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**Working Paper**

## On the construction of social preferences in lab experiments

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## **On the Construction of Social Preferences in Lab Experiments**

Sarah Borgloh, Astrid Dannenberg,  
and Bodo Aretz

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Zentrum für Europäische  
Wirtschaftsforschung GmbH

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## **Non-technical summary**

One of the most important questions in experimental economics is whether individual behavior in certain games is predictive for behavior in other games or contexts. Critics often claim that individual behavior in the lab is limited to that situation and does not contain much information about how people behave outside the lab. This question appears to be particularly relevant for ‘other-regarding’ or social preferences, i.e. preferences which are not captured by the standard assumption of purely payoff-maximizing agents and which have been largely investigated in the lab. The results of the experiments testing the stability of other-regarding preferences across multiple games or multiple contexts are ambiguous. The ambiguity may be partly explained by the ‘constructive-preference’ approach, which suggests that individuals construct preferences spontaneously when they are confronted with an unfamiliar decision situation. With more experience in a certain situation, preferences consolidate over time and become more stable.

This paper sheds light on this issue by investigating and comparing charitable donations and dictator game allocations in an experimental setting for a better understanding of what drives the decision in each task and whether behavior in one task is predictive of behavior in the other. The donation decision is a familiar decision situation where individuals are likely to have existing preferences. In contrast, the dictator game, though very simple, represents a rather unfamiliar decision situation where subjects may construct their preferences ad hoc. In the experiment, we pay special attention to the sequence in which the games are played.

Our experimental results show a significantly positive correlation between both decision tasks if (and only if) the more familiar donation decision is presented first and the rather unfamiliar dictator game is played thereafter. Moreover, the dictator game allocations depend on the sequence of games while the charitable donations do not. Hence, social preferences elicited in the donation context are predictive of subsequent behavior in the dictator game but not vice versa. Thus, if experimenters try to elicit social preferences to make predictions about behavior in other contexts, it seems reasonable to confront individuals with more familiar decision situations where preferences exist and do not need to be constructed. Furthermore, special attention should be paid to the sequence of games if they present a new decision situation for the experimental subjects.

## Das Wichtigste in Kürze

Eine der wichtigsten Fragen in der experimentellen Wirtschaftsforschung ist, ob das Verhalten der Versuchspersonen in einem Spiel Vorhersagen für das Verhalten in anderen Spielen oder in anderen Kontexten erlaubt. Kritiker argumentieren häufig, dass das Verhalten der Versuchspersonen den Laborbedingungen geschuldet ist und kaum Rückschlüsse auf ihr Verhalten außerhalb des Labors zulässt. Diese Frage ist insbesondere relevant für Verhaltensmuster, die sich nicht mit der Standardannahme des ‚homo oeconomicus‘, sondern mit sozialen Präferenzen begründen lassen, da diese Verhaltensmuster oft im Labor untersucht werden. Die Experimente, die sich mit der Stabilität von sozialen Präferenzen über verschiedene Spiele und Kontexte beschäftigen, kommen zu keinem eindeutigen Ergebnis. Die fehlende Eindeutigkeit kann teilweise mit dem Ansatz der ‚konstruierten Präferenzen‘ erklärt werden. Dieser geht davon aus, dass Personen, die mit einer ungewohnten Entscheidungssituation konfrontiert werden, über keine existierenden Präferenzen verfügen, sondern diese spontan konstruieren. Mit zunehmender Erfahrung verfestigen sich die Präferenzen und werden stabiler.

Die vorliegende Arbeit beschäftigt sich mit diesen Fragen, indem sie Spendenentscheidungen und Entscheidungen in einem konventionellen Diktatorspiel im Rahmen eines Experiments vergleicht. Dabei stellt die Spendenentscheidung eine bekannte Entscheidungssituation dar, in der die Versuchspersonen über existierende Präferenzen verfügen. Das Diktatorspiel dagegen stellt eine ungewohnte Situation dar, in der die Versuchspersonen ihre Präferenzen vermutlich eher ad hoc konstruieren. Besonderes Augenmerk liegt auf der Reihenfolge der beiden Entscheidungen.

Unsere Ergebnisse zeigen eine signifikant positive Korrelation zwischen beiden Entscheidungen, sofern die Spendenentscheidung *vor* der Diktatorspielentscheidung präsentiert wird. Während das Verhalten im Diktatorspiel von der Reihenfolge der beiden Entscheidungen abhängt, ist das Spendenverhalten unabhängig von der Reihenfolge. Das heißt, die Spendenentscheidung hat Erklärungskraft für die nachfolgende Entscheidung im Diktatorspiel, aber nicht umgekehrt. Wir schließen daraus, dass Entscheidungen in bekannten Situationen besser geeignet sind, um Aussagen über individuelle soziale Präferenzen abzuleiten. Darüber hinaus sollte der Reihenfolge der Spiele in einem Experiment besondere Aufmerksamkeit geschenkt werden, wenn die Spiele die Versuchspersonen vor eine neue Entscheidungssituation stellen.

# On the Construction of Social Preferences in Lab Experiments

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## **Abstract:**

This paper studies the construction of social preferences in the lab. Experimental subjects have the opportunity to donate to a charity and to allocate money in a conventional dictator game. The results show that charitable donations and dictator game allocations are positively correlated. The correlation is only significant, however, if the dictator game follows the donation decision. Furthermore, while donation behavior is independent from the order of play, dictator game behavior is not. In line with the constructive-preference approach, we argue that preferences are instable and sensitive to outside influences when subjects are confronted with a new decision situation, while in a well-known situation preferences are more stable.

**Keywords:** social preferences, charitable donations, dictator game, experiment

**JEL:** C91, C93, D01, D64

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## 1 Introduction

One of the most important questions in experimental economics is whether subjects' behavior in certain games is predictive for behavior in other games or contexts. Critics often claim that individual behavior in the lab is limited to that situation and does not contain much information about how people behave outside the lab. This question appears to be particularly relevant for 'other-regarding' or social preferences, i.e. preferences which are not captured by the standard assumption of purely payoff-maximizing agents and which have been largely investigated in the lab.

One important class of theories which has been developed to explain other-regarding behavior sticks to the assumption of rational agents but introduces an additional motive to the utility function. This set of theories includes, among others, the 'warm-glow' of giving (Andreoni, 1989, 1990), inequity aversion (Fehr and Schmidt, 1999, Bolton and Ockenfels, 2000) and the desire to comply with social norms (Levitt and List, 2007). In order to test the various theories of social preferences in the lab, experimental economists have developed a wide range of games, like for example the ultimatum game, the dictator game, the trust game or the public good game. It has been shown that a substantial share of experimental subjects does not act selfishly, but shares their endowment, rewards pro-social behavior and contributes to public goods. Still, the results of the experiments testing the *stability* of social preferences across multiple games or multiple contexts are ambiguous (see Bolton et al., 2008 and the next section for examples).

The discussion about whether preferences are stable or not goes back to Stigler and Becker (1977), who propose that tastes are stable over time and similar among people. Tversky and Kahneman (1981), in comparison, emphasize the importance of framing effects for shifts in individual preferences. There is also some empirical evidence that in certain situations preferences are constructed rather than existing. The constructive-preference approach (Lichtenstein and Slovic, 2006) suggests that individuals construct preferences when they are confronted with an unfamiliar decision situation. Thus, the nature of the task, the information available and the situational context have a strong impact on preference construction. With more experience in a certain situation, preferences are said to consolidate over time and become more stable (Hoeffler and Ariely, 1999).

This paper sheds light on this issue by investigating and comparing charitable donations and dictator game allocations in an experimental setting for a better understanding of what drives the decision in each task and whether behavior in one task is predictive of behavior in the

other. The donation decision is a familiar decision situation where individuals are likely to have existing preferences. In contrast, the dictator game (Kahneman et al., 1986), though very simple, represents a rather unfamiliar decision situation for most subjects: it is hard to imagine real-life situations where one is asked to share a certain amount of money with a completely anonymous person. Therefore, it seems questionable that individuals have a well-defined set of existing preferences guiding their behavior in this game. Individuals faced with this game might rather construct their preferences ad hoc. Moreover, the dictator game has been shown to be relatively sensitive towards changes in the experimental setting: Methodological variables, such as anonymity and experimenter blindness, as well as structural variables, such as identity of recipients, communication, available action sets, entitlement to and information about the amount being divided, can have strong effects on the outcome (for an overview see Camerer, 2003, List, 2007).

Unlike many of the previous experiments, we use within-subject as well as between-subject tests and we pay special attention to the *sequence* in which the games are played as it plays a role, if preferences are indeed constructed and therefore instable. Furthermore, we use a non-student subject pool for two reasons: first, those subjects are unlikely to have played a dictator game before. And second, supposedly all of them have either donated to a charity or at least been asked for donations before. Our experimental results show that there is a significantly positive correlation between both decision tasks if - and only if - the more familiar donation decision is presented first and the rather unfamiliar dictator game is played thereafter. Moreover, the dictator game allocations depend on the sequence of games while the charitable donations do not. Hence, social preferences elicited in the donation context are predictive of subsequent behavior in the dictator game but not vice versa. Thus, if experimenters try to elicit social preferences to make predictions about behavior in other contexts, it seems reasonable to confront individuals with more familiar decision situations where preferences exist and do not need to be constructed. Furthermore, special attention should be paid to the sequence of games if they present a new decision situation for the experimental subjects.

The outline of the paper is as follows: the second part presents empirical findings from related studies. Part three describes the experimental setting and the fourth part delivers the results. The last part concludes.

## 2 Empirical Findings

Looking at the findings from earlier empirical work, the question whether social preferences measured in lab experiments, and particularly in dictator games, are predictive of behavior in other games or other contexts, is still largely unanswered. There are three different types of studies which are related to our approach:

First, several lab experiments use (modified) dictator games to measure individual social preferences and relate the observed behavior to the performance in a different game by means of within-subject tests (e.g. Ashraf et al., 2006, Blanco et al., 2008, Brosig et al., 2007, Teyssier, 2009). The experimental results are not coherent, thereby indicating that dictator game behavior is not reliably predictive of behavior in other games. All the listed studies use context-free games and test theories of other-regarding behavior.

The second branch of literature deals with the consequences of *context* for decision making within economic experiments. These studies aim at comparing dictator game allocations with charitable donations (e.g. Eckel and Grossman, 1996, Bettinger and Slonim, 2006). They generally find that people give more to charities than to peers in a dictator game. Similarly, Brañas-Garza (2006) shows that dictators are more generous if they are informed that their recipients are poor compared with the behavior if not provided with this information. This branch seems to have the greatest similarity to our approach; however, they do not consider the *correlation* between games, i.e. whether the people who are generous in the dictator game are more likely to donate to charities.

The third class of studies does consider the correlation between games but focuses on social dilemma games rather than dictator games. More precisely, the studies compare behavior in context-free social dilemma games with contributions to naturally occurring public goods using within-subject tests (e.g. Laury and Taylor, 2008, Oliveira et al., 2008). The experimental results indicate that cooperative behavior across multiple contexts tends to be stable, albeit the relation is not always incontrovertible.<sup>1</sup>

The focus of all studies mentioned above lies on the comparison of behavior across multiple games or multiple contexts, so the effects of *sequence* are of minor interest. Although some of the studies control for sequence effects by changing the order of the games, and some of these indeed find effects, none of them really dwell on those effects. Our study narrows this gap as subjects have to make both charitable donation decisions and decisions in a conventional

dictator game. In doing so, we changed the order of play to examine whether or not preferences are robust to this modification, which may indicate whether they are existing or constructed.

### **3 Experimental Design**

#### *Participants and Implementation*

For subject recruitment, invitation letters were randomly distributed in the city of Mannheim, Germany. The letter contained an invitation to take part in a scientific study and informed people that they would receive €40 for participation. It was announced that there would be a survey in which they could (voluntarily and anonymously) make consumption decisions. We used this relatively high show-up fee in order to avoid underrepresentation of people with high opportunity costs of time. The experiment took place in July 2009 on the premises of the Centre for European Economic Research (ZEW) in Mannheim with a total of 223 participants. At the beginning of each session, participants individually drew lots to determine their ID number - which remained unknown to other participants and the experimenters - and chose a table. The tables had privacy screens on every side to ensure private decisions and answers. Participants were not allowed to talk to each other. If they had questions, the experimenters answered them privately. The 12 experimental sessions lasted around 60 minutes each. Within one session, all subjects performed exactly the same task. At first, all participants obtained detailed instructions about the course of the experiment.<sup>2</sup> The main features were orally repeated. We emphasized that any information given in the instructions was true. Participants in all treatments filled out a questionnaire about socio-demographic characteristics and donation habits. At the end of each session, participants also had the chance to comment on the experiment and give reasons for their decisions.

Participants' socio-demographic characteristics and donation habits are shown in the appendix (Tables A1 and A2). Although the subject pool is not fully representative of the German resident population, it is sufficiently diversified in all socio-demographic variables in order to examine the influence of each variable on charitable donations and dictator game allocations. Moreover, in case of gender, income and religion the distribution of our subject pool does not

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<sup>1</sup> A fourth branch of literature tests whether individual other-regarding behavior in the lab and in the field correlates (e.g. Benz and Meier, 2008, Fehr and Leibbrandt, 2008, Carpenter and Myers, 2010), which is often the case.

<sup>2</sup> See appendix for experimental instructions.

significantly differ from that of the German population (chi squared test, t-test,  $p > 0.1$ ).<sup>3</sup> More precisely, 46.2% of subjects are male; 22.9% dispose of a monthly net household income of less than €1,000; most of the subjects live in households with incomes between €1,000 and €3,000; and 13.0% have more than €3,000 per month disposable. With regard to religion, Catholics (31.4%) and Protestants (31.8%) are equally represented, whereas 6.7% are affiliated with a different religious group and 30.0% of all subjects do not belong to any religious community. The vast majority of participants (84.8%) had previously donated to a charity. The most common charitable purposes were child care and disabled care followed by development aid and environment or animal protection. This underlines that most experimental subjects show some kind of experience regarding the donation decision.

### *Treatments*

The experiment comprised three treatments. Each treatment contained a real donation stage where subjects simultaneously and independently decided how much - if any - of their endowment they want to donate to a certain charity. All of the selected charities have obtained the 'DZI Spendensiegel', a label for charities which use their funds economically and according to their statutes.<sup>4</sup> Subjects could choose one of four charitable purposes, namely disabled care, development aid, medical research or animal protection and they only knew the purpose but not the name of the organizations.<sup>5</sup> All donation decisions were completely voluntary and anonymous. We used a double blind procedure in which neither other subjects nor experimenters came to know if, how much and to which purpose a subject donated. Subjects received a large envelope containing two smaller envelopes and the endowment of €40 broken into two 10-euro notes, one 5-euro note, six 2-euro coins and three 1-euro coins. This breakdown enabled subjects to donate any integer amount between €0 and €40 and reduced incentives to only give the coins. Subjects placed the amount they wished to donate in one of the small envelopes assigned to donations, labeled the envelope with their ID number and, in case they were willing to give a positive amount, the charitable purpose to which they wished to donate. The amount of money subjects wished to keep for themselves was placed in the other small envelope. Afterwards, subjects dropped the envelopes specified for donations in a box. All donations made during the experiment were transferred in full to

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<sup>3</sup> Unless stated otherwise, all tests in this paper are two-sided.

<sup>4</sup> For more information (in German language), see [www.dzi.de](http://www.dzi.de).

<sup>5</sup> Some of the participants also received information about the size of the charities, which is not discussed in this paper. As there is no significant difference in donations between subjects who received the information and subjects who did not, we felt free to pool the data. For more details, see Borgloh et al. (2010).

the respective organizations. The counting of donations and the transfer to the organizations were monitored and certified by a notary. This procedure and the name of the notary had been announced in the experimental instructions.

The baseline treatment (“*NoDG*”) solely involved the donation stage and afterwards the completion of the questionnaire. Two treatments contained a conventional dictator game besides the donation stage. In those treatments, subjects received an additional endowment of €20. Subjects simultaneously and independently decided how much - if any - of this endowment they want to give to another participant. Recipients of this allocation were randomly selected from the *NoDG* treatment without dictator game. The procedure in the dictator game was the same as in the donation stage. Subjects did not get any information about the recipient except that the person participated in a different session and did not receive the additional €20. The dictator game decisions were completely voluntary and anonymous. We also used a double blind procedure in which neither other subjects nor experimenters came to know if and how much a subject allocated to the recipient. Subjects received a large envelope containing two smaller envelopes and the endowment of €20 broken into two 5-euro notes, two 2-euro coins, and six 1-euro coins. This breakdown enabled subjects to donate any integer amount between €0 and €20 and again reduced incentives to only give the coins.

Subjects placed the amount they wished to allocate to the recipient in one of the small envelopes and labeled the envelope with their ID number. The amount of money subjects wished to keep for themselves was placed in the other small envelope. Afterwards, subjects dropped the envelopes with the allocations to the recipients in a box. Subjects knew that these envelopes were given to randomly selected recipients even if the envelopes did not contain any money. In one dictator game treatment (“*DGStart*”), the dictator game was placed at the start of the session followed by the questionnaire and the donation stage. In the other dictator game treatment (“*DGEnd*”), sessions started with the donation stage, proceeded with the questionnaire and ended with the dictator game. Recipients in the treatments without dictator game obtained the envelopes with the allocations from the dictators always at the end of the session.<sup>6</sup> Table 1 summarizes the features of all treatments including number of sessions and number of subjects.

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<sup>6</sup> Due to no-shows we had a few more dictators than recipients. The amount of money that these dictators allocated to recipients (overall €7) was transferred to a randomly selected charity.

**Table 1: Treatments**

Treatment	No. of charitable purposes	DG	Time of DG	No. of sessions	No. of subjects
<i>NoDG</i>	4	no		6	108
<i>DGStart</i>	4	yes	start	2	40
<i>DGEnd</i>	4	yes	end	4	75
Total				12	223

## 4 Results

### *Average Patterns*

In total, €1,225 are donated to the charities. Broken down by purposes, €448 are donated to disabled care, €318 to development aid, €274 to medical research, and €185 to animal protection. Disabled care is not only the most frequently (21%) selected purpose but also receives the highest average donations (€9.53). While individual donations do not differ significantly between the four purposes, subjects select animal protection less frequently than the other three purposes (binomial test, 1% significance). On average, €5.49 (14% of the initial endowment of €40) are donated to the charities and €4.70 (23% of the initial endowment of €20) are allocated in the dictator game. Overall, 33% of the subjects do not make a donation and 27% of the subjects do not allocate anything in the dictator game. Table 2 summarizes the most important descriptive findings.

**Table 2: Descriptive statistics**

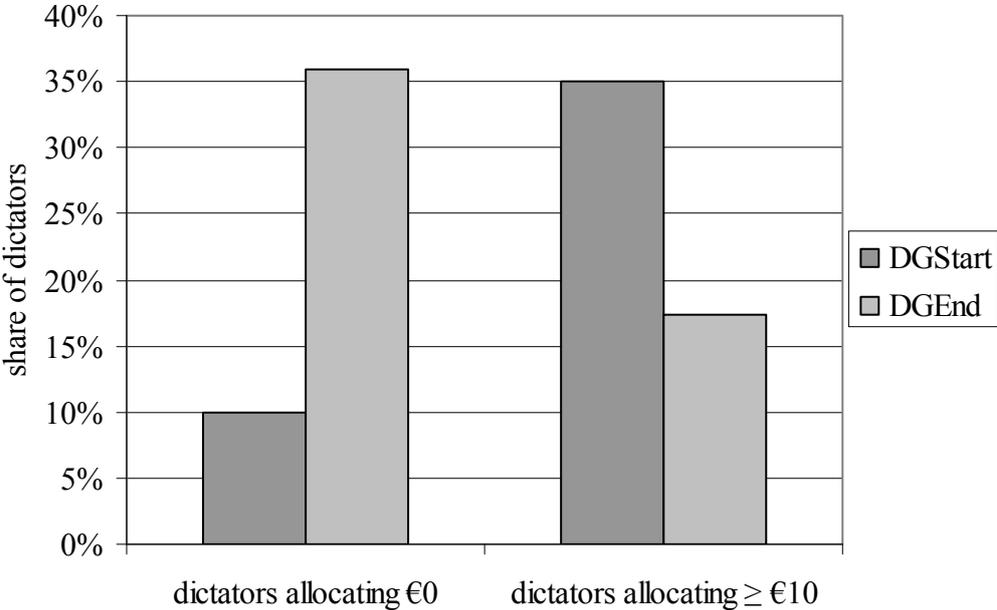
	No. of observations	Average donation (in €)	Average DG allocation (in €)
<i>NoDG</i>	108	5.72	-
<i>DG</i>	115	5.27	4.70
<i>DGStart</i>	40	6.25	6.25
<i>DGEnd</i>	75	4.76	3.87
<i>Total</i>	223	5.49	4.70

In the *DGStart* treatment, in which the dictator game is played at the beginning of the session, dictators allocate an average amount of €6.25. Allocations in the *DGEnd* treatment, in which the dictator game is played at the end of the session, are significantly lower: Here, dictators allocate €3.87 on average (Mann Whitney test, 1% significance). Figure 1 illustrates this difference: While only 10% of the dictators in *DGStart* do not allocate anything to an

experimental peer, this percentage is much higher in the *DGEnd* treatment (36%). At the same time, the share of dictators who allocate at least €10 is twice as large in *DGStart* as in *DGEnd*. The average charitable donations made in the different treatments (€5.72 in *NoDG*, €6.25 in *DGStart* and €4.76 in *DGEnd*) do not significantly differ.

*Result 1: Absolute dictator game allocations are significantly higher when the dictator game is played prior to the donation stage. Absolute donations do not significantly differ between treatments.*

**Figure 1: Distribution of dictator game allocations across treatments**



Why do dictators give less when this decision *follows* the donation decision? For a start, we suggest that an income effect might cause this observation. At the time of the dictator game decision, subjects in the *DGStart* treatment did not know that they would be asked for donations thereafter. In contrast, subjects in the *DGEnd* treatment had already made their donation at this stage, i.e. their remaining budget was smaller: While dictators in *DGStart* calculated with a total of €60, dictators in *DGEnd* calculated with €60 less the amount they had donated. If we take this into account and consider the *relative* dictator game allocation, i.e. the chosen allocation relative to the budget principally available at this stage, we find that the differences are decreasing: Dictators in *DGStart* allocate an average 10% of the available budget and dictators in *DGEnd* allocate 8% on average. Notably, dictators in *DGStart* allocate a larger share of their available budget, although the €40 for participation are not on the table

yet. The difference in relative allocations is still significant (Mann Whitney test, 5% significance), indicating that the income effect can only partly explain the difference in dictator game allocations between *DGStart* and *DGEnd*.

A similar reasoning applies to the donation decision. While subjects in *DGStart* calculated with €60 less their dictator game allocations, individuals in *DGEnd* calculated with €40 because they did not know that they would receive an additional €20 after the donation stage. Taking this into account, we find that in both treatments subjects donate an average 12% of their available budget to the charities. This percentage is not significantly different from the relative donations (14%) in the treatment without dictator game (Mann Whitney test).

*Result 2: Relative dictator game allocations are higher when the dictator game is played prior to the donation stage. Relative donations are not affected by the existence or the time of the dictator game.*

### *Individual Patterns*

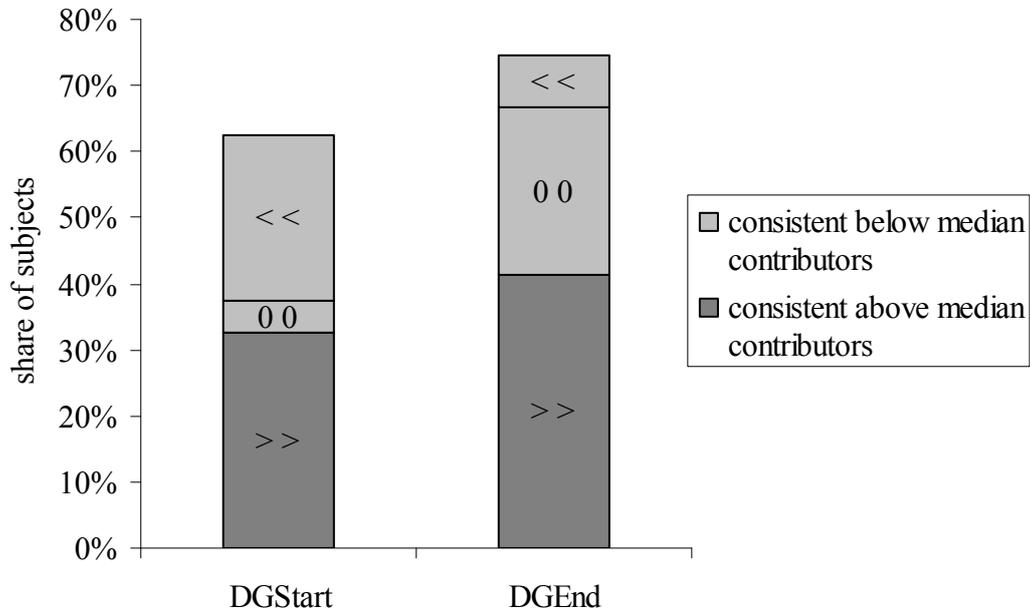
In the following, we take a closer look at individual patterns and compare individual behavior in both tasks. By applying Spearman's rank correlation test, we observe that in *DGEnd* dictator game allocations and donations are positively and significantly correlated (1% significance) while the positive correlation is not statistically significant in the *DGStart* treatment.

To shed more light on this observation, we define individual behavior as 'consistent' if a subject belongs to one of three categories: Subject's giving in *both* games (i) is zero, (ii) is below the respective median values<sup>7</sup> but non-zero in at least one decision task, or (iii) is equal to or greater than the respective median values. Given this classification, the probability of observing consistent behavior across games is significantly higher in *DGEnd* (75%) than in *DGStart* (63%) (binomial test, 5% significance), as can be seen from Figure 2.

Figure 2 shows that 5% of the subjects in *DGStart* give nothing in both decisions while the share in the *DGEnd* treatment is 25%. This difference, however, is almost leveled off by the subjects who contribute below the respective median value in both games but give a positive amount in at least one decision task. More consistent contributions above the median are observed in the *DGEnd* treatment.

*Result 3: Individual behavior is more consistent across games if the dictator game decision follows the donation decision.*

**Figure 2: Consistent individual behavior across games**



Note: >> - Contribution is above or equal to the respective relative median in both the donation and dictator game allocation decision. << - Contribution is below the respective relative median in both the donation and dictator game allocation decision, with at least one decision with non-zero contribution. 0 0 - Contribution is 0 in both the donation and dictator game allocation decision.

The findings summarized in Results 2 and 3 potentially provide an interesting feature of the elicitation of social preferences by means of simple experimental games. Our inexperienced subjects who play the dictator game at the beginning of the experiment face a new and unfamiliar decision situation. As they probably do not have existing preferences for this situation, they construct preferences ad hoc to reach a decision. For example, they may want to avoid extreme outcomes and, therefore, allocate a small or medium amount to an experimental peer rather than giving nothing. In contrast, if subjects face the dictator game decision after the more familiar donation decision, they may use the donation decision as an ‘anchor’ leading to a higher degree of consistency across games. As this anchor is not available when the dictator game is played first, individual behavior is less consistent. This result is an indication for how preferences may be constructed in an experiment. The

<sup>7</sup> The median values are calculated in relative terms for each group: (a) relative donations in *DGStart*, (b) relative donations in *DGEnd*, (c) relative DG allocations in *DGStart*, (d) relative DG allocations in *DGEnd*.

constructive-preference approach may also explain why charitable donations are stable, i.e. independent from the sequence of play, whereas the dictator game allocations are instable.

### *Econometric Analysis*

In order to gain a further insight into the driving forces behind individuals' behavior in the donation decision and the dictator game, we analyze the impact of various socio-demographic variables by conducting an econometric analysis. In both tasks, around one third of the participants chooses zero contributions. Hence, there is a large number of observations clustered at zero. In this case, ordinary least squares estimates would not be accurate, so we use a Tobit estimation model. We include the following socio-demographic variables in our regressions: *age*, *household size* as the absolute number of household members including children, dummy variables for *male* subjects, *unmarried* subjects, subjects not having any religious affiliation (*no religion*), voters of the *left party*<sup>8</sup>, highly educated subjects (*education*, owning a graduate degree) and high *income* subjects (monthly net household income of €2,000 or more). In order to verify how the sequence of the tasks influences our results, we include the dummy variable *DGStart* which is coded '1' if the dictator game was played before the donation stage and '0' if it was played afterwards. In specification (1) in Table 3 the dependent variable is the amount donated in the donation decision while in specification (2) the dependent variable is the amount allocated in the dictator game. Specifications (3) and (4) exclude outliers which are defined as those observations lying outside the donation or allocation interval of three standard deviations from the mean.<sup>9</sup>

First of all, the estimation results in Table 3 confirm the finding reported in Result 1: People choose higher dictator game allocations if they play the dictator game prior to the donation stage while donations are not significantly influenced by the order of the tasks. Comparing the results of specifications (3) and (4), we see that personal characteristics influence both contribution decisions similarly: While neither the donation nor the allocation decision is significantly affected by gender, religious affiliation, *education*, and *income*, the variables *age*, family status, and voting for the *left party* have the same directional impact in both decision contexts. Older people and unmarried people donate more to the charities and allocate more money in the dictator game, whereas voters of the *left party* donate less and

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<sup>8</sup> The party "Die Linke" (German for 'the left') is one of the five parties that comprise the Federal Parliament of Germany.

<sup>9</sup> More precisely, the cut-off threshold for donations is €22.16; the cut-off threshold for dictator game allocations is €12.88.

allocate less than all other individuals. The positive effect of individuals' *household size* on donations and dictator game allocations, however, is significant only for the latter. To sum up, the same individual characteristics seem to be crucial for generosity in both tasks, no matter whether preferences are constructed ad hoc or already existing.

**Table 3: Tobit estimation results**

Variable	Including outliers		Excluding outliers	
	Charitable donation	DG allocation	Charitable donation	DG allocation
	(1)	(2)	(3)	(4)
<i>age</i>	0.253*** (0.082)	0.159*** (0.050)	0.229*** (0.066)	0.138*** (0.044)
<i>male</i>	-2.134 (1.894)	-1.624 (1.141)	-1.839 (1.523)	-1.245 (0.992)
<i>household size</i>	0.702 (1.131)	1.117 (0.676)	1.131 (0.902)	1.283** (0.583)
<i>unmarried</i>	9.132*** (2.830)	4.538*** (1.693)	7.873*** (2.264)	4.780*** (1.476)
<i>no_religion</i>	1.002 (2.074)	-0.582 (1.257)	-1.166 (1.684)	0.021 (1.084)
<i>left_party</i>	-8.734** (3.944)	-3.638 (2.306)	-6.770** (3.106)	-3.498* (1.981)
<i>education</i>	3.283 (2.107)	-0.315 (1.284)	1.526 (1.691)	0.735 (1.126)
<i>income</i>	2.364 (2.271)	1.217 (1.378)	0.744 (1.826)	-0.354 (1.231)
<i>DGStart</i>	0.929 (1.900)	2.827** (1.142)	0.640 (1.533)	2.637*** (1.002)
<i>Constant</i>	-15.368*** (5.797)	-8.274** (3.484)	-12.719*** (4.619)	-8.150*** (3.051)
No. of observations	98	98	96	96
LR Chi <sup>2</sup>	23.32***	25.20***	21.80***	27.20***
Pseudo R <sup>2</sup>	0.042	0.051	0.043	0.059

Notes: t statistics in parentheses; levels of significance: \* p<0.10, \*\* p<0.05, \*\*\* p<0.01.

## 5 Conclusions

This paper contributes to the discussion whether social preferences measured in the lab are predictive of individuals' behavior in other games or decision contexts. As opposed to the assumption of stable preferences, the constructive-preference approach suggests that individuals construct their preferences ad hoc if they are confronted with an unfamiliar decision situation. We take a closer look at this issue as our inexperienced experimental subjects allocate money in a conventional dictator game and make a donation decision. While the donation context represents a familiar decision situation where individuals are supposed to have existing preferences, the dictator game is a rather unfamiliar decision situation where

subjects are likely to construct their preferences ad hoc. We pay special attention to the sequence in which both games are played by reversing their order to examine whether behavior in one situation is predictive of that in the other.

The results show that dictator game allocations are significantly higher if this game is played at the beginning of experimental sessions as compared to the dictator game played at the end of a session. Charitable donations, in comparison, are independent of the sequence of play. This more stable pattern may result from existing preferences in the donation context. Moreover, we observe a significantly positive correlation between charitable donations and dictator game allocations if individuals are confronted with the more familiar donation decision situation first. Hence, subjects are more likely to behave consistently generous or selfish across games or contexts if they start the experiment with the more familiar decision problem. An explanation for this may be that they use the more familiar donation decision as an anchor for the subsequent dictator game decision leading to a higher degree of consistency across games. As this anchor is not available when the dictator game is played first, individual behavior is less consistent. This result is an indication for how preferences may be constructed in an experiment.

The discussion in this paper suggests an important conclusion for the measurement of social preferences in lab experiments as our data provide an explanation why some studies succeed and some studies fail to find a consistent behavioral pattern between a dictator game and a different experimental task. It makes an enormous difference whether subjects in lab experiments find themselves in context-rich familiar decision situations or in context-free unknown games, like the dictator game. Therefore, it is not so obvious in how far spontaneously constructed preferences can be predictive of behavior in other contexts or in real-life decision situations. In comparison, social preferences measured in more familiar decision contexts seem to have greater predictive power of behavior in other decision situations. Thus, experimenters trying to elicit social preferences in the lab might rather employ more familiar tasks where preferences exist and need not be constructed. Our experiment is in line with previous literature which has shown that the dictator game is particularly vulnerable to design changes and therefore not well suited for measuring social preferences. By adopting more robust tasks, the measurement of social preferences within experiments might be improved. Furthermore, special attention should be paid to the sequence of games if these present a new decision situation to the experimental subjects.

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## Appendix A: Tables and Figures

**Table A1: Socio-demographic characteristics of participants**

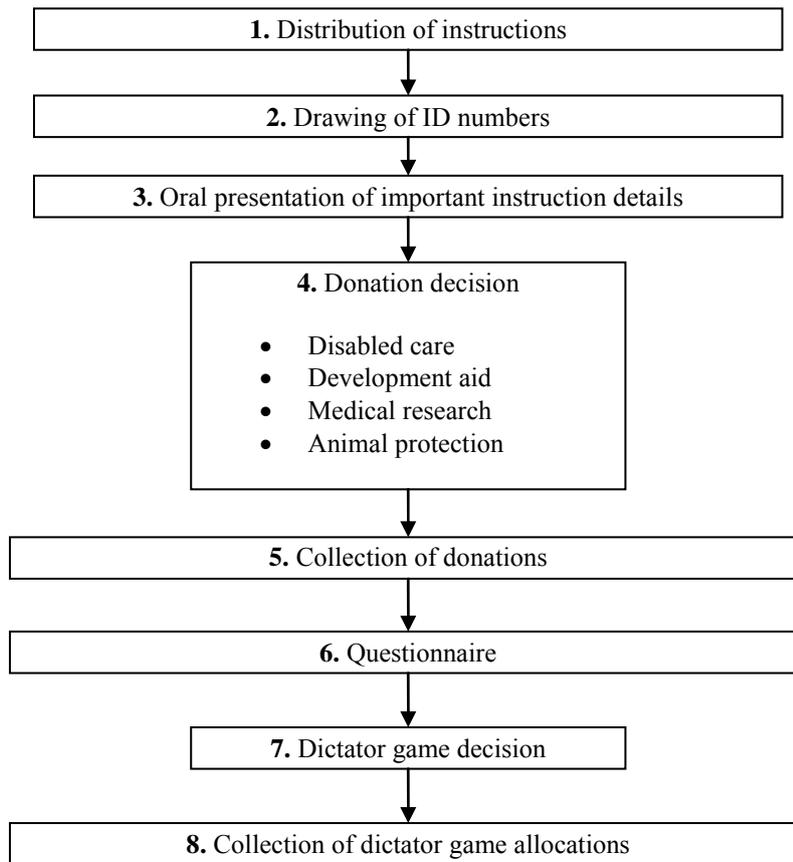
Variable	State	Frequency abs.	Frequency in %
Gender	Male	103	46.19
	Female	119	53.36
	No answer	1	0.45
Age	18 – 29	73	32.74
	30 – 44	60	26.91
	45 – 59	54	24.22
	60 – 75	34	15.25
	No answer	2	0.90
Family Status	Single	139	62.33
	Married	45	20.18
	Divorced	31	13.90
	Widowed	6	2.69
	No answer	2	0.90
Children	Yes	34	15.25
	No	189	84.75
Household size	1	102	45.74
	2	82	36.77
	3	21	9.42
	4 or more	17	7.62
	No answer	1	0.45
Education	University	88	39.46
	<i>Gymnasium</i> (12 years of education)	58	26.01
	<i>Realschule</i> (10 years of education)	35	15.70
	<i>Hauptschule</i> (9 years of education)	23	10.31
	Other	17	7.62
	No graduation	2	0.90
Nationality	German	192	86.10
	Turkish	2	0.90
	Italian	3	1.35
	Polish	2	0.90
	Other	23	10.31
	No answer	1	0.45
Household net income	< 1.000 €	51	22.87
	1.000 – 2.000 €	85	38.12
	2.000 – 3.000 €	44	19.73
	3.000 – 4.000 €	13	5.83
	4.000 – 5.000 €	8	3.59
	> 5.000 €	8	3.59
	No Answer	14	6.28
Religion	Catholic	70	31.39
	Evangelic	71	31.84
	Muslim	5	2.24
	Other	10	4.48
	No religion	67	30.04
Voting behavior	The Christian Democratic / Christian Social Union	43	19.28
	The Social Democratic Party	49	21.97
	The Greens	42	18.83
	The Free Democratic Party	25	11.21
	The Left Party	17	7.62
	Other	9	4.04
	Nonvoter	17	7.62
	No answer	21	9.42
	$\Sigma$	223	100.00

**Table A2: Charitable giving habits of participants**

Variable	State	Frequency abs.	Frequency in %
Donated before	Yes	189	84.75
	No	34	15.25
Modal charitable purpose <sup>1</sup>	Child or disabled care	46	20.63
	Emergency aid	12	5.38
	Medical research	13	5.83
	Church and religious purposes	11	4.93
	Environment or animal protection	32	14.35
	Development aid	39	17.49
	General (e.g. Red Cross, charitable lotteries)	20	8.97
	Culture	3	1.35
	Politics	2	0.90
	Local welfare services, homeless persons, poverty	8	3.59
	No answer (incl. 34 subjects who did not donate before)	37	16.59
Contribution receipt received	Always	60	26.91
	Mostly	36	16.14
	Sometimes	42	18.83
	Never	49	21.97
	No answer (incl. 34 subjects who did not donate before)	36	16.14
Donated in 2009	Yes	67	30.04
	No	156	69.96
	$\Sigma$	223	100.00

<sup>1)</sup> If subjects stated that they had donated before they were asked to which charity they donated most frequently. If subjects gave more than one answer the charity named first was included.

**Figure A1: Proceedings of the experiment**



Notes: The proceeding above reflects the *DGEnd* sessions. In the *DGStart* sessions, the dictator game and the questionnaire were conducted before the donation stage. In the *NoDG* sessions, no dictator game was played.

## **Appendix B: Experimental instructions for *DGEnd* (translated from German)**

Welcome!

Thank you very much for participating in our study analyzing consumer behavior. Enclosed in this folder, you find information which you need throughout the study. You may return to pages you have already gone through at any time. Please do not look at the pages behind the next “stop-sign”. You will be asked to turn to the next page. Please only read the respective text and do not act until you receive specific instructions to follow the assignment.

Please follow the instructions carefully. We also would like to ask you not to talk to other participants.

We want to emphasize that all information which we gain from today’s event will only be used to draw a comparison between the groups of participants. No individual data about the participants will be published or passed on.

Shortly, we will come up to your seat and you will draw a piece of paper with a number on it. This number will serve as your personal identification number (ID) throughout the study. Please state your ID whenever you are asked to do so during the study. The ID ensures anonymity, as neither other participants nor we know your name or the ID that belongs to it.

-- STOP sign: Please do not turn the page until we ask you to! --

### **Part 1**

You will receive 40 Euros for your participation in the study. Shortly, we will hand out the money in an envelope. Then we ask you to confirm the receipt. Afterwards, you will get the opportunity to donate any preferred amount of money to a charitable cause.

There is a charitable organization behind every charitable cause. The money you donate if you decide to donate any will be **completely** transferred to the respective charity. We guarantee that this will happen lawfully and will have the transfer supervised and verified by the director of the notary’s office, [...].

All selected charitable organizations hold the “donation seal” by the state-approved German Central Institute for Social Issues (Deutsches Zentralinstitut für soziale Fragen (DZI)). This assures that the organizations act autonomously and charitably and that the usage of their financial means is reviewable, economical and statutory. The names of the individual organizations will at this point – for scientific reasons – not be mentioned. We guarantee that all information you receive from us regarding the organizations is **true**. At the end of the experiment, we are happy to hand to you a list of all organizations upon request.

In the following, we present to you four different charitable causes to which you can donate in the course of this study.

The four charitable causes are:

- Medical research
- Animal protection
- Disabled care
- Development aid

We now hand out to you an envelope with the money you receive for your participation in our study.

-- STOP sign: Please do not turn the page until we ask you to! --

In the envelope, you find:

- one white envelope
- one blue envelope
- 40 Euros, composed of two 10 Euro-bills, one 5 Euro-bill, six 2 Euro-coins and three 1 Euro-coins
- one receipt.

We now ask you to sign the enclosed receipt. By doing so, you confirm that you have received 40 Euros from ZEW for the participation in this study. We need the receipt for administrative purposes. Without a receipt we are not allowed to give you the money. Your data is still handled **confidentially** and **anonymously**. We will now collect the receipts. The study will continue hereafter.

-- STOP sign: Please do not turn the page until we ask you to! --

Now you can make a donation decision. You can decide **freely and anonymously** whether and how much money you want to give to one of the above-mentioned charitable organizations. The amount of money you put in the **blue** envelope will benefit a charitable cause and will be transferred **completely** to the respective charity after the experiment. You can keep the amount of money you put in the **white** envelope.

The study proceeds as follows:

1.) Make your donation decision.

In case of a donation, please tick the desired charitable organization on the **blue** envelope. Please note that you have to choose **one** of the four given charities. It is not possible to choose more than one charitable organization for your donation. Please tick only **one** organization if you wish to donate. If you tick more than one organization, unfortunately, we will not be able to transfer the donation. If you do not wish to donate, please do not tick any organization.

2.) Write down your ID-number in the predefined box on the **blue** envelope, irrespective of whether you wish to donate or not.

3.) Put the desired donation amount in the **blue** envelope.

4.) Put the amount of money you wish to keep in the **white** envelope.

Finally, you should have distributed 40 Euros completely to the two envelopes. Please note that any distribution in full amounts of Euros is possible. You may put any desired amount of money into both envelopes. It is also possible to put 40 Euros completely into one envelope.

5.) Seal up **both** envelopes.

When all participants have finished, we will come up to you and collect the **blue** envelope. When we do so, please put the **blue** envelope into the box. Please keep the white envelope. We guarantee that your donation will be transferred to the charitable organization lawfully and have the transfer supervised and verified by the director of the notary's office, [...].

We will explain the most important items once again orally. Afterwards, please make your decision as described above.

-- STOP sign: Please do not turn the page until we ask you to! --

## Part 2 – Questionnaire

Please answer the following questions by ticking or filling out.

If you have a question, please raise your hand. We will come up to you and answer your question. Please do **not** say your question out loud and please do not talk to other participants.

1. What is your ID-number? \_\_\_\_\_

2. How can your marital status be described?

- unmarried
- married
- divorced
- widowed

3. Please state your gender:

- male
- female

4. What is your year of birth? \_\_\_\_\_

5. How many people, including you, live in your household? \_\_\_\_\_

6. How many children live in your household?

- 0-3 years old \_\_\_\_\_
- 4-7 years old \_\_\_\_\_
- 8-12 years old \_\_\_\_\_
- 13-18 years old \_\_\_\_\_
- older than 18 years \_\_\_\_\_
- none \_\_\_\_\_

7. What is your religious affiliation?

- Catholic
- Protestant
- Muslim
- Jewish
- Buddhist
- other: \_\_\_\_\_

no religion

8. What is your highest educational achievement?

- University/College
- higher education entrance qualification
- middle school
- secondary modern school
- other: \_\_\_\_\_
- none

9. What is your original nationality?

- German
- Turkish
- Italian
- Polish
- other: \_\_\_\_\_

10. What is your first language? \_\_\_\_\_

11. What are the monthly net earnings of your household (how much money per month is available for your household altogether?)

- below 1,000 Euros
- 1,000 – 2,000 Euros
- 2,000 – 3,000 Euros
- 3,000 – 4,000 Euros
- 4,000 – 5,000 Euros
- above 5,000 Euros
- not specified

12. Which party would you vote for if there were federal elections this Sunday?

- CDU/CSU
- SPD
- Bündnis 90 / The Green Party
- FDP
- The Left
- Other
- I do not vote
- not specified

14. Have you made a donation to a charitable organization before?

- yes                       no

15. To which purpose have you donated most often?

\_\_\_\_\_

16. Have you already donated to a charitable organization this year?

- yes                       no

17. If you answered question 16 with “yes”, in which month have you donated last?

\_\_\_\_\_

18. If you answered question 16 with “yes”, how much have you donated this year altogether?  
\_\_\_\_\_ €

19. Have you ever received a donation receipt for your donation?

- always
- mostly
- occasionally
- never

20. Compared with how others live in Germany: Do you think you get your fair share, more than your fair share, somewhat less or very much less than your fair share?

- fair share
- more than fair share
- somewhat less than fair share
- very much less than fair share
- don't know

21. On the whole, I find the social differences in our country just.

- Completely agree.
- Tend to agree.
- Tend to disagree.
- Completely disagree.
- Don't know

22. The State must ensure that people can live a decent income even in illness, hardship, unemployment and old age.

- Completely agree.
- Tend to agree.
- Tend to disagree.
- Completely disagree.
- Don't know

23. It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes.

- Agree strongly.
- Agree.
- Neither agree nor disagree.
- Disagree.
- Disagree strongly.
- Can't choose.

-- STOP sign: Please do not turn the page until we ask you to! --

### Part 3

The participants of our study can be divided into two groups of equal size, which we call group A and group B. All participants who join the same session will be randomly assigned to **one** of the groups.

Participants in group A will shortly receive a further envelope which contains 20 Euros. The participants receive these 20 Euros **in addition** to the 40 Euros which participants of both groups receive. Participants in group B will receive **no** additional money.

Each participant in group A has the chance to give any desired amount of their 20 Euros to a participant from group B which will be randomly assigned. To this end, the participant in group A puts money into an envelope, which will later be given to a participant in group B. At no time will the participants in group A know which participants in group B have received their envelopes. It also applies that at no time, any participant in group B will know which person in group A the envelope is from. The participant in group B will receive the envelope even in the case that there is no money in it.

Drawing of the group:

The session which you participate in has randomly been assigned to group A. Therefore, you are a member of group A and receive an additional 20 Euros.

[The session which you participate in has randomly been assigned to group B. Therefore you are a member of group B. We now hand out to you an envelope which comes from a randomly selected participant of group A.]

-- STOP sign: Please do not turn the page until we ask you to! --

[Group B continues with the option to give general comments on the study. The following instructions are received by group A only.]

In the envelope, you find:

- one white envelope
- one yellow envelope
- 20 Euros, consisting of two 5 Euro-bills, as well as two 2 Euro-coins and six 1 Euro-coins
- one receipt

We now ask you to sign the receipt you find enclosed. By doing so, you confirm that you have received 20 Euros from ZEW. We only need the receipt for administrative purposes. Without a receipt we are not allowed to give you the money. Your data is still handled **confidentially** and **anonymously**. We will now collect the receipts. The study will continue hereafter.

-- STOP sign: Please do not turn the page until we ask you to! --

Please distribute the 20 Euros to the white and the yellow envelope. You keep the amount of money you put in the **white** envelope. The amount you put in the **yellow** envelope will be given to a participant in group B, which will later be randomly chosen. This participant will receive the envelope at the end of their experiment even if there is no money in it.

We guarantee that the transfer of the envelope will be carried out lawfully.

You make the decision whether and how much of the 20 Euros you want to distribute among you and an unknown participant **freely** and **anonymously**.

The study will be carried out in the following chronological order:

1.) Put the amount you wish to give to a participant of the experiment in the **yellow** envelope.

2.) Put the amount of money you wish to keep in the **white** envelope.

Finally, you should have distributed the 20 Euros completely to the two envelopes. Please note that any distribution in full amounts of Euros is possible. You may put any desired amount of money in both envelopes. It is also possible to put 20 Euros completely into one envelope.

3.) Write your ID-number in the predefined box on the **yellow** envelope.

4.) Seal up **both** envelopes.

When all participants have finished, we will come up to you and collect the **yellow** envelope. When we do so, please put the **yellow** envelope into the box. Please keep the **white** envelope.

We will explain the most important items once again orally. Afterwards, please make your decision as described above.

-- STOP sign: Please do not turn the page until we ask you to! --

We would like to ask you to write down general comments regarding our study. You *may* also give reasons for your donation decision. [11 empty lines follow.]

We would like to thank you for participating in our study and wish you a nice day! Please remember to take the white envelopes with you.

**Appendix C: Invitation letter used for recruitment of participants**  
**(translated from German)**

The following writing was sent to randomly selected households in the municipal area of Mannheim. The front page shows the logo of ZEW at the top of the letter, general contact information of the project manager and the following text:

**Ref.: Invitation to a scientific study on consumer behavior**

Dear Sir or Madam,

the Centre for European Economic Research (ZEW) Mannheim is a non-profit research institute in the field of applied economics. At present, ZEW is conducting a study on individual consumption decisions. In order to carry out our study, we are looking for participants. For this reason, we would like to invite you.

For your participation in the study, which lasts about **60 minutes**, you will receive **40 Euros in cash**. With the money, you will be able to make consumption decisions during the study. The money spent will be subtracted from the 40 Euros you received. If you do not spend any money, you will be paid out 40 Euros without deductions. In doing so, your decisions will be **voluntary and anonymous** at all times. Only the ZEW researcher team will know your identity. Your statements will be treated with the utmost discretion and according to the Data Protection Act.

Please consider the following requirements for the participation in the study:

- registration by phone;
- residence in Mannheim (verification with, for example, your identity card);
- very good knowledge of the German language;
- between 18 and 75 years old;
- arriving on time on the selected date and presenting this letter.

If you would like to take part in the study and meet the conditions mentioned above, please choose one of the dates listed on the next page and register by telephone. The selection of participants is carried out according to scientific criteria. The event will be taking place at the ZEW. At the end of the event, you will receive 40 Euros in cash minus the amount which you have possibly spent for your personal consumption. In case you have any further questions, please do not hesitate to call us at 0621/1235-395 from June 29<sup>th</sup> to July 15<sup>th</sup> 2009, 4pm to 6pm.

We are looking forward to welcome you as participant in our study.

Yours sincerely,

Sarah Borgloh (project manager)

The back page offers further information concerning the study:

**Registration:**

Please call from **June 29<sup>th</sup> to July 15<sup>th</sup> 2009** (Monday to Friday) between **4pm and 6pm** at the following number: 0621/1235-395. Please state the date (see below) at which you want to participate. Your name will be noted for the registration; however, as explained above, it will not be published or given to a third party. Please take note that with the reception of this letter, you do not have any claim to participate. The selection of participants will be carried out according to scientific criteria.

**Dates (day, date, time):**

Sat, July 18 <sup>th</sup> 2009, 9-10am	Tue, July 21 <sup>st</sup> 2009, 9-10am
Sat, July 18 <sup>th</sup> 2009, 11-12am	Tue, July 21 <sup>st</sup> 2009, 5-6pm
Sat, July 18 <sup>th</sup> 2009, 2-3pm	Tue, July 21 <sup>st</sup> 2009, 7-8pm
Mon, July 20 <sup>th</sup> 2009, 9-10am	Wed, July 22 <sup>nd</sup> 2009, 9-10am
Mon, July 20 <sup>th</sup> 2009, 5-6pm	Wed, July 22 <sup>nd</sup> 2009, 5-6pm
Mon, July 20 <sup>th</sup> 2009, 7-8pm	Wed, July 22 <sup>nd</sup> 2009, 7-8pm

It follows a map of the location of ZEW and general information about the ZEW taken from the homepage of ZEW, [www.zew.de](http://www.zew.de).