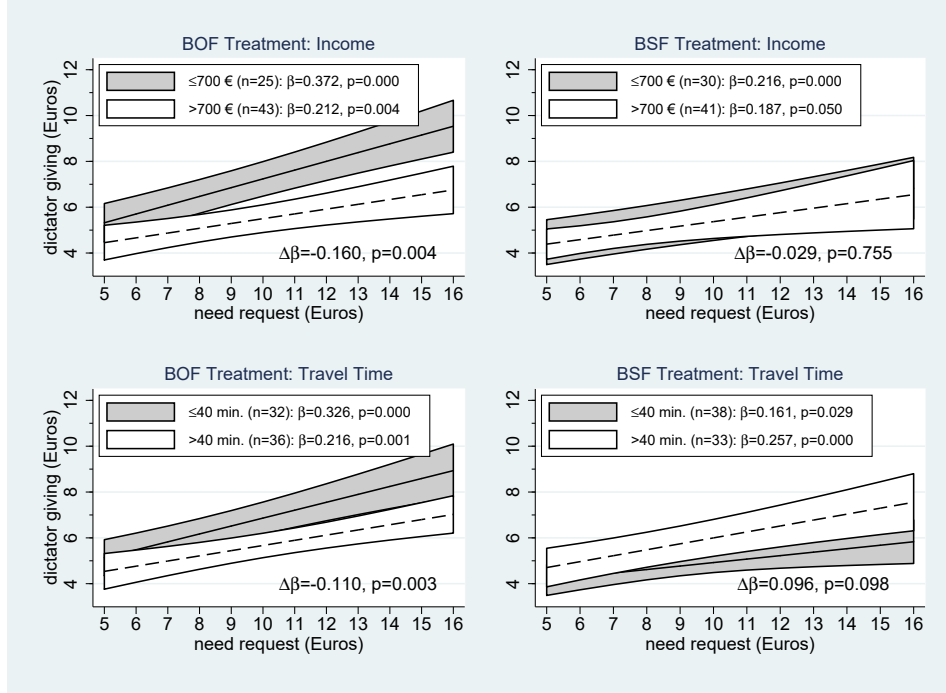
The upper panels show the interaction effects of the recipients' need requests and income profile (≤ 700 € or > 700 €) on actual dictator giving in the Full Info scenario by treatment. The lower panels show the interaction effects of the recipients' need requests and travel time profile (≤ 40 min. or > 40 min.) on actual dictator giving in Euros in the Full Info scenario by treatment. p value of (difference of) estimated slope coefficient(s) β ($\Delta\beta$) and 90% confidence interval for the mean. $n = 139$ need sensitive dictators. Tobit regression with session clustered standard errors. For a regression table see Table 4.

Figure 6: Interactions between Objective and Subjective Information

Figure 6 shows the estimated average slope coefficients of need request × income (upper panels) and need request × travel time (lower panels) by treatment. As indicated by the analysis of the marginal effect of the public transfer dummy on dictator giving, the interaction need request × public transfer is insignificant for both treatments. We therefore omit the respective range plots.

In the BOF treatment, the interaction between need request and income is highly significant. A recipient whose income exceeds 700 Euros is given about 16 $[7.0, 25.0]$ Eurocents per Euro requested less than a recipient whose

27

income does not exceed 700 Euros. For example, a "poor" recipient who asked for 10 Euros was given 8.77 [7.80, 9.74] Euros by her dictator, while the "rich" recipient was given only 6.34 Euros [5.49, 7.18] Euros. In the BSF treatment, the interaction between need request and income is insignificant. Both slope coefficients of the need request are very similar in size to the respective slope coefficient for an income exceeding 700 Euros in the BOF treatment.

Hence, we conclude that the interaction between objective information in terms of the income indicator and subjective information in terms of the need request leads to an asymmetric *acknowledgment effect* (i.e., an increase of average giving) in the BOF treatment, where the income information is presented at first. This effect is mainly responsible for the difference of mean dictator giving across treatments in the Full Info scenario visualized by the bar graph in the upper panel of Figure 3.

At first glance, a striking difference seems to occur with respect to the interaction between need request and travel time. In the BOF treatment, dictators reward *shorter* travel time with 0.110 [0.050, 0.169] Euros per Euro requested; in the BSF treatment they reward *longer* travel time with 0.096 [0.000, 0.191] Euros per Euro requested. For example, a recipient who requested 10 Euros in the BOF treatment received 8.24 [7.28, 9.21] Euros when she scheduled not more than 40 minutes to reach and leave the laboratory; she received only 6.57 [5.90, 7.24] Euros when she scheduled more than 40 minutes. A recipient who requested 10 Euros in the BSF treatment received 5.53 [4.79, 6.26] Euros when she scheduled not more than 40 minutes to reach and leave the laboratory; she received only 7.04 [5.97, 8.10] Euros when she scheduled more than 40 minutes.

Dictator giving behavior in the BSF treatment clearly acknowledges the higher travel cost of the recipients (note that income dummy and travel time dummy are independent $\chi^2(1) = 0.001$, $p = 0.978$). In contrast to this, in the BOF treatment, dictator giving behavior with respect to travel time is mostly driven by a strong negative correlation between the income dummy and the travel time dummy, that is, an excess of high-income-low-travel-time profiles. The χ^2 test clearly rejects the null hypothesis of independence between income and travel time ($\chi^2(1) = 5.764$, $p = 0.016$), that is, in this subgroup of 68 dictators the randomization of profiles was not sufficient.

In a post-experimental questionnaire, we asked the dictators to state whether or not the objective information indicators were important in their giving decisions. The evaluation of the answers clearly supports the dominating role of the recipients' income. 202 (82.1%) of the dictators found the income information important, only 111 (45.1%) found the public transfer information important, and a minority of 76 (30.9%) found the travel time

information important. Among the 139 need sensitive dictators, income information was significantly more important (86.3%) than when compared to all other dictators (76.6%) (independence test: $\chi^2(1) = 3.870$, $p = 0.049$).

Moreover, all subjects were asked for what purpose they would use the earnings from the experiment. An overwhelming majority of subjects answered that they were planning to spend the money on food or dining in the university cafeteria. Hence, we think that we can make a good case for assuming that both dictators and recipients actually thought about monetary needs when making their giving choices and stating their need requests. We interpret the answers from the questionnaire as mild evidence that the elicitation of the "compensation need request" captures to some degree a monetary need on part of the participants. We argue that this kind of "compensation need" is one of the mildest forms of need in the real world. The behavioral impact of providing information on a monetary "compensation need" assessed from a sample of German students may thus be considered as a lower bound for the behavioral impact of "real needs" in the real world.

5 Conclusion

In this paper, we examine the influence of recipients' need on dictator giving behavior in a modified dictator game. Due to the inherent subjectivity of individual needs, need-based distributive justice is arguably one of the most complex justice principles and clear evidence for the adherence to the need principle is difficult to identify. Previous laboratory studies have addressed this challenge either by inducing needs within an experiment or by providing background information about the recipients. However, induced experimental needs are unrelated to the actual neediness of a person and allow subjects only to equalize final payoffs by allocating resources relative to their experimental needs. Similarly, background information alone, e.g. the residence of a subject, does not imply that a subject actually needs more. It only provides a rough proxy about the subjects' living circumstances. In contrast to these approaches, we asked the subjects directly how much payoff they need from the experiment as compensation, given their personal traits and living circumstances, and then determined how much dictators are willing to transfer given the requests by recipients.

We find that subjects who state greater need requests (considering their living circumstances) also receive significantly higher transfers from dictators. In fact, 57% of all dictators can be classified as needs sensitive, which means that they condition their transfers directly on the compensation needs of the recipient. In this sense, this is the first study that provides direct ev-

idence that needs, which are articulated as such in a social context, affect the distribution of available resources. From a methodological point of view, our experiment provides a simple and compelling tool for the elicitation of monetary "need requests" that in turn allow subjects to apply need-based justice.

In addition, our results suggest that transfers increase further when the need request is supported by information about the recipients' disposable income. In other words, when the requested transfer is relatively high, transfers are more likely to match the request when the information about the recipient indicates a low monthly income. Given that objective information alone does not increase transfers on average, this finding speaks for an "acknowledgment effect", which alleges that subjective needs are acknowledged in combination with the relevant background information about the individual living circumstances. In this context, information about state benefits appears to be irrelevant, whereas the influence of recipients' travel time on giving behavior is ambiguous. Considering that commuting allowances are common in Germany, we expected that travel costs in terms of time would increase the legitimacy of the claim for need-based compensation and, hence, increase transfers. We find that transfers decrease or increase depending on whether dictators receive the information about recipients' travel costs before or after the subjective request. However, we also find that disposable income and travel costs correlate negatively among the recipients in the former treatment, while they do not correlate at all in the latter, which might explain the puzzling result.

Among our sample, need sensitive dictators usually place themselves in the middle left of the political spectrum, have an income above the median, and are more likely to be female. While this result matches observations from survey studies, which find that these characteristics explain the tendency to support redistributive policies (e.g., Rueda and Stegmueller 2016), results from laboratory experiments with student samples always have to be extrapolated carefully. For the research question at hand, we considered the internal validity and the possibility of comparing our results with the experimental results of existing research as more important than the possibility of applying the results directly to a representative population. Studying the need principle within a student sample has the additional advantage of being ecologically valid, as the students' median income of 700 Euros is distinctly below the German national poverty line[17] of about 1136 Euros, which makes the problem highly relevant to their daily experiences.

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[17] 60% of the household equivalent net income in 2018 according to the German federal statistical office.

One might argue that the huge prevalence of the need sensitive dictator type may be partly due to the fact that the recipients are the dictators' fellow students, that is, dictators and recipients are in a close social relationship. Lamm and Schwinger (1980) also found need considerations to play a greater role in allocation decisions when the group members were described as close friends. We regard a critical test of the external validity of our results as an important future research avenue.

Overall, redistributing welfare according to peoples' need is an integral part of solidarity communities and important for the functioning of modern welfare states (e.g. Bowles et al., 2000; Mau, 2004). Our results suggest that subjects take the need of others into account even if there is no strategic reason to do so. In this way, this study makes an important contribution to the microfoundation of social policy. The fact that the social acknowledgment of need requires objectifying information about recipients' personal living circumstances may, however, raise legitimacy concerns regarding the application of the need principle. Clearly, it is necessary to have some information on welfare recipients' need in order to allocate resources to the rightful person. However, the question remains as to how much information can be requested from a person (e.g., by states or welfare agencies) before human dignity is compromised and the need principle loses its moral force.

References

Ahlert, M., K. Funke, and L. Schwettmann (2012). Thresholds, productivity, and context. An experimental study on determinants of distributive behaviour. *Social Choice and Welfare 40*(4), 957–984.

Andreoni, J. (1989). Giving with impure altruism: Applications to charity and ricardian equivalence. *Journal of Political Economy 97*(6), 1447–1458.

Andreoni, J. (1990). Impure altruism and donations to public goods: A theory of warm-glow giving. *The Economic Journal 100*(401), 464–477.

Andreoni, J. (1993). An experimental test of the public-goods crowding-out hypothesis. *The American Economic Review 83*, 1317–1327.

Andreoni, J. and J. Miller (2002). Giving according to garp: An experimental test of the consistency of preferences for altruism. *Econometrica 70*(2), 737–753.

Andreoni, J. and J. M. Rao (2011). The power of asking: How communication affects selfishness, empathy, and altruism. *Journal of public economics 95*(7), 513–520.

Battigalli, P. and M. Dufwenberg (2007). Guilt in games. *American Economic Review 97*(2), 170–176.

Becker, G. S. (1974). A theory of social interactions. *Journal of Political Economy 82*(6), 1063–1093.

Bellemare, C., A. Sebald, and S. Suetens (2017). A note on testing guilt aversion. *Games and Economic Behavior 102*, 233–239.

Bellemare, C., A. Sebald, and S. Suetens (2019). Guilt aversion in economics and psychology. *Journal of Economic Psychology 73*, 52–59.

Bock, O., I. Baetge, and A. Nicklisch (2014). hroot: Hamburg registration and organization online tool. *European Economic Review 71*, 117–120.

Bohnet, I. and B. S. Frey (1999). Social distance and other-regarding behavior in dictator games: Comment. *The American Economic Review 89*(1), 335–339.

Bolton, G. E. and A. Ockenfels (2000). Erc: A theory of equity, reciprocity, and competition. *American Economic Review 90*(1), 166–193.

Bowles, S., H. Gintis, et al. (2000). Reciprocity, self-interest, and the welfare state. *Nordic Journal of Political Economy 26*(1), 33–53.

Brañas-Garza, P. (2006). Poverty in dictator games: Awakening solidarity. *Journal of Economic Behavior & Organization 60*(3), 306–320.

Bruttel, L. and F. Stolley (2020). Getting a yes. an experiment on the power of asking. *Journal of Behavioral and Experimental Economics*, 101550.

Cappelen, A., K. Moene, E. Sørensen, and B. Tungodden (2013). Needs versus entitlements. An international fairness experiment. *Journal of the European Economic Association 11*(3), 574–598.

Cappelen, A. W., A. D. Hole, E. Ø. Sørensen, and B. Tungodden (2007). The pluralism of fairness ideals: An experimental approach. *American Economic Review 97*(3), 818–827.

Cappelen, A. W., K. O. Moene, E. Ø. Sørensen, and B. Tungodden (2013). Needs versus entitlements—an international fairness experiment. *Journal of the European Economic Association 11*(3), 574–598.

Cartwright, E. (2019). A survey of belief-based guilt aversion in trust and dictator games. *Journal of Economic Behavior & Organization 167*, 430–444.

Charness, G. and U. Gneezy (2008). What's in a name? anonymity and social distance in dictator and ultimatum games. *Journal of Economic Behavior & Organization 68*(1), 29–35.

Charness, G. and M. Rabin (2002). Understanding social preferences with simple tests. *The Quarterly Journal of Economics 117*(3), 817–869.

Chowdhury, S. M. and J. Y. Jeon (2014). Impure altruism or inequality aversion?: An experimental investigation based on income effects. *Journal of Public Economics 118*, 143–150.

De Quidt, J., J. Haushofer, and C. Roth (2018). Measuring and bounding experimenter demand. *American Economic Review 108*(11), 3266–3302.

Diederich, A., M. Wyszynski, and S. Traub (2020). Need, frames, and time constraints in risky decision-making. *Theory and Decision 89*, 1–37.

Eckel, C. C. and P. J. Grossman (1996). Altruism in anonymous dictator games. *Games and economic behavior 16*(2), 181–191.

Engel, C. (2011). Dictator games: A meta study. *Experimental Economics 14*(4), 583–610.

Fehr, E. and K. M. Schmidt (1999). A theory of fairness, competition, and cooperation. *Quarterly Journal of Economics*, 817–868.

Fehr, E. and K. M. Schmidt (2006). The economics of fairness, reciprocity and altruism–experimental evidence and new theories. *Handbook of the Economics of Giving, Altruism and Reciprocity 1*, 615–691.

Fischbacher, U. (2007). z-tree: Zurich toolbox for ready-made economic experiments. *Experimental Economics 10*(2), 171–178.

Frohlich, N., J. Oppenheimer, and C. Eavey (1987). Choices of principles of distributive justice in experimental groups. *American Journal of Political Science 31*(3), 606–636.

Frohlich, N., J. Oppenheimer, and A. Kurki (2004). Modeling other-regarding preferences and an experimental test. *Public Choice 119*(1-2), 91–117.

Frohlich, N. and J. A. Oppenheimer (1992). *Choosing justice: An experimental approach to ethical theory*, Volume 22. University of California Press.

Kahneman, D., J. L. Knetsch, and R. H. Thaler (1986). Fairness and the assumptions of economics. *Journal of business*, S285–S300.

Kerschbamer, R. (2015). The geometry of distributional preferences and a non-parametric identification approach: The equality equivalence test. *European economic review 76*, 85–103.

Kerschbamer, R. and D. Müller (2020). Social preferences and political attitudes: An online experiment on a large heterogeneous sample. *Journal of Public Economics 182*, 104076.

Kittel, B. (2020). Need-based justice: A sociological perspective. In S. Traub and B. Kittel (Eds.), *Need-based Distributive Justice: An Interdisciplinary Perspective*, pp. 91–131. Cham: Springer Nature.

Kittel, B., S. Neuhofer, and M. Schwaninger (2020). The impact of need on distributive decisions: Experimental evidence on anchor effects of exogenous thresholds in the laboratory. *PloS one 15*(4), e0228753.

Konow, J. (2001). Fair and square: the four sides of distributive justice. *Journal of Economic Behavior & Organization 46*(2), 137–164.

Konow, J. (2003). Which is the fairest one of all? a positive analysis of justice theories. *Journal of economic literature 41*(4), 1188–1239.

Konow, J. (2010). Mixed feelings: Theories of and evidence on giving. *Journal of Public Economics 94*(3-4), 279–297.

Konow, J. and L. Schwettmann (2016). The economics of justice. In *Handbook of social justice theory and research*, pp. 83–106. Springer.

Lamm, H. and T. Schwinger (1980). Norms concerning distributive justice: Are needs taken into consideration in allocation decisions? *Social Psychology Quarterly 43*(4), 425–429.

Lamm, H. and T. Schwinger (1983). Need consideration in allocation decisions: Is it just? *The Journal of Social Psychology 119*(2), 205–209.

Levine, D. K. (1998). Modeling altruism and spitefulness in experiments. *Review of Economic Dynamics 1*(3), 593–622.

Lorenz, J., F. Paetzel, and M. Tepe (2017). Just don't call it a tax! framing in an experiment on voting and redistribution. *Journal of Experimental Political Science 4*(3), 183–194.

Mau, S. (2004). Welfare regimes and the norms of social exchange. *Current Sociology 52*(1), 53–74.

Miller, D. (1999). *Principles of social justice.* Harvard University Press.

Müller, D. (2019). The anatomy of distributional preferences with group identity. *Journal of Economic Behavior & Organization 166*, 785–807.

Nicklisch, A. and F. Paetzel (2020). Need-based justice and distribution procedures: The perspective of economics. In *Need-Based Distributive Justice: An Interdisciplinary Perspective*, pp. 161–189. Springer.

Rabin, M. (1993). Incorporating fairness into game theory and economics. *American Economic Review 83*(5), 1281–1302.

Rankin, F. W. (2006). Requests and social distance in dictator games. *Journal of Economic Behavior & Organization 60*(1), 27–36.

Schwettmann, L. (2012). Competing allocation principles. Time for compromise? *Theory and Decision 73*(3), 357–380.

Scott, J. and B. Bornstein (2009). What's fair in foul weather and fair? Distributive justice across different allocation contexts and goods. *The Journal of Politics 71*(3), 831–846.

Siebel, M. and T. Schramme (2020). Need-based justice from the perspective of philosophy. In S. Traub and B. Kittel (Eds.), *Need-based distributive justice*, pp. 21–58. Cham: Springer.

Yaari, M. and M. Bar-Hillel (1984). On dividing justly. *Social Choice and Welfare 1*(1), 1–24.

Yamamori, T., K. Kato, T. Kawagoe, and A. Matsui (2008). Voice matters in a dictator game. *Experimental Economics 11*(4), 336–343.

Zizzo, D. J. (2010). Experimenter demand effects in economic experiments. *Experimental Economics 13*(1), 75–98.

A   Randomization

As a prerequisite for comparing dictator giving across treatments, the null hypothesis that (i) the distribution of recipients' eight profiles is identical across treatments cannot be rejected ($\chi^2(7) = 5.941$, $p = 0.547$); (ii) the distribution of recipients' up to 17 different need requests x_r is identical across treatments cannot be rejected ($\chi^2(2) = 19.366$, $p = 0.112$); (iii) the means of recipients' need requests are identical across treatments cannot be rejected ($t = 0.812$, $p = .417$, Welch test); (iv) the means of recipients' need request in each profile are identical across treatments cannot be rejected in any of the profiles but one, namely, $z_3 = \{\leq 700\,\text{€}, \text{Yes}, > 40 \text{ min}\}$ ($t = 4.346$, $p = 0.002$, Welch test). The other test results are as follows. z_1: $t = 1.530$, $p = 0.134$; z_2: $t = 0.566$, $p = 0.575$; z_4: $t = 0.447$, $p = 0.664$; z_5: $t = 0.960$, $p = 0.343$; z_6: $t = 0.065$, $p = 0.948$; z_7: $t = 0.845$, $p = 0.412$;z_8: $t = 0.218$, $p = 0.830$. With respect to (iv), the "problematic" profile has very low case numbers ($n = 10$ in BOF and $n = 3$ in BSF) and has been merged with other profiles in all of the analyses. A between-subjects comparison of dictator giving across treatments in Baseline confirms the successful randomization of dictators, since the mean difference is not significantly different from zero (p values can be taken from Figure 3.

B Additional Tables

Table 4: Marginal Effects of Objective and Subjective Information

	(1)	(2)	(3)
≤ 700 €× No Transfer	0.161**	0.500***	0.536***
× ≤ 40 min. × BOF × x_r	(0.0695)	(0.110)	(0.117)
≤ 700 €× No Transfer	0.139***	0.271***	0.250***
× ≤ 40 min. × BSF × x_r	(0.0329)	(0.0740)	(0.0499)
≤ 700 €× No Transfer	0.184***	0.346***	0.344***
× > 40 min. × BOF × x_r	(0.0500)	(0.0851)	(0.0868)
≤ 700 €× No Transfer	0.119*	0.209***	0.218***
× > 40 min. × BSF × x_r	(0.0623)	(0.0679)	(0.0742)
≤ 700 €× Transfer	0.157**	0.287***	0.305***
× ≤ 40 min. × BOF × x_r	(0.0630)	(0.0523)	(0.0564)
≤ 700 €× Transfer	-0.0532	0.163	0.146
× ≤ 40 min. × BSF × x_r	(0.0880)	(0.101)	(0.111)
≤ 700 €× Transfer	0.110	0.288***	0.257***
× > 40 min. × BOF × x_r	(0.106)	(0.0895)	(0.0930)
≤ 700 €× Transfer	0.102	0.411***	0.218
× > 40 min. × BSF × x_r	(0.280)	(0.0644)	(0.288)
≤ 700 €× No Transfer	0.0159	0.204***	0.188**
× ≤ 40 min. × BOF × x_r	(0.0465)	(0.0659)	(0.0746)
> 700 €× No Transfer	-0.0925	0.189**	0.0436
× ≤ 40 min. × BSF × x_r	(0.107)	(0.0854)	(0.129)
> 700 €× No Transfer	0.00632	0.143	0.133
× > 40 min. × BOF × x_r	(0.0544)	(0.0999)	(0.0987)
> 700 €× No Transfer	0.173	0.283**	0.301**
× > 40 min. × BSF × x_r	(0.122)	(0.126)	(0.129)
> 700 €× Transfer	0.107*	0.362***	0.376***
× ≤ 40 min. × BOF × x_r	(0.0575)	(0.103)	(0.108)
> 700 €× Transfer	0.0824	0.289***	0.201***
× ≤ 40 min. × BSF × x_r	(0.0625)	(0.0544)	(0.0716)
> 700 €× Transfer	-0.118	0.198**	0.213**
× > 40 min. × BOF × x_r	(0.114)	(0.0825)	(0.0825)
> 700 €× Transfer	0.154*	0.170**	0.263**
× > 40 min. × BSF × x_r	(0.0877)	(0.0810)	(0.104)
Constant	0.546	-1.461	-2.057
	(1.536)	(1.376)	(1.557)
Pseudo R^2	0.126	0.164	0.111

*Tobit model with session clustered standard errors (in parentheses). Endogenous variable in model (1): actual dictator giving in Euros in scenarios O (BOF) and F (BSF); in model (2): actual dictator giving in Euros in scenarios F (BOF) and S (BSF); in model (3): actual dictator giving in scenario F (BOF and BSF). n = 139 need sensitive dictators. For the regression table of control variables see Table 5. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$*

Table 5: Regression Table of Control Variables

	(1)	(2)	(3)
Transfer	0.566***	0.666***	0.561***
in Baseline	(0.107)	(0.0786)	(0.114)
Own Income	0.304	-0.813**	-0.160
> 700 Euros	(0.390)	(0.355)	(0.436)
Own Public Transfer	-0.201	-0.218	-0.0977
"Yes"	(0.348)	(0.432)	(0.375)
Own Travel Time	-0.370	-0.523	-0.371
> 40 min.	(0.292)	(0.327)	(0.315)
Female	-0.187	-0.497*	-0.152
"Yes"	(0.256)	(0.283)	(0.271)
Age (Years)	0.0479	0.0890**	0.0994*
	(0.0548)	(0.0428)	(0.0549)
Siblings	-0.268	-0.117	0.0505
"Yes"	(0.277)	(0.537)	(0.566)
Experience (No.	0.00180	-0.0152	-0.00376
of Experiments)	(0.0106)	(0.0124)	(0.0134)
Political Orientation	-0.184	-0.0992	-0.0115
$(L = -5, \ldots, R = 5)$	(0.115)	(0.177)	(0.190)

For table notes, see Table 4. $*$ $p < 0.10$, $**$ $p < 0.05$, $***$
$p < 0.01$

Table 6: Two-Way Table of Dictator Main Type Classification

Dictator Type (Subjective Info)	Dictator Type (Full Info)					
	Egoistic	Warm Glow	Need Sensitive	Punitive	Other	Total
Egoistic	17	0	0	0	2	19
Warm Glowing	1	17	1	2	0	21
Need Sensitive	0	5	69	0	0	74
Punitive	1	0	1	4	0	6
Other	1	0	0	0	0	1
Total	20	22	71	6	2	121

Test on independence: Pearson $\chi^2(16) = 236.286$, $p = 0.000$.

Table 7: Two-Way Table of Dictator Subtype Classification

Dictator Type (Subjective Info)	Dictator Type (Full Info)				
	Decreasing	Constant	Increasing	Hump Shaped	Total
Decreasing	38	3	1	4	46
Constant	2	4	2	1	9
Increasing	0	1	2	0	3
Hump Shaped	2	0	0	9	11
Total	42	8	5	14	69

Test on independence: Pearson $\chi^2(9) = 67.182$, $p = 0.000$.
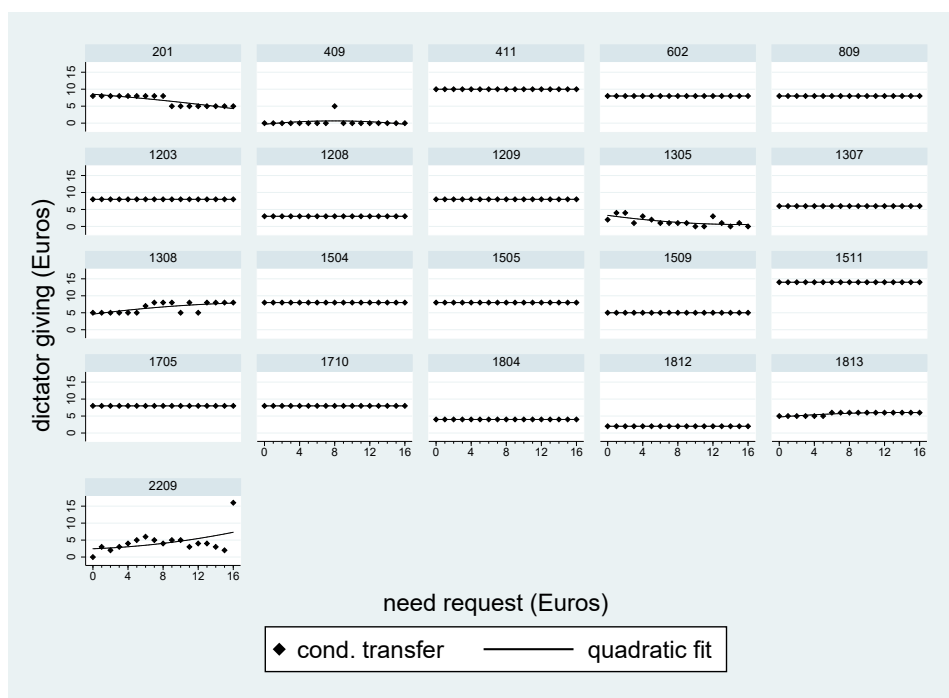
C Additional Figures
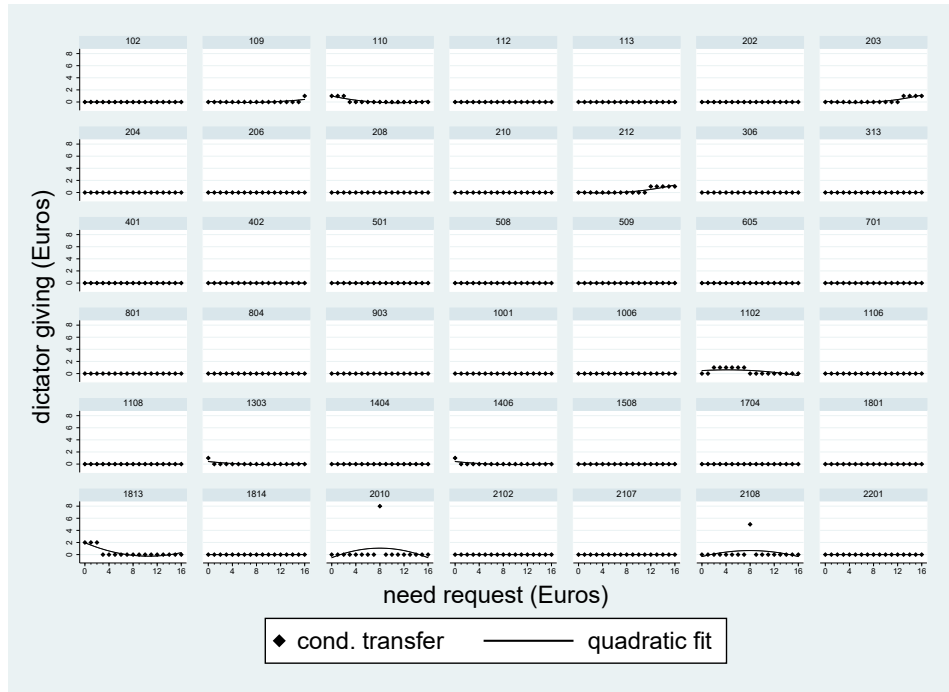
Figure 7: Individual Giving Functions of Egoistic Dictators
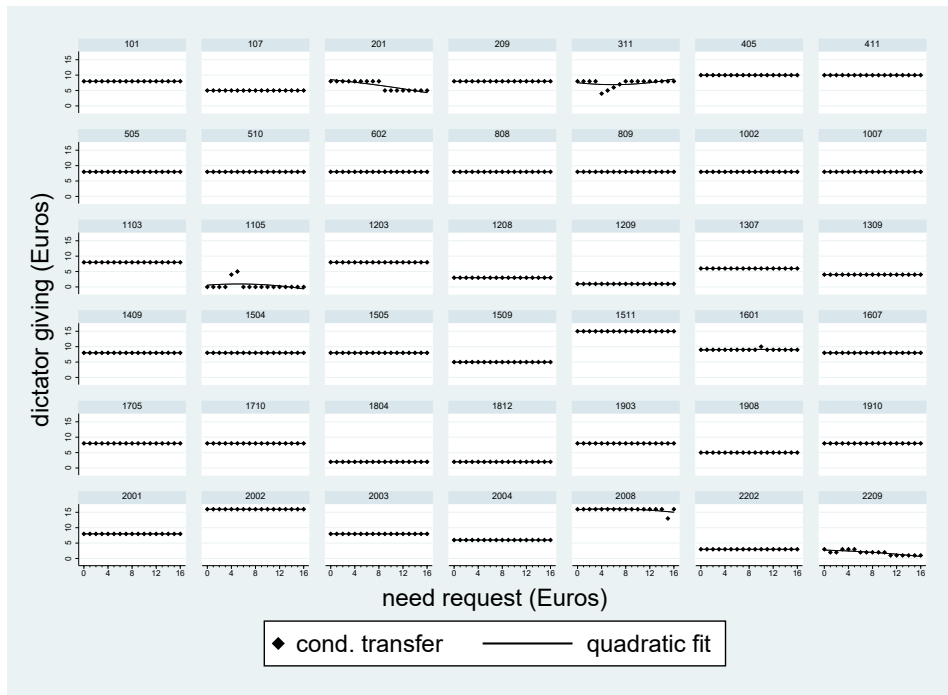
Figure 8: Individual Giving Functions of Warm Glowing Dictators
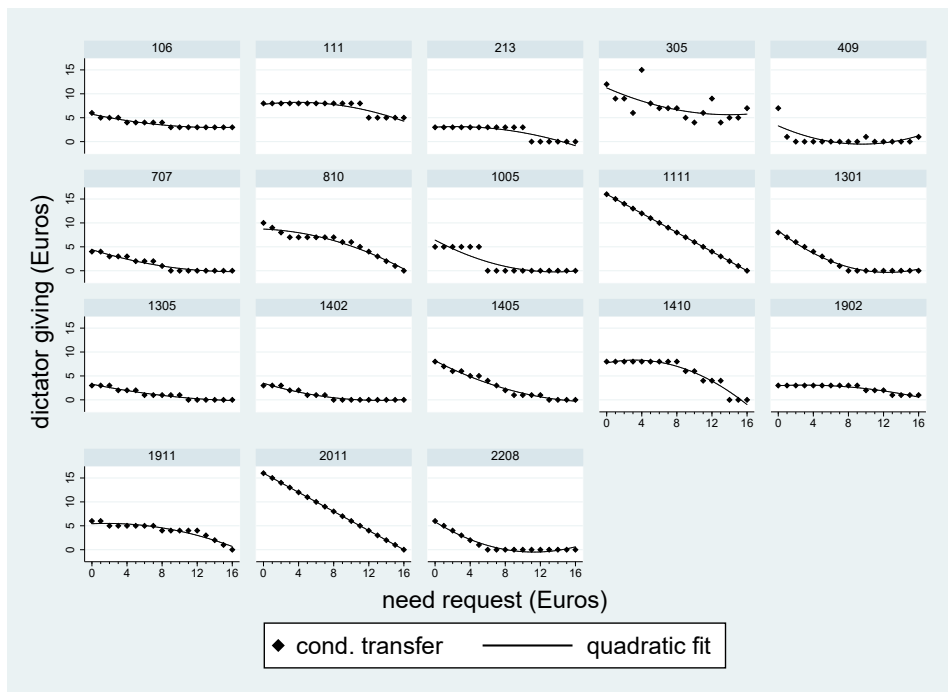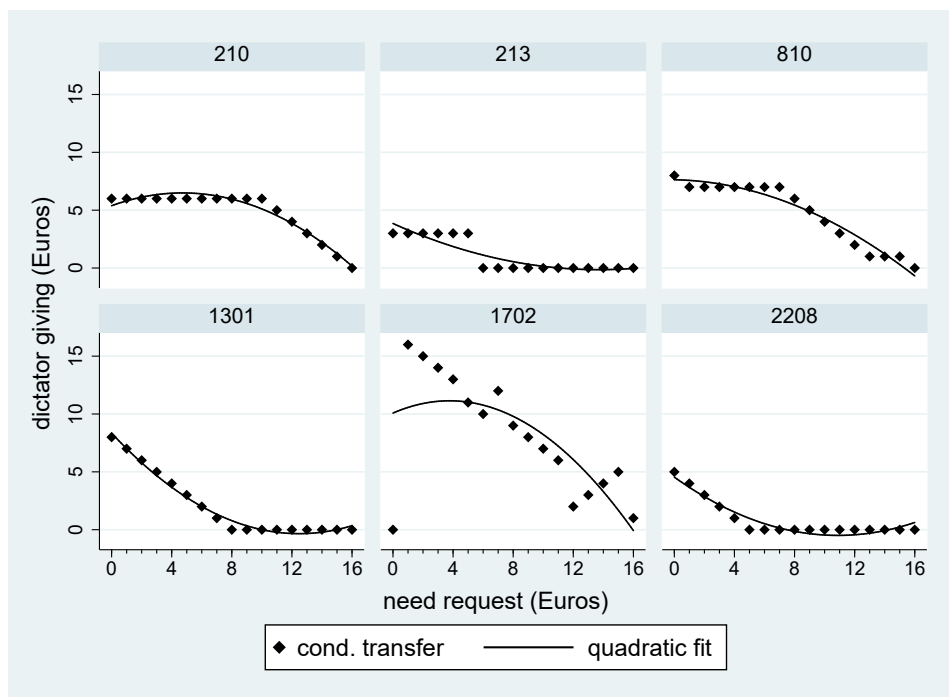

Figure 9: Individual Giving Functions of Punitive Dictators
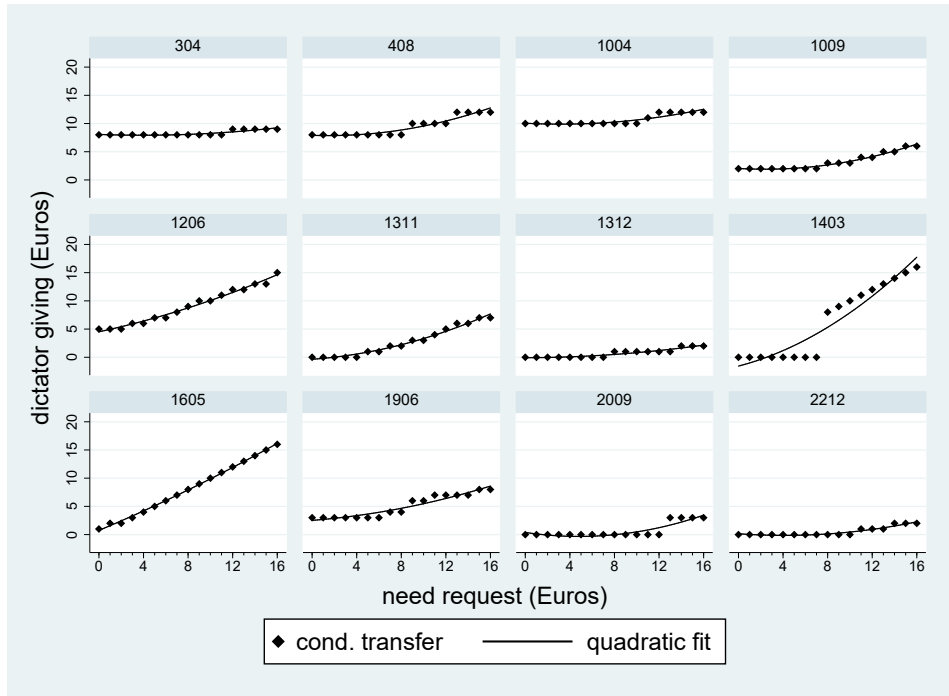
Figure 10: Individual Giving Functions of Increasing Need Sensitive Dictators
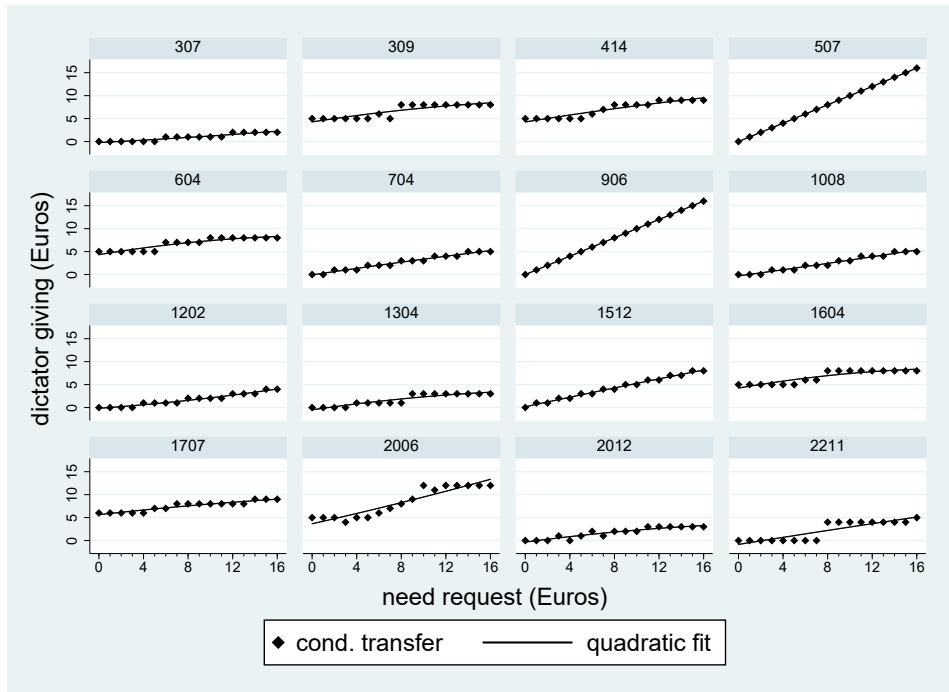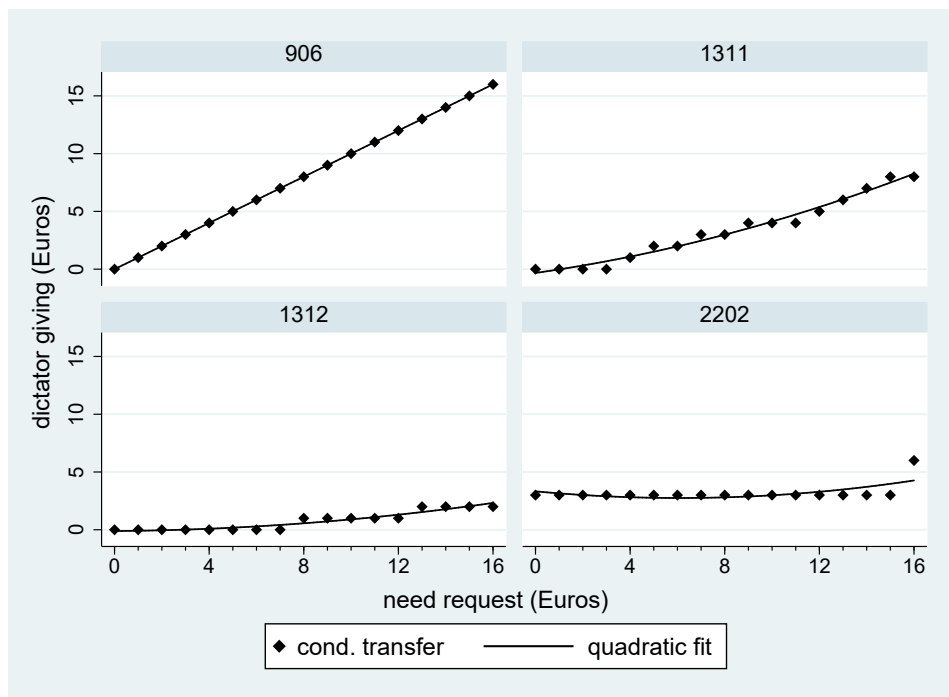

Figure 11: Individual Giving Functions of Constant Need Sensitive Dictators
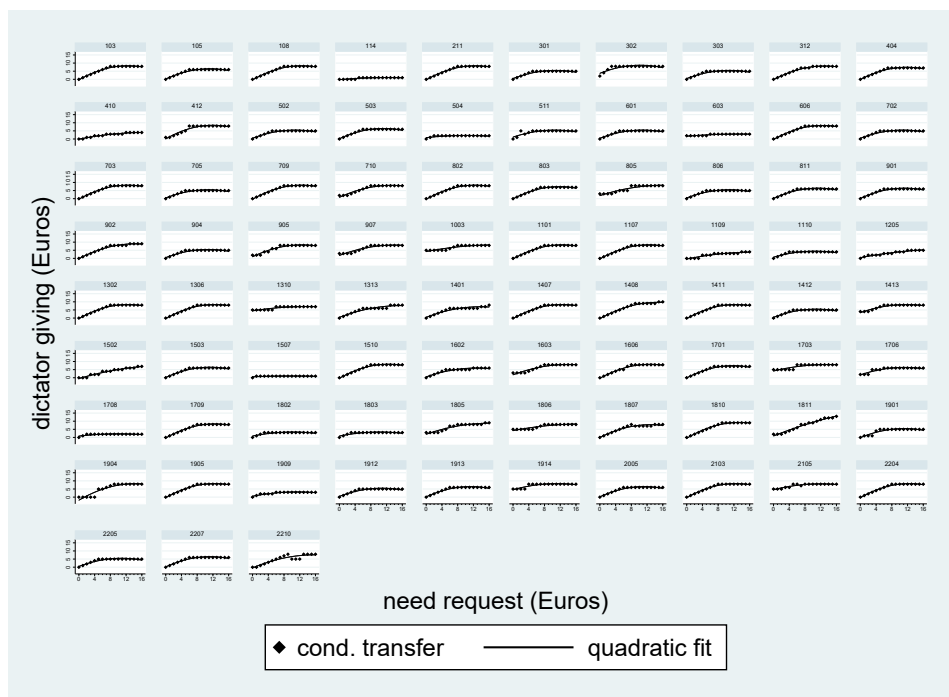
Figure 12: Individual Giving Functions of Decreasing Need Sensitive Dictators
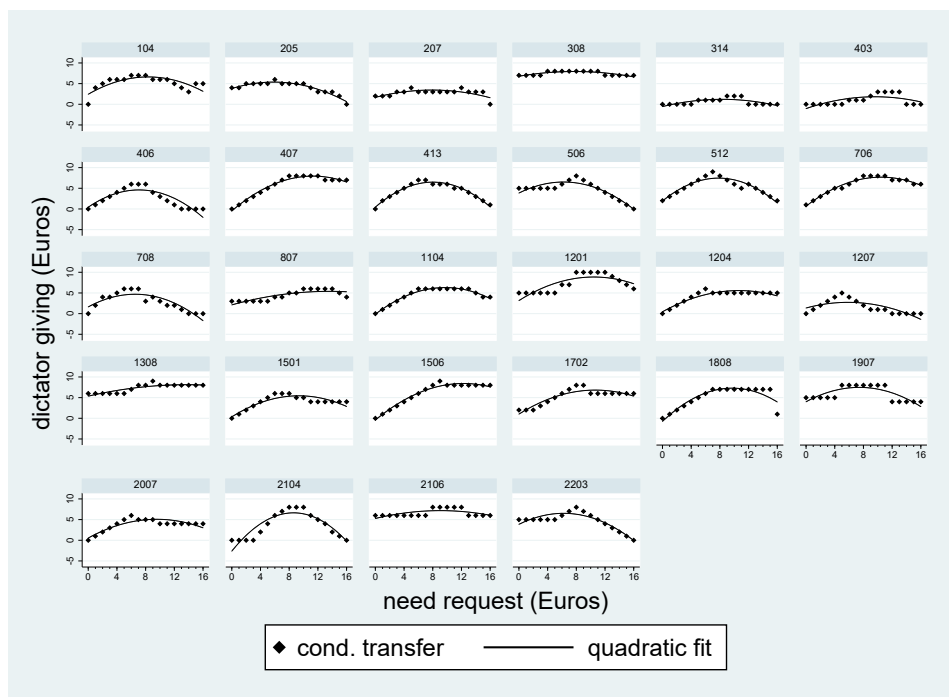
Figure 13: Individual Giving Functions of Hump Shaped Need Sensitive Dictators
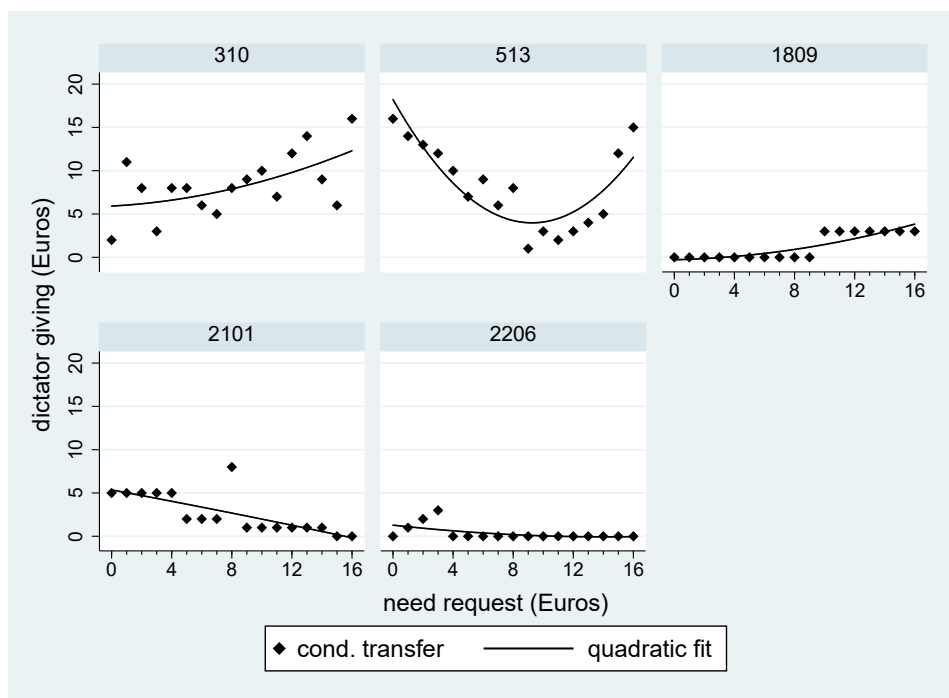
Figure 14: Individual Giving Functions of Not Classified Dictators
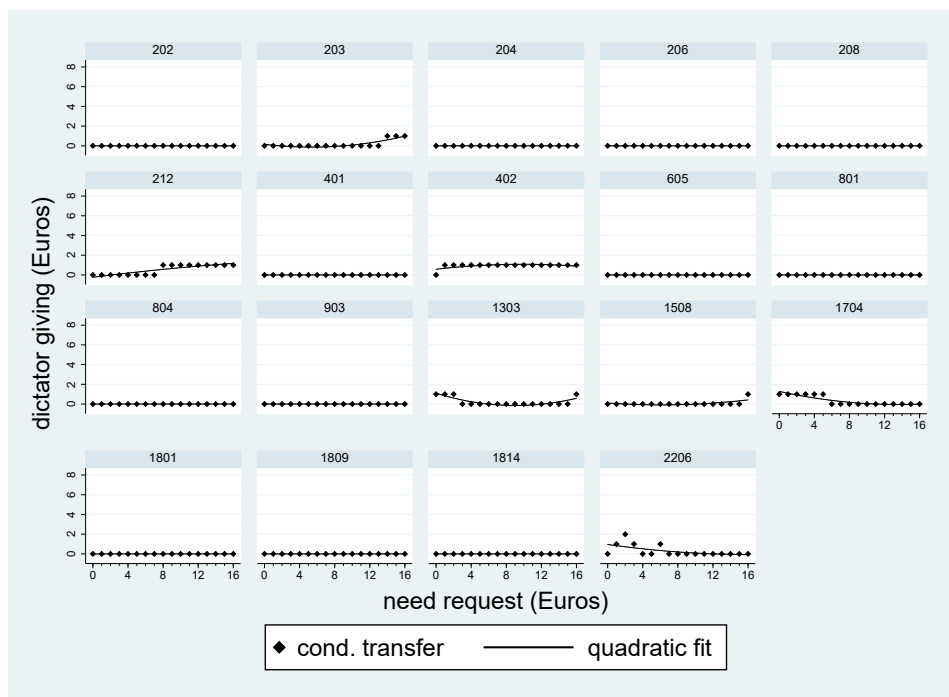
Figure 15: Individual Giving Functions of Egoistic Dictators in the Subjective Info Scenario

Figure 16: Individual Giving Functions of Warm Glowing Dictators in the Subjective Info Scenario

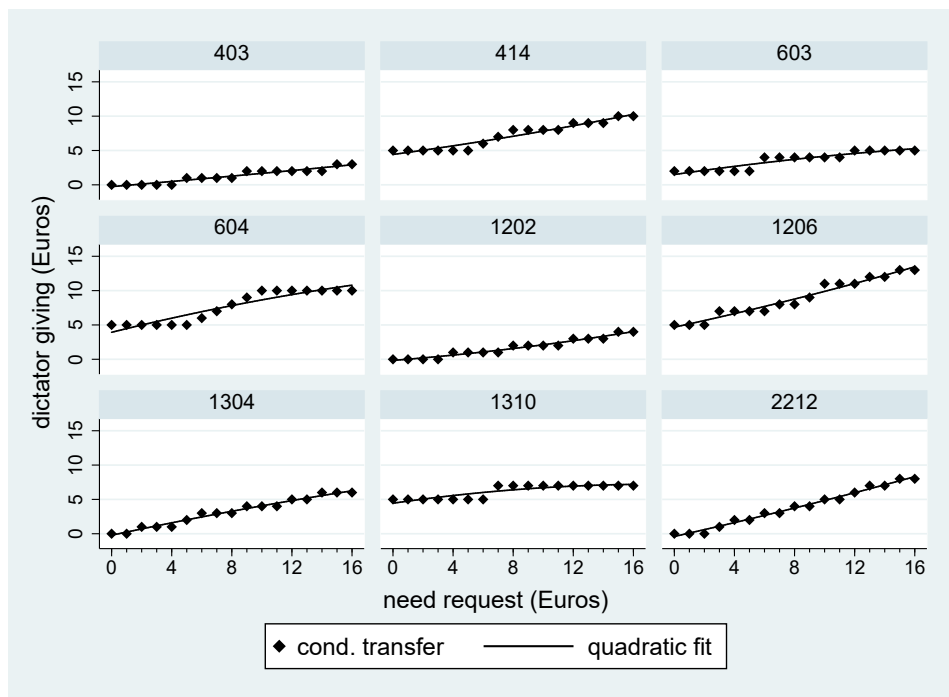Figure 17: Individual Giving Functions of Punitive Dictators in the Subjective Info Scenario

Figure 18: Individual Giving Functions of Increasing Need Sensitive Dictators in the Subjective Info Scenario

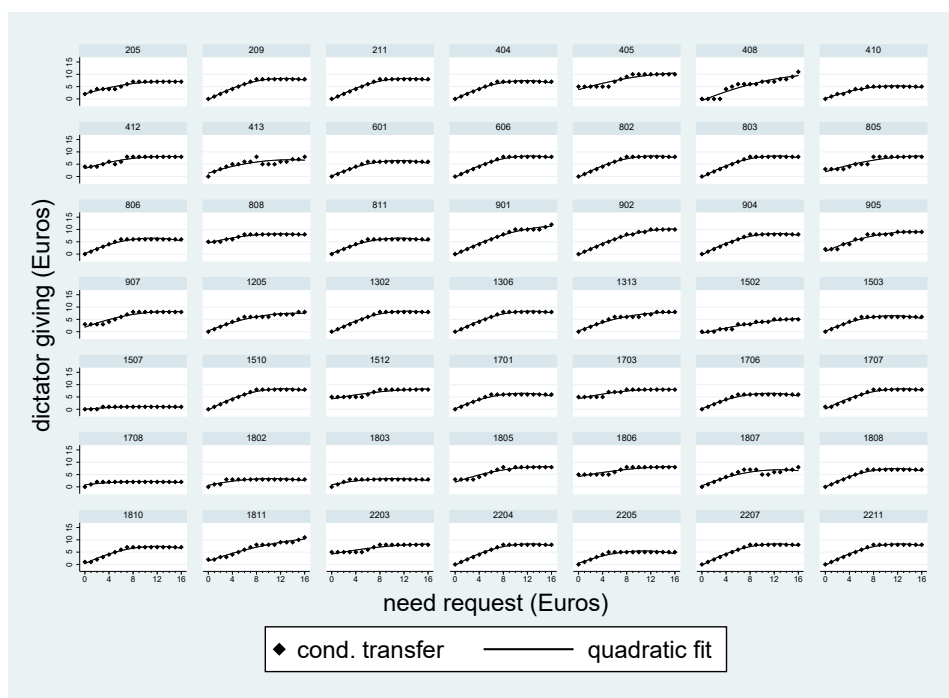Figure 19: Individual Giving Functions of Constant Need Sensitive Dictators in the Subjective Info Scenario

Figure 20: Individual Giving Functions of Decreasing Need Sensitive Dictators in the Subjective Info Scenario
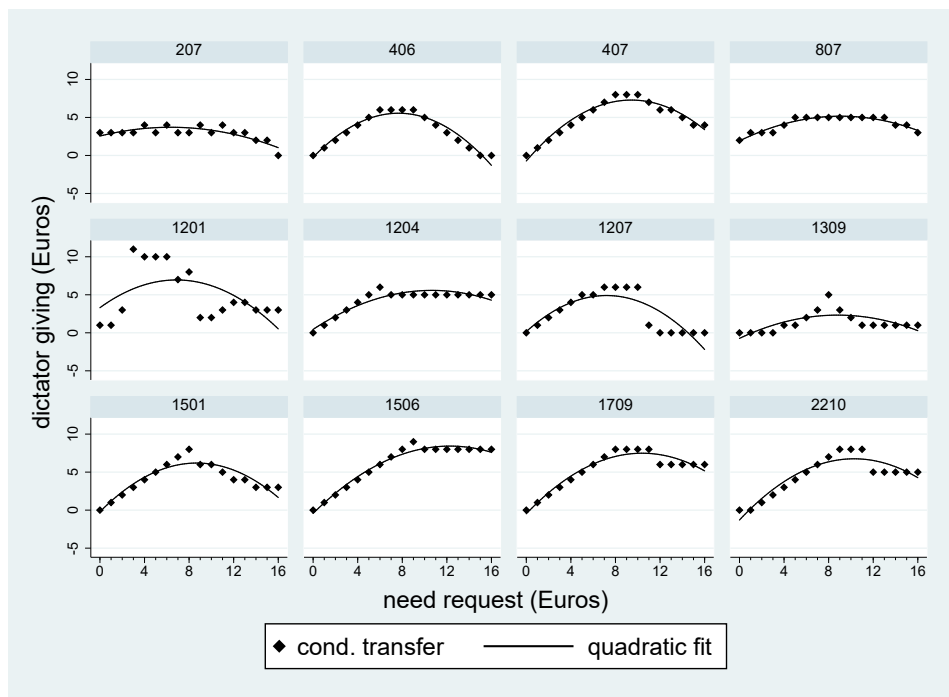
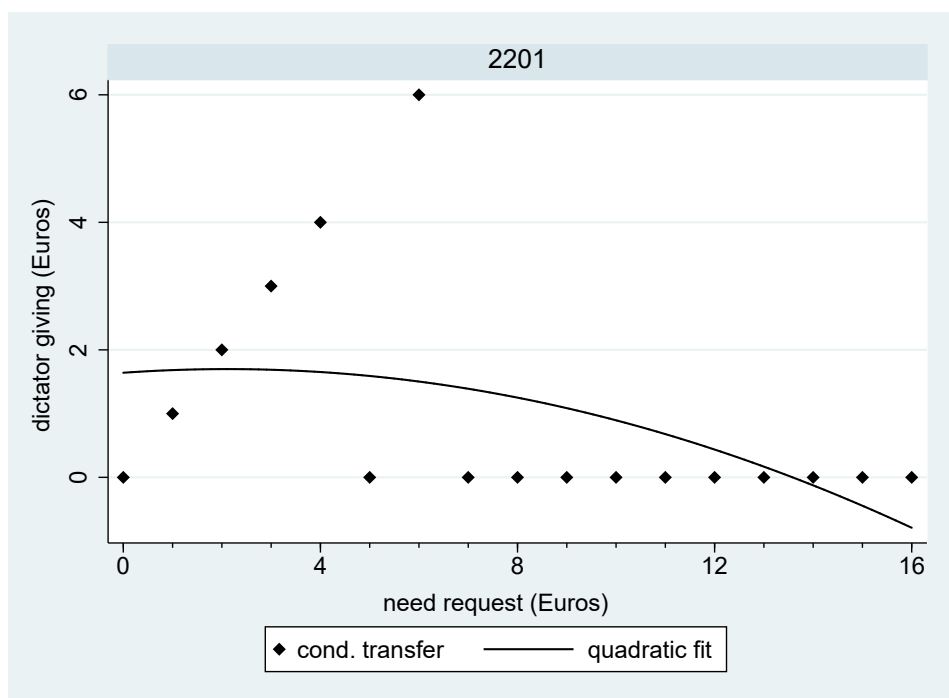Figure 21: Individual Giving Functions of Hump Shaped Need Sensitive Dictators in the Subjective Info Scenario
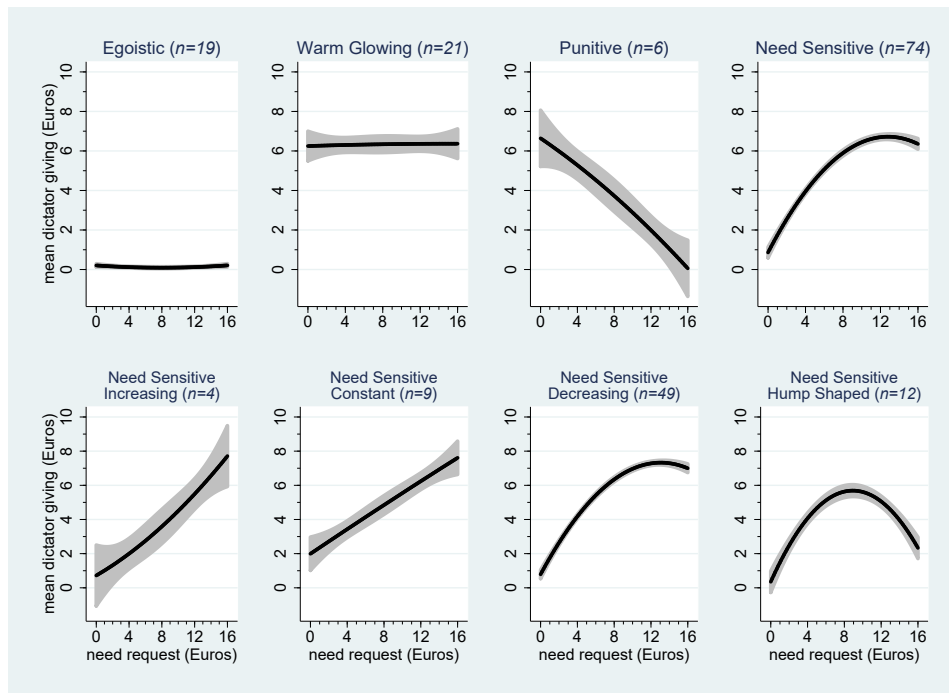
Figure 22: Individual Giving Functions of Not Classified Dictators in the Subjective Info Scenario

The figure shows a quadratic fit and 90% confidence interval of conditional dictator giving by dictator type in the Subjective Info scenario. The upper panel shows the four main types of dictators, the lower panel shows the four subtypes of need sensitive dictators.

Figure 23: Conditional Dictator Giving by Dictator Type in the Subjective Info Scenario

D   Written instructions (English)

D.1   Written instructions in treatment B-O-F

Instructions

Welcome! You and the other participants will make several decisions today through which you can earn money. These instructions describe the procedures of the experiment. It is important that you read the instructions carefully so that you fully understand the decision situations.

If something seems unclear to you while reading or if you have any other questions, please raise your hand. We will then answer your questions individually. Please do not ask your questions openly, please do not talk to other participants and do not pass on any information to other participants. Complying with these rules is very important for the scientific value of the experiment.

At the end of the experiment you will be paid individually, privately and in cash. Each participant will receive a **flat payment** of **5.00 Euros** for completing a short questionnaire. **In addition** to the 5.00 Euros you can earn between **0-16.00 Euros** in the experiment. The amount you earn depends on your decisions and the decisions of the other participants. Your anonymity with respect to other participants will be maintained throughout the experiment.

The experiment consists of three decision situations in total. Before we explain the decision situations, please answer the questionnaire on your computer. When the questionnaire is completed, you will receive instructions for the first decision situation. Afterwards you will also receive the instructions for the second and third decision situations one after the other. All instructions will be read out loud.

Decision situation 1

There are two roles in this experiment. Half of the participants in this session of the experiment have been randomly assigned the role of "giver" and the other half of the participants have been randomly assigned the role of "receiver". The role assigned to you by the computer is shown on your screen.

The **givers** receive a provisional amount of **16 Euros**. The **receivers** receive nothing (**0 Euro**). Each giver is randomly assigned to exactly one **receiver**. The giver has the possibility of distributing this amount between himself/herself and the receiver. The giver can send any amount of the 16 Euros to the receiver. The amount can be divided into 1-Euro increments.

The giver's income is therefore equal to 16 Euros minus the amount that the giver has sent to the receiver.
The income of the receiver is therefore equal to the amount that the receiver has obtained from the giver.

Example 1: The giver allocates 4 Euros to the receiver. Thus, the giver keeps 12 Euros and the receiver 4 Euros.
Example 2: The giver allocates 10 Euros to the receiver. The giver keeps 6 Euros and the receiver 10 Euros.

While the givers make a decision, the receivers are confronted with the same decision situation. The decisions of the givers are payoff relevant, those of the receivers are hypothetical and not payoff relevant.

Overall, givers make three decisions. The initial situation is the same in all three decision-making situations; the only thing that changes is the information available to the givers about the receivers. You will receive corresponding instructions for the other decision-making situations. The roles do not change during the following decision situations. The receiver assigned to the giver will also remain the same in all three decision situations. At the end of the experiment, one of the three decisions will be randomly selected and paid out.

Decision situation 2

In the second decision, the givers make the same decision as in decision situation 1, but receive additional information about the receiver.

The following questions were answered by the assigned receiver:

- *"If you add up all of your income (including government transfers, grants, etc.), how much money do you have available each month?"*

- *"How much money does the state (e.g. BAFÖG) provide you with each month in total ?"*

- *"If you add up your outward journey and return journey, how much time will it take for you to get to this laboratory and from this laboratory to your next destination?"*

The answers to these questions are divided in two categories[18] each:

Total monthly income: *above/below the mean amount (700 Euro)*
Income includes state transfers: *yes/no*
Outward journey/return journey time: *above/below mean time (40 minutes)*

The givers receive a profile card with the three parts of information about the assigned receiver as explained above and make the same decisions as in decision situation 1, taking into account the additional information about the receiver.

In the meantime, the receivers make the same decisions as the givers, but these decisions are hypothetical and therefore not relevant for the payoff.

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[18]If the entry corresponds exactly to the mean value, you will be assigned to the lower category.

Decision situation 3

In the third decision, the givers make the same decision as in decision situation 2, but receive additional information about the receiver.

The following question was answered by the assigned receiver:

"This experiment takes about one hour in total. You will receive a flat payment of 5 Euros for a fully completed questionnaire. Please consider your own income situation, whether you receive BAFÖG, and your travel times to and from the laboratory. In addition to the 5 Euros, what amount do you think is appropriate payment for your personal situation for a one-hour experiment? (You can specify between 0 and 16 Euros.)".

The giver's task is to allocate an amount for each possible answer to this question.

To make a decision, please ask yourself: How much would you allocate to your receiver if she/he had indicated "0 Euro" to the question, how much would you allocate to your receiver if she/he had indicated "1 Euro" to the question, and so on until you reach "16 Euros".

If, at the end of the experiment, the third decision situation is selected as relevant for payoff, then the giver's decision that matches the actual information provided by the receiver is selected. If, for example, the receiver specified X Euros, then the giver's amount that matches X determines the payoff in the experiment.

In the meantime, the receivers make the same decisions as the givers, but these decisions are hypothetical and therefore not relevant for the payoff.

D.2 Written instructions in treatment B-S-F

Instructions

Welcome! You and the other participants will make several decisions today through which you can earn money. These instructions describe the procedures of the experiment. It is important that you read the instructions carefully so that you fully understand the decision situations.

If something seems unclear to you while reading or if you have any other questions, please raise your hand. We will then answer your questions individually. Please do not ask your questions openly, please do not talk to other participants and do not pass on any information to other participants. Complying with these rules is very important for the scientific value of the experiment.

At the end of the experiment you will be paid individually, privately and in cash. Each participant will receive a **flat payment** of **5.00 Euros** for completing a short questionnaire. **In addition** to the 5.00 Euros you can earn between **0-16.00 Euros** in the experiment. The amount you earn depends on your decisions and the decisions of the other participants. Your anonymity with respect to other participants will be maintained throughout the experiment.

The experiment consists of three decision situations in total. Before we explain the decision situations, please answer the questionnaire on your computer. When the questionnaire is completed, you will receive instructions for the first decision situation. Afterwards you will also receive the instructions for the second and third decision situations one after the other. All instructions will be read out loud.

Decision situation 1

There are two roles in this experiment. Half of the participants in this session of the experiment have been randomly assigned the role of "giver" and the other half of the participants have been randomly assigned the role of "receiver". The role assigned to you by the computer is shown on your screen.

The **givers** receive a provisional amount of **16 Euros**. The **receivers** receive nothing (**0 Euro**). Each giver is randomly assigned to exactly one **receiver**. The giver has the possibility of distributing this amount between himself and the receiver. For this purpose, the giver can send any amount of the 16 Euros to the receiver. The amount can be divided into 1-euro increments.

The giver's income is therefore equal to 16 Euros minus the amount that the giver has sent to the receiver.
The income of the receiver is therefore equal to the amount that the receiver has obtained from the giver.

Example 1: The giver allocates 4 Euros to the receiver. Thus, the giver keeps 12 Euros and the receiver 4 Euros.
Example 2: The giver allocates 10 Euros to the receiver. The giver keeps 6 Euros and the receiver 10 Euros.

While the givers make a decision, the receivers are confronted with the same decision situation. The decisions of the givers are payoff relevant, those of the receivers are hypothetical and not payoff relevant.

Overall, givers make three decisions. The initial situation is the same in all three decision-making situations; the only thing that changes is the information available to the givers about the receivers. You will receive corresponding instructions for the other decision-making situations. The roles do not change during the following decision situations. The receiver assigned to the giver will also remain the same in all three decision situations. At the end of the experiment, one of the three decisions will be randomly selected and paid out.

Decision situation 2

In the second decision, the givers make the same decision as in decision situation 1, but receive additional information about the receiver.

The following question was answered by the assigned receiver:

"This experiment takes about one hour in total. You will receive a flat payment of 5 Euros for a fully completed questionnaire. Please consider your own income situation, whether you receive BAFÖG, and your travel times to and from the laboratory. In addition to the 5 Euros, what amount do you think is appropriate payment for your personal situation for a one-hour experiment? (You can specify between 0 and 16 Euros.)"

The giver's task is to allocate an amount for each possible answer to this question.

To make a decision, please ask yourself: How much would you allocate to your receiver if she/he had indicated "0 Euro" to the question, how much would you allocate to your receiver if she/he had indicated "1 Euro" to the question, and so on until you reach "16 Euros".

If, at the end of the experiment, the third decision situation is selected as relevant for payoff, then the giver's decision that matches the actual information provided by the receiver is selected. If, for example, the receiver specified X Euros, then the amount of the giver that matches X determines the payoff in the experiment.

In the meantime, the receivers make the same decisions as the givers, but these decisions are hypothetical and therefore not relevant for the payoff.

Decision situation 3

In the third decision, the givers make the same decision as in decision situation 2, but receive additional information about the receiver.

The following questions were answered by the assigned receiver:

- *"If you add up all of your income (including government transfers, grants, etc.), how much money do you have available each month?"*

- *"How much money does the state (e.g. BAFÖG) provide you with each month in total ?"*

- *"If you add up your outward journey and return journey, how much time does it take for you to get to this laboratory and from this laboratory to your next destination?"*

The answers to these questions are divided in two categories[19] each:

Total monthly income: *above/below the mean amount (700 Euro)*
Income includes state transfers: *yes/no*
Arrival/departure time: *above/below mean time (40 minutes)*

The givers receive a profile card with the three pieces of information about the assigned receiver as explained above and make the same decisions as in decision situation 2, taking into account the additional information about the receiver.

In the meantime, the receivers make the same decisions as the givers, but these decisions are hypothetical and therefore not relevant for the payoff.

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[19]If the entry corresponds exactly to the mean value, you will be assigned to the lower category.

D.3 Written instructions in treatment B-O-F in German

Instruktionen

Herzlich willkommen! Sie und die anderen Experimentteilnehmerinnen und -Teilnehmer[20] werden heute mehrere Entscheidungen treffen, in denen Sie Geld verdienen können. Diese Instruktionen beschreiben den Ablauf des Experiments. Es ist wichtig, dass Sie die Instruktionen sorgfältig durchlesen, damit Sie die Entscheidungssituationen vollständig verstehen.

Falls Ihnen beim Lesen etwas unklar erscheint oder falls Sie sonstige Fragen haben, so zeigen Sie das bitte per Handzeichen. Wir werden Ihre Fragen dann einzeln beantworten. Bitte stellen Sie Fragen auf keinen Fall laut, bitte sprechen Sie nicht mit anderen Teilnehmern und geben Sie keine Informationen an andere Teilnehmer weiter. Die Einhaltung dieser Regeln ist für den wissenschaftlichen Wert des Experiments sehr wichtig.

Am Ende des Experiments werden Sie einzeln, privat und in bar ausgezahlt. Jeder Teilnehmer erhält in jedem Fall eine **pauschale Auszahlung** in Höhe von **5,00 Euro** für das Ausfüllen eines kurzen Fragebogens. **Zusätzlich** zu den 5,00 Euro können Sie im Experiment zwischen **0-16,00 Euro** verdienen. Wie viel Sie verdienen, hängt von Ihren Entscheidungen und den Entscheidungen der anderen Experimentteilnehmer ab. Selbstverständlich bleibt Ihre Anonymität gegenüber anderen Teilnehmern während des gesamten Experiments gewahrt.

Das Experiment besteht insgesamt aus drei Entscheidungssituationen. Bevor wir Ihnen die Entscheidungssituationen erläutern, beantworten Sie bitte den Fragebogen auf Ihrem Computer. Wenn dieser abgeschlossen ist, erhalten Sie die Instruktionen für die erste Entscheidungssituation. Danach erhalten Sie nacheinander auch die Instruktionen für die zweite und dritte Entscheidungssituation. Alle Instruktionen werden laut vorgelesen.

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[20]Im Folgenden werden männliche Formen verwendet, um den Text möglichst kurz zu halten.

Entscheidungssituation 1

In diesem Experiment gibt es zwei Rollen. Die Hälfte der Teilnehmer in dieser Sitzung des Experimentes bekommt zufällig die Rolle des „Gebers"und die andere Hälfte der Teilnehmer bekommt zufällig die Rolle des „Empfängers"zugewiesen. Welche Rolle Ihnen durch den Computer zugewiesen wurde, sehen Sie im Folgenden auf Ihrem Bildschirm.

Die **Geber** erhalten vorläufig einen Betrag von **16 Euro**. Die **Empfänger** erhalten nichts (**0 Euro**). Jedem Geber wird genau ein Empfänger zufällig zugewiesen. Der Geber hat die Möglichkeit diesen Betrag zwischen sich selbst und dem Empfänger zu verteilen. Dazu kann der Geber jeden beliebigen Anteil der 16 Euro an den Empfänger senden. Der Betrag kann in 1-Euro-Schritten aufgeteilt werden.

Das Einkommen des Gebers ist demnach gleich 16 Euro minus dem Betrag, den der Geber an den Empfänger geschickt hat.
Das Einkommen des Empfängers ist demnach gleich dem Betrag, den der Empfänger vom Geber erhalten hat.

Beispiel 1: Der Geber weist dem Empfänger 4 Euro zu. Der Geber behält 12 Euro, der Empfänger 4 Euro.
Beispiel 2: Der Geber weist dem Empfänger 10 Euro zu. Der Geber behält 6 Euro, der Empfänger 10 Euro.

Während die Geber eine Entscheidung treffen, werden die Empfänger mit derselben Entscheidungssituation konfrontiert. Die Entscheidungen der Geber sind auszahlungs-relevant, die der Empfänger sind nicht auszahlungsrelevant und rein hypothetisch.

Insgesamt treffen die Geber in drei Situationen Entscheidungen. Die Ausgangssituation ist in allen drei Entscheidungssituationen gleich, es ändert sich einzig und allein die Information, die den Gebern über die Empfänger zu Verfügung steht. Sie erhalten entsprechende Instruktionen auch für die anderen Entscheidungssituationen. Die Rollen ändern sich während den folgenden Entscheidungssituationen nicht mehr. Auch der dem Geber zugewiesene Empfänger bleibt in allen drei Entscheidungssituationen gleich. Am Ende des Experiments wird eine der drei Entscheidungen zufällig ausgewählt und ausgezahlt.

Entscheidungssituation 2

In der zweiten Entscheidung treffen die Geber wieder dieselbe Entscheidung wie in Entscheidungssituation 1, erhalten jedoch zusätzliche Informationen über den Empfänger.

Dazu wurden vom zugewiesenen Empfänger folgende Fragen beantwortet:

- *„Wenn Sie alle Ihre Einkünfte zusammenrechnen (einschließlich staatlicher Transfers, Stipendien, etc.), wie viel Geld steht Ihnen pro Monat zur Verfügung?"*

- *„Wie viel Geld wird Ihnen insgesamt vom Staat (bspw. BAFÖG) im Monat zur Verfügung gestellt?"*

- *„Wenn Sie Anfahrt und Abfahrt zusammenrechnen, wie viel Zeit kostet Sie der Weg zu diesem Labor und vom Labor zu Ihrem nächsten Ziel?"*

Die Antworten auf diese Fragen werden jeweils in zwei Kategorien[21] eingeteilt:
Gesamtes monatl. Einkommen: *über/unter dem mittleren Betrag (700 Euro)*
Einkommen beinhaltet staatliche Transfers: *ja/nein*
An-/Abfahrtszeit: *über/unter der mittleren Zeit (40 Minuten)*

Die Geber erhalten eine Profilkarte mit den drei oben erklärten Informationen des zugewiesenen Empfängers und treffen dieselben Entscheidungen wie in der Entscheidungssituation 1 unter Berücksichtigung der zusätzlichen Informationen über den Empfänger.

Die Empfänger treffen in der Zwischenzeit wieder die gleichen Entscheidungen wie die Geber, die Entscheidungen sind jedoch hypothetisch und daher nicht auszahlungsrelevant.

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[21]Entspricht die Angabe genau dem mittleren Wert, werden Sie der unteren Kategorie zugeordnet.

Entscheidungssituation 3

In der dritten Entscheidung treffen die Geber dieselbe Entscheidung wie in Entscheidungssituation 2, bekommen jedoch zusätzliche Informationen über den Empfänger.

Dazu wurde von dem zugewiesenen Empfänger folgende Frage beantwortet:

*"Dieses Experiment dauert insgesamt etwa eine Stunde. Für einen vollständig ausgefüllten Fragebogen erhalten Sie pauschal 5 Euro. Berücksichtigen Sie bitte Ihre eigene Einkommenssituation, ob Sie Bafög bekommen und Ihre eigene An- und Abreisezeit zum/vom Labor. Welche Bezahlung halten Sie zusätzlich zu den 5 Euro für ein einstündiges Experiment für **Ihre persönliche Situation** für angemessen?*
(Sie können zwischen 0 und 16 Euro angeben.")

Die Aufgabe des Gebers ist es, für jede mögliche Antwort auf diese Frage einen Betrag zuzuweisen.

Um eine Entscheidung zu treffen, fragen Sie sich bitte nacheinander: Wie viel würden Sie Ihrem Empfänger zuweisen, wenn dieser auf die Frage *"0 Eur"* angegeben hätte, wie viel würden Sie Ihrem Empfänger zuweisen, wenn dieser auf die Frage *"1 Euro"* angegeben hätte und so weiter, bis Sie bei der Angabe *"16 Euro"* angelangt sind.

Wenn am Ende des Experimentes die zweite Entscheidungssituation als auszahlungsrelevant ausgewählt wird, wird diejenige Entscheidung des Gebers ausgewählt, die passend zur tatsächlichen Angabe des Empfängers ist. Wenn also z.B. der Empfänger X Euro angab, dann bestimmt der zu X passende Betrag des Gebers die Auszahlung im Experiment.

Die Empfänger treffen in der Zwischenzeit wieder die gleichen Entscheidungen wie die Geber, die Entscheidungen sind jedoch wieder hypothetisch und daher nicht auszahlungsrelevant.

D.4 Written instructions in treatment B-S-F in German

Instruktionen

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Am Ende des Experiments werden Sie einzeln, privat und in bar ausgezahlt. Jeder Teilnehmer erhält in jedem Fall eine **pauschale Auszahlung** in Höhe von **5,00 Euro** für das Ausfüllen eines kurzen Fragebogens. **Zusätzlich** zu den 5,00 Euro können Sie im Experiment zwischen **0-16,00 Euro** verdienen. Wie viel Sie verdienen, hängt von Ihren Entscheidungen und den Entscheidungen der anderen Experimentteilnehmer ab. Selbstverständlich bleibt Ihre Anonymität gegenüber anderen Teilnehmern während des gesamten Experiments gewahrt.

Das Experiment besteht insgesamt aus drei Entscheidungssituationen. Bevor wir Ihnen die Entscheidungssituationen erläutern, beantworten Sie bitte den Fragebogen auf Ihrem Computer. Wenn dieser abgeschlossen ist, erhalten Sie die Instruktionen für die erste Entscheidungssituation. Danach erhalten Sie nacheinander auch die Instruktionen für die zweite und dritte Entscheidungssituation. Alle Instruktionen werden laut vorgelesen.

---

[22]Im Folgenden werden männliche Formen verwendet, um den Text möglichst kurz zu halten.

Entscheidungssituation 1

In diesem Experiment gibt es zwei Rollen. Die Hälfte der Teilnehmer in dieser Sitzung des Experimentes bekommt zufällig die Rolle des „Gebers"und die andere Hälfte der Teilnehmer bekommt zufällig die Rolle des „Empfängers"zugewiesen. Welche Rolle Ihnen durch den Computer zugewiesen wurde, sehen Sie im Folgenden auf Ihrem Bildschirm.

Die **Geber** erhalten vorläufig einen Betrag von **16 Euro**. Die **Empfänger** erhalten nichts (**0 Euro**). Jedem Geber wird genau ein Empfänger zufällig zugewiesen. Der Geber hat die Möglichkeit diesen Betrag zwischen sich selbst und dem Empfänger zu verteilen. Dazu kann der Geber jeden beliebigen Anteil der 16 Euro an den Empfänger senden. Der Betrag kann in 1-Euro-Schritten aufgeteilt werden.

Das Einkommen des Gebers ist demnach gleich 16 Euro minus dem Betrag, den der Geber an den Empfänger geschickt hat. Das Einkommen des Empfängers ist demnach gleich dem Betrag, den der Empfänger vom Geber erhalten hat.

Beispiel 1: Der Geber weist dem Empfänger 4 Euro zu. Der Geber behält 12 Euro, der Empfänger 4 Euro.
Beispiel 2: Der Geber weist dem Empfänger 10 Euro zu. Der Geber behält 6 Euro, der Empfänger 10 Euro.

Während die Geber eine Entscheidung treffen, werden die Empfänger mit derselben Entscheidungssituation konfrontiert. Die Entscheidungen der Geber sind auszahlungs-relevant, die der Empfänger sind nicht auszahlungsrelevant und rein hypothetisch.

Insgesamt treffen die Geber in drei Situationen Entscheidungen. Die Ausgangssituation ist in allen drei Entscheidungssituationen gleich, es ändert sich einzig und allein die Information, die den Gebern über die Empfänger zu Verfügung steht. Sie erhalten entsprechende Instruktionen auch für die anderen Entscheidungssituationen. Die Rollen ändern sich während den folgenden Entscheidungssituationen nicht mehr. Auch der dem Geber zugewiesene Empfänger bleibt in allen drei Entscheidungssituationen gleich. Am Ende des Experiments wird eine der drei Entscheidungen zufällig ausgewählt und ausgezahlt.

Entscheidungssituation 2

In der zweiten Entscheidung treffen die Geber dieselbe Entscheidung wie in Entscheidungssituation 1, bekommen jedoch zusätzliche Informationen über den Empfänger.

Dazu wurde von dem zugewiesenen Empfänger folgende Frage beantwortet:

*„Dieses Experiment dauert insgesamt etwa eine Stunde. Für einen vollständig ausgefüllten Fragebogen erhalten Sie pauschal 5 Euro. Berücksichtigen Sie bitte Ihre eigene Einkommenssituation, ob Sie Bafög bekommen und Ihre eigene An- und Abreisezeit zum/vom Labor. Welche Bezahlung halten Sie zusätzlich zu den 5 Euro für ein einstündiges Experiment für **Ihre persönliche Situation** für angemessen?*
(Sie können zwischen 0 und 16 Euro angeben.)"

Die Aufgabe des Gebers ist es, für jede mögliche Antwort auf diese Frage einen Betrag zuzuweisen.

Um eine Entscheidung zu treffen, fragen Sie sich bitte nacheinander: Wie viel würden Sie Ihrem Empfänger zuweisen, wenn dieser auf die Frage *„0 Euro"* angegeben hätte, wie viel würden Sie Ihrem Empfänger zuweisen, wenn dieser auf die Frage *„1 Euro"* angegeben hätte und so weiter, bis Sie bei der Angabe *„16 Euro"* angelangt sind.

Wenn am Ende des Experimentes die zweite Entscheidungssituation als auszahlungsrelevant ausgewählt wird, wird diejenige Entscheidung des Gebers ausgewählt, die passend zur tatsächlichen Angabe des Empfängers ist. Wenn also z.B. der Empfänger X Euro angab, dann bestimmt der zu X passende Betrag des Gebers die Auszahlung im Experiment.

Die Empfänger treffen in der Zwischenzeit wieder die gleichen Entscheidungen wie die Geber, die Entscheidungen sind jedoch wieder hypothetisch und daher nicht auszahlungsrelevant.

Entscheidungssituation 3

In der dritten Entscheidung treffen die Geber wieder dieselbe Entscheidung wie in Entscheidungssituation 2, erhalten jedoch zusätzliche Informationen über den Empfänger.

Dazu wurden vom zugewiesenen Empfänger folgende Fragen beantwortet:

- *„Wenn Sie alle Ihre Einkünfte zusammenrechnen (einschließlich staatlicher Transfers, Stipendien, etc.), wie viel Geld steht Ihnen pro Monat zur Verfügung?"*

- *„Wie viel Geld wird Ihnen insgesamt vom Staat (bspw. BAFÖG) im Monat zur Verfügung gestellt?"*

- *„Wenn Sie Anfahrt und Abfahrt zusammenrechnen, wie viel Zeit kostet Sie der Weg zu diesem Labor und vom Labor zu Ihrem nächsten Ziel?"*

Die Antworten auf diese Fragen werden jeweils in zwei Kategorien[23] eingeteilt:
Gesamtes monatl. Einkommen: *über/unter dem mittleren Betrag (700 Euro)*
Einkommen beinhaltet staatliche Transfers: *ja/nein*
An-/Abfahrtszeit: *über/unter der mittleren Zeit (40 Minuten)*

Die Geber erhalten eine Profilkarte mit den drei oben erklärten Informationen des zugewiesenen Empfängers und treffen dieselben Entscheidungen wie in der Entscheidungssituation 2 unter Berücksichtigung der zusätzlichen Informationen über den Empfänger.

Die Empfänger treffen in der Zwischenzeit wieder die gleichen Entscheidungen wie die Geber, die Entscheidungen sind jedoch hypothetisch und daher nicht auszahlungsrelevant.

D.5   Pre-experimental Questionnaire (in English)

Please answer the following questions:
Q1. Your sex: [male; female]
Q2. Your age: [continuous variable: 17-100]
Q3. How many siblings do you have? [continuous variable: 0-50]
Q4. In which country have you spent the longest part of your life so far?

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[23]Entspricht die Angabe genau dem mittleren Wert, werden Sie der unteren Kategorie zugeordnet.

[open question]

Q5. What is your field of studies? [open question]

Q6. How many semesters have you been studying in total? [continuous variable: 0-50]

Q7. In how many experiments have you already participated in? (approximately) [continuous variable: 0-100]

Q8. If you add up all of your income (including government transfers, grants, etc.), how much money do you have available each month? [continuous variable: 0-10000 Euros]

Q9. How much money does the state (e.g. BAFÖG) provide you with in total per month? [continuous variable: 0-5000 Euros]

Q10. Are you in a permanent job with more than 10 working hours a week? [no; yes]

Q11. How many hours a week do you work alongside your studies to make additional income? [continuous variable: 0-120]

Q12. If you add up your outward journey and return journey, how much time does it take to get to this laboratory and from this laboratory to your next destination? [continuous variable: 0-600 minutes]

Q13. In politics, people often speak of "left" and "right". If you use this scale from 1 to 11, where would you place yourself? [continuous variable: left 1-11 right]

Q14. This experiment takes about an hour in total. You will receive a flat rate of 5 Euros for a fully completed questionnaire.

a. Please take into account the general income situation of students in the laboratory, whether they receive a student loan and their general travel times to and from the laboratory. What payment do you think is appropriate in addition to the 5 Euros for a one-hour experiment? (You can specify between 0 and 16 Euros.) [continuous variable: 0-16]

b. Please take **your own** income situation into account, whether you get a student loan and your own travel times to and from the laboratory. What payment do you think is appropriate for your personal situation in addition to the 5 Euros for a one-hour experiment? (You can specify between 0 and 16 Euros.) [continuous variable: 0-16]

Q15. How necessary is the income from this experiment for you? [unnecessary; rather not necessary; rather necessary; very necessary;]

D.6   Post-experimental Questionnaire (in English)

Please answer the following questions before you are informed about your payment on the next page.

Q1. What information about the respective recipient did you find important and tried to take into account in your decision? [Checkbox: income; government transfers; Arrival/departure time]

Q2. What information about the recipient did you consider most important? [Income; government transfers; Arrival/departure time]

Q3. Which information about the respective recipient was irrelevant for your decision? [Income; government transfers; Arrival/departure time]

D.7 Pre-experimental Questionnaire (Fragebogen vor dem Experiment)

Bitte beantworten Sie die folgenden Fragen:

Q1. Ihr Geschlecht: [männlich; weiblich]

Q2. Ihr Alter: [kontinuierliche Variable: 17-100]

Q3. Wie viele Geschwister haben Sie? [kontinuierliche Variable: 0-50]

Q4. In welchem Land haben Sie den längsten Teil ihres bisherigen Lebens verbracht? [offene Frage]

Q5. Was studieren Sie? [offene Frage]

Q6. Seit wievielen Semestern studieren Sie insgesamt? [kontinuierliche Variable: 0-50]

Q7. An wievielen Experimenten haben Sie bereits teilgenommen? (ca.) [kontinuierliche Variable: 0-100]

Q8. Wenn Sie alle Ihre Einkünfte zusammenrechnen (einschließlich staatlicher Transfers, Stipendien, etc.), wie viel Geld steht Ihnen pro Monat zur Verfügung? [kontinuierliche Variable: 0-10000]

Q9. Wie viel Geld wird Ihnen insgesamt vom Staat (bspw. BAFÖG) im Monat zur Verfügung gestellt? [kontinuierliche Variable: 0-5000 Euro]

Q10. Stehen Sie in einem festen Arbeitsverhältnis mit mehr als 10 Arbeitsstunden in der Woche? [nein; ja]

Q11. Wieviele Stunden pro Woche arbeiten Sie neben Ihrem Studium, um zusätzliche Einkünftige zu erzielen? [kontinuierliche Variable: 0-120]

Q12. Wenn Sie Anfahrt und Abfahrt zusammenrechnen, wie viel Zeit kostet Sie der Weg zu diesem Labor und vom Labor zu Ihrem nächsten Ziel? [kontinuierliche Variable: 0-600]

Q13. In der Politik reden die Leute häufig von "Links" und "Rechts". Wenn Sie diese Skala von 1 bis 11 benutzen, wo würden Sie sich selbst einordnen? [kontinuierliche Variable: links 1-11 rechts]

Q14. Dieses Experiment dauert insgesamt etwa eine Stunde. Für einen vollständig ausgefüllten Fragebogen erhalten Sie pauschal 5 Euro.

a. Berücksichtigen Sie bitte die allgemeine Einkommenssituation von Studierenden im Labor, ob diese Bafög bekommen und deren allgemeine An- und Abreisezeit zum und vom Labor. Welche Bezahlung halten Sie zusätzlich zu den 5 Euro für ein einstündiges Experiment für angemessen? (Sie können zwischen 0 und 16 Euro angeben.) [kontinuierliche Variable: 0-16]

b. Berücksichtigen Sie bitte Ihre eigene Einkommenssituation, ob Sie Bafög bekommen und Ihre eigene An- und Abreisezeit zum und vom Labor. Welche Bezahlung halten Sie zusätzlich zu den 5 Euro für ein einstündiges Experiment für **Ihre persönliche Situation** für angemessen? (Sie können zwischen 0 und 16 Euro angeben.) [kontinuierliche Variable: 0-16]

Q15. Wie notwendig sind die Einnahmen aus diesem Experiment für Sie? [nicht notwendig; eher nicht notwendig; eher notwendig; sehr notwendig;]

D.8 Post-experimental Questionnaire (Abschlussfragen)

Bitte beantworten Sie noch die folgenden Fragen, bevor Sie auf der nächsten Seite über Ihre Auszahlung informiert werden.

Q1. Welche Informationen über den jeweiligen Empfänger haben Sie als wichtig empfunden und versucht in Ihrer Entscheidung zu berücksichtigen? [Checkbox: Einkommen; staatliche Transfers; An-/Abfahrtszeit]

Q2. Welche Information über den jeweiligen Empfänger haben Sie als am Wichtigsten erachtet? [Einkommen; staatliche Transfers; An-/Abfahrtszeit]

Q3. Welche Information über den jeweiligen Empfänger war für Ihre Entscheidung irrelevant? [Einkommen; staatliche Transfers; An-/Abfahrtszeit]

D.9 Sample Screens in English (in vertical order of entries)

Figure 1: Sample screen in scenario *Full information.*

D.10 Sample Screens in German (in horizontal order of entries)

Figure 2: Sample screen in scenario *Full information* in German.

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– Latest Contributions

Bauer, Alexander Max, Meyer, Frauke, Romann, Jan, Siebel, Mark and Traub, Stefan: Need, Equity, and Accountability: Evidence on Third-Party Distributive Decisions from an Online Experiment. Working Paper Nr. 2020-01. http://bedarfsgerechtigkeit.hsu-hh.de/dropbox/wp/2020-01.pdf

Schwaninger, Manuel: The Predicament of the Third Actor: Other-regarding Preferences in Unstructured Bargaining. Working Paper Nr. 2019-01. http://bedarfsgerechtigkeit.hsu-hh.de/dropbox/wp/2019-01.pdf

Bauer, Alexander Max: Sated but Thirsty. Towards a Multidimensional Measure of Need-Based Justice. Working Paper Nr. 2018-03. http://bedarfsgerechtigkeit.hsu-hh.de/dropbox/wp/2018-03.pdf

Khadjavi, Menusch and Nicklisch, Andreas: Parent's Ambitions and Children's Competitiveness. Working Paper Nr. 2018-02. http://bedarfsgerechtigkeit.hsu-hh.de/dropbox/wp/2018-02.pdf

Bauer, Alexander Max: Monotonie und Monotoniesensitivität als Desiderata für Maße der Bedarfs-gerechtigkeit. Working Paper Nr. 2018-01. http://bedarfsgerechtigkeit.hsu-hh.de/dropbox/wp/2018-01.pdf

Schramme, Thomas: Mill and Miller: Some thoughts on the methodology of political theory. Working Paper Nr. 2017-25. http://bedarfsgerechtigkeit.hsu-hh.de/dropbox/wp/2017-25.pdf

Kittel, Bernhard, Tepe, Markus and Lutz, Maximilian: Expert Advice in Need-based Allocations. Working Paper Nr. 2017-24. http://bedarfsgerechtigkeit.hsu-hh.de/dropbox/wp/2017-24.pdf

Tepe, Markus and Lutz, Maximilian: The Effect of Voting Procedures on the Acceptance of Redistributive Taxation. Evidence from a Two-Stage Real-Effort Laboratory Experiment. Working Paper Nr. 2017-23. http://bedarfsgerechtigkeit.hsu-hh.de/dropbox/wp/2017-23.pdf

Tepe, Markus and Lutz, Maximilian: Compensation via Redistributive Taxation. Evidence from a Real-Effort Laboratory Experiment with Endogenous Productivities. Working Paper Nr. 2017-22. http://bedarfsgerechtigkeit.hsu-hh.de/dropbox/wp/2017-22.pdf

Kittel, Bernhard, Neuhofer, Sabine, Schwaninger, Manuel and Yang, Guanzhong: Solidarity with Third Players in Exchange Networks: An Intercultural Comparison. Working Paper Nr. 2017-21. http://bedarfsgerechtigkeit.hsu-hh.de/dropbox/wp/2017-21.pdf

Nicklisch, Andreas, Puttermann, Louis and Thöni, Christian: Self-governance in noisy social dilemmas: Experimental evidence on punishment with costly monitoring. Working Paper Nr. 2017-20. http://bedarfsgerechtigkeit.hsu-hh.de/dropbox/wp/2017-20.pdf

Chugunova, Marina, Nicklisch, Andreas and Schnapp, Kai-Uwe: On the effects of transparency and reciprocity on labor supply in the redistribution systems. Working Paper Nr. 2017-19. http://bedarfsgerechtigkeit.hsu-hh.de/dropbox/wp/2017-19.pdf

Chugunova, Marina, Nicklisch, Andreas and Schnapp, Kai-Uwe Redistribution and Production with the Subsistence Income Constraint: a Real-Effort Experiment. Working Paper Nr. 2017-18. http://bedarfsgerechtigkeit.hsu-hh.de/dropbox/wp/2017-18.pdf

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