Dual-Process Reasoning in Charitable Giving:
Learning from Non-results

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Abstract

To identify dual process reasoning in giving, we exposed experimental participants making a charitable donation to vivid images of the charity’s beneficiaries in order to stimulate affect. We hypothesized that the effect of an affective manipulation on giving is larger when we simultaneously put the subjects under cognitive load using a numerical recall task. Independent treatment checks cast doubt on the reliability of our mainstream treatment manipulations and reveal opposite responses in men and women. Only women responded to the manipulations as expected, but even among women we find no evidence for dual-process decision-making. These results highlight the need for caution in the use of these common manipulations, the importance of independent manipulation checks, and the limitations of dual-process models for understanding altruistic behavior.

Keywords: cognitive load, dual-process, manipulation checks, charitable giving, dictator games, experimental economics.

JEL Codes: C91, D64.

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1 Introduction

Dual-process theories assert that decision making is comprised of two systems: a slow, deliberative cognitive system and a fast, intuitive affective system. These theories have been applied fruitfully to economic domains such as decision-making under risk or intertemporal choice (Loewenstein and O’Donoghue, 2004; Kahneman, 2011). More recent research has examined whether dual-process reasoning also underlies altruistic or cooperative behavior and whether people are instinctually selfish or altruistic.

Identifying dual-process reasoning requires an indirect approach as the processes under consideration cannot be observed directly. One method is to place the decision maker under cognitive load: if the cognitive system is occupied or taxed then behavior more strongly reflects the goals of the affective system. A problem with this approach is that if both systems approximately “agree” on the right amount of giving, manipulations of the cognitive system will not result in different decisions. This may well be the case in the rather abstract dictator games that are the focus of the literature and can explain why a growing number of studies implementing cognitive load yield inconclusive results.

To overcome this problem, we conducted a charitable-giving experiment with manipulations of both the affective and the cognitive system in a $2 \times 2$ design. Based on the model in Loewenstein and O’Donoghue (2004), we hypothesized that the affective manipulation would lead to stronger increases in dictator giving when the cognitive system is under load. This design avoids the problem mentioned above, by studying the effect of cognitive load on a experimentally induced change in giving rates driven by a shock to the affective system.

We chose manipulations that have been used with apparent success in many previous studies.

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1Neuroscientific evidence suggests that brain areas associated with cognitive and affective processing are active during the process of charitable giving (Moll et al., 2006; Sanfey et al., 2003; Knoch et al., 2006).

2Another approach looks at response times. Piovesan and Wengström (2009) finds that subjects who decide faster are more selfish in a modified dictator game. In contrast, Rand et al. (2012) and Rand (2013) find that faster subjects are more cooperative across a range of games. The usefulness of response time as a window into cognitive processes is not universally accepted (Tinghög et al., 2013; Recalde et al., 2014).

3Schulz et al. (2014) find that cognitive load makes dictators somewhat more generous, Hauge et al. (2016) do not find any difference, and Kessler and Meier (2014) find a small increase charitable giving that is not robust to small manipulations, Benjamin et al. (2013) finds a small negative effect and Cornelissen et al. (2011) finds that the effect of cognitive load depends on social value orientation.

4Small et al. (2007) also investigates both affective and cognitive processes using a $2 \times 2$ design. However, that study is not designed to separate the two systems, and some of the treatment manipulations may affect both the cognitive and the affective system simultaneously. Skitka et al. (2002) show that the effect of cognitive load on social attitudes depends upon a subject’s political leanings. More liberal subjects expressed more sympathy than conservatives towards a personally-responsible aid claimant under low cognitive load, but high load significantly reduced this correlation. This study was hypothetical and not incentivized. Furthermore, the affective manipulation was not induced in a randomized way but based on differences between subgroups.
To manipulate the cognitive system we asked participants to remember either a long or short string of numbers. Variations of this numeric recall tasks have been used in numerous studies published in both psychology and economics journals, including studies on dictator giving (see Footnote 3) and some classic studies that are heavily cited. The affective system manipulation consisted of vivid images of victims helped by the charity under consideration, a standard method used to induce affect (e.g. Olofsson et al., 2008), and featured individual refugees, playing on the identifiable-victim effect (Small et al., 2007). Some of the images were taken from the charity’s own website, reflecting real world communication strategies.

We performed independent behavioral checks of both manipulations to study whether they succeeded in manipulating cognitive and affective processes. The results show that the manipulations, despite being standard, did not work as intended. As a result, we do not find statistically significant effects of our treatments on aggregate giving levels. In light of previously documented gender differences in reaction to intuitive and deliberative manipulations (Rand et al., 2016), we examine men and women separately and find that they have opposite responses to both manipulations. Re-evaluating our results for women, for whom our treatments worked as we intended to, we still find no support for dual-process decision-making. These results raise important concerns for the study of dual-process theories and altruism, which we discuss in the final section.

2 Design

We conducted the experiments at the Frankfurt Laboratory for EXperimental economics (FLEX) at Goethe University Frankfurt with subjects randomly recruited from the FLEX subject pool using the online system ORSEE (Greiner, 2003). Participants received a show-up fee of €2 and made their decisions at individual computer terminals with an interface programmed using z-Tree (Fischbacher, 2007). Appendix B provides screenshots containing the instructions. We conducted 12 sessions, each lasting about 25 minutes and with 12 to 23 participants each, for a total of 224 participants.

Participants had the opportunity to donate to the German Red Cross (GRC) programs that provide aid to victims of conflict in Syria. After reading basic instructions on an introductory screen, participants advanced to a screen displaying information about the GRC programs in Syria. The text was adapted from the GRC website and described the victims of the conflict, the activities of the GRC, and how the activities help the victims. When reading this information, the participants did not yet know that they would be asked to make a donation to the GRC.

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5 For example, Shiv and Fedorikhin (1999) has over 1500 citations indexed by Google Scholar.
6 Skitka et al. (2002) and Hauge et al. (2016) assess the success of their respective manipulations, but use introspective self-reports, whereas ours are based on behavioral and out-of-sample measures.
A third screen introduced the cognitive manipulation, which consisted of a numeric recall task. Participants were given a number and told that on two subsequent screens they would be asked to add a single digit to the number and keep a running total in their head. This total was to be reported later in the session. Participants were not allowed to write or use electronic devices so this running total had to be calculated and stored in participants’ memories.

The starting number was 13 in the Low Load treatment and 13987 in the High Load treatment. The two numbers two be added were 7 and then 8, yielding interim and final totals of 20 and 28 in the Low Load treatment and 13994 and 14002 in the High Load treatment. This constitutes a small variation of the standard numeric recall task, in which a high load typically requires memorizing a single six or seven digit number. The purpose of requiring participants to perform recurrent addition tasks was to keep them engaged with the memory task throughout both the donation choice and the CRT stage. Because this increased the level of difficulty of the task, we used a slightly shorter number to avoid discouraging participants. Like Kessler and Meier (2014), we did not provide financial incentives for this recall task to avoid creating a disparity in income effects across experimental treatments.

We then gave participants an endowment of €10 and asked them to choose how much of it to donate to the GRC. This donation choice was our main outcome of interest and was made by selecting an amount from a menu of choices, enumerated whole euro amounts, from €0 to €10. Above the donation-choice menu, participants were asked to add 7 to the number they were shown on the previous screen and remember the running total, thus extending the cognitive load manipulation.

Next, participants took a version of the cognitive reflection test (CRT) (Frederick, 2005) and were also asked to add 8 to the running total in their head. This was our first manipulation check, as the CRT is designed to assess participants’ ability to overcome an intuitive incorrect answer in favor of a correct answer that requires more reflection. Our version of the CRT consisted of four questions. Lower CRT performance in the High Load treatment would be consistent with an effective cognitive manipulation (Johnson et al., 2014). After the subjects completed the CRT, they advanced to a screen where they were asked to input the memorized number. Participants then completed a brief questionnaire, the purpose of which was to collect basic demographic information and to return them to a more neutral cognitive state. As a further manipulation check, after the load had been lifted we gave subjects the unexpected opportunity to revise their donation decisions. Larger and more frequent revisions in the High Load treatment would be consistent with an effective cognitive manipulation.

The affective manipulation consisted of displaying images chosen to increase empathy for the conflict victims and willingness to donate to a charity that helps them. In the High Affect treatment, three screens (the GRC-information screen, the donation screen, and the revised

\footnote{The CRT questions we used are available in the Appendix.}
donation screen) featured evocative images of victims and aid workers in areas affected by conflict in Syria. The images were chosen to elicit affective responses without providing additional information about the conflict victims or the charity. Three of those images had been taken from the GRC website, so this manipulation reflects the actual communication strategy of the GRC.8 The same four images were shown on each screen. In the Low Affect treatment, no images were displayed on any screens.

**Power.** For our design, it was important to generate a sizable effect of the affective manipulation, so we could study how it varied in different cognitive load treatments. We computed the affective treatment effect that we could have detected at the 5% level with 80% power on a two-sample test of means. For the overall sample with a size of 112 in each of the affect treatments and using the fact that the mean donation in the Low Affect treatment is 4.13, we could have rejected the null hypothesis of no treatment effect for an effect size of 0.35, implying a mean donation in the High Affect treatment of 4.76. Below we separately examine the subsample of women. Assuming a sample size of 52 in each treatment and using a mean donation of 4.24, we could have rejected the null hypothesis of no treatment effect in this subsample for an effect size of 0.55, implying a mean donation in the High Affect treatment of 4.79.

**Hypotheses**

We base our hypotheses on the model in Loewenstein and O’Donoghue (2004), which gives a rather literal interpretation of the dual-system approach. The authors argue that optimal level of giving may differ between the affective and cognitive systems, in which case the resulting donation level will lie somewhere in between. The degree to which the cognitive system will be able to influence the decision away from the ‘affective optimum’ towards the ‘cognitive optimum’ depends on contextual factors, such as the degree of depletion of the cognitive system and the presence of other tasks that require cognitive attention.

This experiment departs from previous studies by featuring not only a cognitive manipulation, but also a manipulation designed to increase the level of giving desired by the affective system. The use of pictures to evoke affect is standard in social psychology (Olofsson et al., 2008) and is designed to increase pity and compassion. Moreover, focusing on individual victims can increase giving through ‘the identifiable victim effect’, which is typically associated with the affective system (see Kogut and Ritov, 2005; Small et al., 2007).

We thus hypothesize that High Affect will increase the amount of giving favored by the affective system, leading to higher donations. Moreover, under High Load, the cognitive system will have less capacity available to influence the decision away from the ‘affective optimum’ than

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8The fourth image was slightly more graphic and featured a urban area after a bombardment, with residents gathering around destroyed properties. It was added to increase the affective shock from the images.
under Low Load. Thus, we hypothesize that the increase in giving will be larger under High Load than under Low Load. In other words, under High Load, we expect the ‘whims’ of the affective systems to have a more powerful influence on behavior than under Low Load.

3 Results

We first examine the effectiveness of the cognitive and affective manipulations and then turn to an analysis of the charitable giving choices.

3.1 Effectiveness of the Cognitive Manipulation

In the Low Load treatment, 98 out of 112 participants (88%) correctly reported the number they were asked to compute and 74 out of 112 (66%) did in the High Load treatment. Thus, it seems that the High Load task was indeed harder than the Low Load task. Relative performance notwithstanding, the fact that the majority of High Load participants reported the number correctly indicates that they were taking the task seriously.9

**CRT performance.** The average number of CRT questions answered correctly was 1.60 out of 4 in both load treatments, so on the basis of performance we cannot reject the possibility that the cognitive manipulation was ineffective. Note that this goes against the evidence in Johnson et al. (2014), who find that load, imposed using a similar memory task, does decrease CRT performance. Low Load participants took on average 94 seconds to answer the questions, while they took on average 103 seconds in the High Load treatment. This difference of 9 seconds (10%) is not significant at the 10% level ($p = 0.115$, $t$-test).10 The absence of any significant differences in performance and completion time casts doubt on the effectiveness of the manipulation.

There is evidence that women perform differently on the CRT test (Frederick, 2005), so we disaggregate CRT performance and speed by gender. This reveals a divergent response to cognitive load. Figure 1 shows the mean CRT score and response time across genders and load treatments. Women in the High Load treatment answer on average 1.27 out of 4 CRT questions correctly, which is lower than the 1.51 average score for women in the Low Load treatment,108

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9Eighteen High Load participants reported an incorrect number, but were close to either the final number or the intermediate number, or omitted one of the digits of the correct number. These participants tried to complete the task and were likely still under cognitive load while choosing the donation amount. Pooling these with those who reported correctly suggests that at least 81% of the participants spent cognitive resources on the task in the High Load condition.

10Unless noted otherwise, reported $p$-values are for Mann-Whitney U (MWU) tests, for which the null hypothesis is equal distributions. An interpretation in terms of changes in means can be made if we assume that the other parameters of the distribution are the same. Where appropriate, we also performed $t$-tests of differences of means, which did not change the conclusions.
although not significantly so ($p = 0.170$). Similarly, women’s average response time increases from 96.5 seconds to 115.9 seconds from the High Load to Low Load treatments, which is a significant difference ($p = 0.020$, t-test). In contrast, men’s average performance increases from 1.67 to 1.94 from Low to High Load treatments ($p = 0.203$), and their average response time drops trivially from 92.8 to 90.1 ($p = 0.364$, t-test). As Figure 1 indicates, these opposite tendencies by men and women result in a large gender gap under high load, both with respect to performance ($p = 0.002$) and decision time ($p = 0.004$, t-test).11

**Donation revisions.** In addition, we judge the cognitive manipulation by evaluating how subjects revised their decisions after cognitive load was lifted.12 The average participant revised her donation downward by €0.38 and 34 percent of participants made a non-zero revision. Consistent with the idea that high load impairs decision making, downward revisions were larger on average in the High Load treatment (€0.48) than in the Low Load treatment (€0.29), but not significantly so ($p = 0.404$, t-test). While 26 percent in the Low Load treatment chose to revise the original donation amount, this increased significantly to 42 percent in the High Load treatment ($p = 0.016$, Fisher Exact Test (FET)). These latter results constitute the only statistically significant evidence that is consistent with the expected effect of the cognitive load.

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11We find a gender difference in CRT performance overall. The average number of correct answers is lower significantly ($p = 0.01$, t-test) lower for women (1.41) than for men (1.77), echoing the results in Frederick (2005).

12In the High Affect treatment the images shown before and with initial donation choice were also provided in the revision screen, so that the affect treatment was maintained.
manipulation.

Figure 2a shows the fraction of subjects who revised their decision by gender and by cognitive load. Revision rates are higher in the High Load treatment for both sexes, consistent with the idea that reflection is impaired in this treatment. However, while this increase is significant for women ($p = 0.016$, FET), it is not for men ($p = 0.417$, FET). Figure 2b shows the average size of revisions by gender and cognitive load. Men do not respond to higher load with a higher average revision size. Women do but the effect is not statistically significant.

![Graphs showing revision rate and mean revision size by gender and cognitive load.](image)

(a) Revision rate in percentages.  
(b) Mean revision size in euros.

Figure 2: Revised donations by cognitive load and gender with 95% confidence intervals

**Result 1** Although subjects took the task seriously, there is little evidence that the cognitive load treatment was effective on aggregate, with men and women displaying different effects on both CRT performance and revision rates.

### 3.2 Effectiveness of the Affect Manipulation

To understand whether the affective manipulation actually increased the level of giving preferred by the affective system, we elicited affect ratings from participants in other, independent sessions.\(^{13}\) These participants only reported their feelings and were not asked to make any donation. They were presented with the same information about the GRC as in the main experiment and shown the same vivid images of the conflict in Syria in the High Affect treatment, but not in the

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\(^{13}\)These subjects had participated in another, unrelated experiment and were asked before they were paid to complete one final, unrelated and unpaid task.
Low Affect treatment. Next they completed a six-item Likert scale pertaining to their feelings about victims of the conflict in Syria and the GRC programs assisting those victims. The items included declarations of feelings of pity, sympathy, compassion, and an obligation to help the victims of conflict in Syria, as well as the desire to do more to help the victims, and a statement of approval of the GRC’s programs in Syria. The scale featured six levels of agreement or disagreement and did not include a neutral option. Finally, participants completed the same questionnaire as in the donation experiment. Ninety participants in ten sessions completed the affect ratings, of whom 44 percent identified as male.

Table 1: Affect score by treatment & gender

|                | Low Affect | High Affect | Total |
|----------------|------------|-------------|-------|
| Female         | 13.7       | 15.4        | 14.5  |
| N              | 27         | 23          | 50    |
| Male           | 14.5       | 13.8        | 14.2  |
| N              | 23         | 17          | 40    |
| Total          | 14.1       | 14.8        | 14.4  |
| N              | 50         | 40          | 90    |

For each item, we mapped responses to numerical scores from zero to five, with zero corresponding to strong disagreement and five corresponding to strong agreement. For each individual we summed these scores over the six items, yielding a total affect score with a range of 0 to 30. The overall average affect score was 14.4 with a standard deviation of 5.6. Table 1 breaks down the affect score by gender and affect treatment. We cannot reject the hypothesis that the affect score is distributed the same across both affect treatments ($p = 0.643$), nor can we reject the hypothesis that giving is the same across gender ($p = 0.705$).

Looking at treatment effects by gender, the average score for women increases from 13.7 to 15.3 when shown the images of conflict victims ($p = 0.402$). Men respond to the images with a drop in average score from 14.5 to 13.8 ($p = 0.752$). However, since the aggregate score combines different answer distributions it has high variance and the test has relatively low power. We therefore look at individual Likert items, which suggests different affective responses across gender. In each affect dimension, average women’s ratings go up with the display of pictures, except for the “help” measure, for which there is no change. These changes are at or close to marginal significance levels for feelings of pity and compassion ($p = 0.103$ and $p = 0.068$, respectively). This contrasts with the men, whose average rating decreases under High Affect in 4 out of 6 dimensions, with statistical significance when it comes to approval of the GRC’s

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The full text of the Likert items is available in the Appendix.

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14The full text of the Likert items is available in the Appendix.
activities ($p = 0.077$). These opposite reactions lead women to have weakly higher scores for all items under High Affect, with virtual ties for “help” and “sympathy” and marginally significant differences for compassion ($p = 0.069$) and approval ($p = 0.056$).\footnote{While our data do not provide any evidence as to why men and women exhibit opposite reactions to the images, one possibility is that images of foreign victims may trigger group identity. Men are known to act less positively towards out-group members than women (Winterich et al., 2009).}

**Result 2** A display of vivid pictures has a weak positive effect on women’s affect across the board, with more pronounced increases in pity and compassion. For men, the opposite is true, as affect ratings go down in most dimensions.

### 3.3 Analysis of Donation Choices

Figure 3a shows the mean initial donation levels across treatments. The overall mean donation was €4.07, so the average subject took home €7.93, including the €2 show-up fee. The 113 High Affect participants gave 4.02 on average, which is not higher than the 4.13 average for the 111 Low Affect participants. Under Low Load, the average donation did increase slightly from 4.07 ($N = 56$) in the Low Affect treatment to 4.30 ($N = 56$) in the High Affect treatment, but it actually decreased from 4.18 ($N = 55$) to 3.74 ($N = 57$) in the High Load treatment. This is inconsistent with our hypothesis that there would be a larger jump in giving under High Load. A series of two-sided Mann-Whitney U (MWU) tests do not reject the null hypothesis that the donation distributions are the same when comparing any two treatments.\footnote{A multivariate OLS analysis also fails to find statistically significant effects of our treatments or their interaction. We also do not find a direct relation between CRT scores and giving, as some other authors have reported (Ben-Ner et al., 2004). The only significant result, which comes at the 10% level, occurs for the interaction between gender and affect, with males responding to High Affect by reducing their donation by 1.344.}

**Result 3** There are no significant differences in donation levels across treatments.

Having found above that our manipulations affect women in the intended manner, but not men, we re-examine women’s donation decisions. Overall, women contribute on average 88 cents more than men (4.54 vs. 3.66) and the distribution of their donations are significantly different ($p = 0.012$) from that of men’s donations.\footnote{Appendix A provides more details on giving differences between men and women.} Figure 3b shows mean giving levels for women, by treatment. Under Low Load, the mean initial donation increased from 4.33 to 5.21 in response to the affect manipulation, a difference of 0.88 ($p = 0.288$). Under High Load, the mean donation increased from 4.16 to 4.61, a difference of only 0.45 ($p = 0.0734$). Thus, if anything, higher cognitive load causes a smaller increase in giving and our test provides no support for the dual-process model.
Result 4  Women increase giving in response to our affect manipulation, but cognitive load does not lead to a larger increase.

4 Discussion and conclusion

To identify dual process reasoning in altruistic decisions, we attempted to manipulate the cognitive and affective system in a giving task, using commonly-used procedures. Our treatment checks show no aggregate effects of these manipulations and we find no effect aggregate giving levels. On closer examination, we find that women’s cognitive function suffers under the load we imposed, but not men’s, and that a display of vivid pictures raises women’s affective ratings but lowers men’s. Behavior among women, the group in which the manipulations had the expected effects, was not consistent with the dual-process model.

These observations contain several lessons for the nascent field of dual-process research in economics. First, the effects of even standard treatment manipulations may depend on unanticipated details. In the case of cognitive load, we are strengthened in this belief by a number of recent studies that find conflicting or null results from this manipulation (see Footnote 3). For example, Kessler and Meier (2014) find that the effect of cognitive load manipulations depends on whether the manipulation was implemented early or late in the experiment.\footnote{Using a similar manipulation, Balafoutas et al. (2015) find that ego depletion moderates social preferences, which may explain why suppressing the cognitive system produces such inconsistent effects on giving behavior.}

Second, manipulations may have different effects on different subgroups. This finding is
consistent with that of Rand et al. (2016), who find that promoting intuition relative to deliberation increases giving among women, but not men, and argue that whether one is intuitively altruistic or selfish may depend on who you are. The response to the treatments might depend on other characteristics such as education level or age, of which there was little variation in our study. Together, these two points underline the importance of a critical evaluation of these manipulations and the use of independent treatment checks.

Third, our results among the female sample are not consistent with the idea that cognitive capacity constrains the “whims” of the affective system. If anything, we observed a lower impact of affective manipulations under cognitive load. While more research is obviously needed, this finding does not agree with most standard interpretations of the dual-system approach.

Thus, our results show the challenges involved in testing the dual-process model. As psychologists and neuroscientists have long realized, this model is a metaphor for a much more complex interaction of different distributed modules in the brain. Despite the popularity of this metaphor, there is an ongoing debate about its cogency, its usefulness for scientific practice, and the robustness of the supporting evidence (e.g. Keren and Schul, 2009; Evans and Stanovich, 2013; Carter and McCullough, 2014). There is increasing evidence that the relation between behavior and affective and cognitive manipulations is very complex.\textsuperscript{19} This suggests that treatments based on highly simplified models of the brain may fail to generate consistent results.

\textsuperscript{19}For example, De Neys and Schaeken (2007) find that people are more logical under cognitive load, Blanchette et al. (2014) show that increasing affect may improve reasoning when the emotions are relevant to the decision in question, and Lench and Bench (2015) provide evidence that affective reactions can reduce judgement biases.
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Appendix A: Detailed donation results.

Tables 2 and 3 provide mean donation levels by treatment for women and men, respectively. On closer inspection, it appears that the gender difference is due to opposite reactions to the pictures of victims displayed in the High Affect treatment. While women increase their donations, men decrease them. This is in line with their reaction to our treatment manipulations in our independent check, inspiring confidence that the treatment did indeed have the hypothesized effect. Pooling both cognitive load treatments, the mean giving numbers when affect is high are 4.91 for women and 3.38 for men. A MWU test rejects the null hypothesis of equal distributions between men and women under high affect at the 1% level ($p = 0.0048$).

Table 2: Mean donations made by women

|               | Low Affect | High Affect | Total |
|---------------|------------|-------------|-------|
| Low Load      | 4.33       | 5.21        | 4.75  |
| N             | 27         | 24          | 51    |
| High Load     | 4.16       | 4.61        | 4.35  |
| N             | 31         | 23          | 54    |
| Total         | 4.24       | 4.91        | 4.54  |
| N             | 58         | 47          | 105   |

Table 3: Mean donations made by men

|               | Low Affect | High Affect | Total |
|---------------|------------|-------------|-------|
| Low Load      | 3.83       | 3.63        | 3.72  |
| N             | 29         | 32          | 61    |
| High Load     | 4.21       | 3.15        | 3.59  |
| N             | 24         | 34          | 58    |
| Total         | 4.00       | 3.38        | 3.66  |
| N             | 53         | 66          | 119   |
Appendix B: Screenshots and Instructions.

English translation of the text of the affect rating Likert items:

1. I feel pity for the victims of conflict in Syria
2. I feel sympathy for the victims of conflict in Syria
3. I feel compassion towards the victims of conflict in Syria
4. I feel an obligation to help the victims of conflict in Syria
5. I should do more to help the victims of conflict in Syria
6. I approve of the GRC's programs in Syria
Herzlich Willkommen! Sie nehmen nun an einem wirtschaftswissenschaftlichen Experiment teil, das von diversen Forschungsförderungsstellen finanziert wird. Bitte nehmen sie alles vom Tisch (Jacken, Taschen, Stifte) und schalten Sie Ihr Handy aus.

Bitte lesen Sie die Instruktionen genau durch. Es wird Ihnen alles erklärt, was Sie für die Teilnahme am Experiment wissen müssen. Falls Sie Fragen haben, melden Sie sich bitte. Ihre Frage wird dann an Ihrem Platz beantwortet. Ansonsten gilt während des ganzen Experiments ein absolutes Kommunikationsverbot.

Jeder Teilnehmer erhält für sein Kommen ein Startgeld von 2 Euro; dies wird am Ende des Experiments ausbezahlt. Im Verlauf des Experiments können Sie zusätzlich Geld verdienen. Am Ende des Experiments erhalten Sie das Einkommen, das Sie im Verlauf des Experiments verdient haben, plus das Startgeld in bar. Die Auszahlung erfolgt privat. Kein anderer Teilnehmer, oder der Experimentleiter, werden von Ihren Entscheidungen erfahren.
In der ersten Phase des Experiments werden wir Ihnen einige Informationen über den Bürgerkrieg in Syrien und die dortigen Aktivitäten des Deutschen Roten Kreuzes (DRK) geben, welche teilweise von der Internetseite des DRK stammen. Diese Informationen sind später für das Experiment relevant.

Wie Sie wahrscheinlich gehört haben herrscht in Syrien ein Bürgerkrieg in dem tausende Menschen ihr Leben verloren haben. Die humanitäre Situation in Syrien verschlechtert sich weiterhin dramatisch. Viele Häuser sind zerstört worden. Mehr als sechs Millionen Menschen sind von dem bewaffneten Konflikt und seinen Auswirkungen betroffen. Viele Syrer haben ihre Wohnorte verlassen, suchen Schutz vor Gewalt in Flüchtlingslagern – im eigenen Land und jenseits der Grenzen. Über 1,5 Millionen Menschen sind bereits aus Syrien geflüchtet, über 4 Millionen sind innerhalb des Landes auf der Flucht.

Seit Anfang 2012 hilft das Deutsche Rote Kreuz trotz schwieriger Sicherheitslage in Syrien, gemeinsam mit dem Internationalen Komitee vom Roten Kreuz und dem Syrischen Roten Halbmond. Das DRK beteiligt sich mit Hilfslieferungen und Unterstützung für die betroffenen Familien. In Notunterkünften erhalten sie Essen, wärmende Decken, ein Bett und werden medizinisch versorgt. In 2013 werden 63.000 Familien mit Hygiene- und 30.000 Lebensmittelpaketen versorgt und 30.000 Lebensmittelpaketen verteilt.
In der ersten Phase des Experiments werden wir Ihnen einige Informationen über den Bürgerkrieg in Syrien und die dortigen Aktivitäten des Deutschen Roten Kreuzes (DRK) geben, welche teilweise von der Internetseite des DRK stammen. Diese Informationen sind später für das Experiment relevant.

Wie Sie wahrscheinlich gehört haben herrscht in Syrien ein Bürgerkrieg in dem tausende Menschen ihr Leben verloren haben. Die humanitäre Situation in Syrien verschlechtert sich weiterhin dramatisch. Viele Häuser sind zerstört worden. Mehr als sechs Millionen Menschen sind von dem bewaffneten Konflikt und seinen Auswirkungen betroffen. Viele Syrer haben ihre Wohnorte verlassen, suchen Schutz vor Gewalt in Flüchtlingslagern - im eigenen Land und jenseits der Grenzen. Über 1,5 Millionen Menschen sind bereits aus Syrien geflüchtet, über 4 Millionen sind innerhalb des Landes auf der Flucht.

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Im Rest des Experiments werden wir Sie bitten einige Entscheidungen zu treffen, während Sie versuchen sich an einige Zahlen zu erinnern. Unten finden sie eine zweistellige Zahl. Bitte prägen Sie sich diese ein. Während des Experiments werden wir Ihnen zwei weitere Zahlen mit jeweils einer Stelle zeigen. Diese Zahlen sollen Sie zu der Zahl, welche Sie hier unten sehen, dazu addieren und sich die Summe merken. Am Ende der Studie werden sie gebeten die Summe aller drei Zahlen anzugeben. Sie werden nicht dazu in der Lage sein die Zahlen irgendwo aufzuschreiben, daher müssen Sie sich die Zahlen merken und im Kopf addieren.

Ihre Zahl ist:

1 3

Bitte nehmen sie sich einen Moment um sich die Zahl einzuprägen. Wenn Sie bereit sind fortzufahren, klicken sie den "OK" Button.
Im Rest des Experiments werden wir Sie bitten einige Entscheidungen zu treffen, während Sie versuchen sich an einige Zahlen zu erinnern. Unten finden sie eine fünfstellige Zahl. Bitte prägen Sie sich diese ein. Während des Experiments werden wir Ihnen zwei weitere Zahlen mit jeweils einer Stelle zeigen. Diese Zahlen sollen Sie zu der Zahl, welche Sie hier unten sehen, dazu addieren und sich die Summe merken. Am Ende der Studie werden sie gebeten die Summe aller drei Zahlen anzugeben. Sie werden nicht dazu in der Lage sein die Zahlen irgendwo aufzuschreiben, daher müssen Sie sich die Zahlen merken und im Kopf addieren.

Ihre Zahl ist:

1 3 9 8 7

Bitte nehmen sie sich einen Moment um sich die Zahl einzuprägen. Wenn Sie bereit sind fortzufahren, klicken sie den "OK" Button.
Denken Sie an die vorher erhaltenen Informationen über die Aktivitäten des DRK's in Syrien. Wir geben Ihnen nun 10 zusätzliche Euro. Ihre Aufgabe ist es, diese 10 Euro zwischen Ihnen selbst und den Aktivitäten des Deutschen Roten Kreuzes in Syrien aufzuteilen. Ihre Auszahlung ist 10 Euro abzüglich der Spende plus der 2 Euro Startgeld.

Am Ende des Experiment werden wir alle Spenden an das Deutsche Rote Kreuz weiterleiten um dessen Aktivitäten in Syrien zu unterstützen. Sie können uns kontaktieren falls Sie zusätzliche Information über die Spenden erhalten wollen.

Bitte addieren Sie 7 zu der Zahl die wir Ihnen vorher gezeigt haben und prägen Sie sich die Summe ein. Bis zum Ende des Experiment zeigen wir Ihnen EINE weitere Zahl, die zu dieser Summe addiert werden soll.

Bitte wählen Sie Ihre Spende an das DRK.

Meine Spende:
- 0 euro
- 1 euro
- 2 euro
- 4 euro
- 5 euro
- 6 euro
- 7 euro
- 8 euro
- 9 euro
- 10 euro
Denken Sie an die vorher erhaltenen Informationen über die Aktivitäten des DRK’s in Syrien. Wir geben Ihnen nun 10 zusätzliche Euro. Ihre Aufgabe ist es, diese 10 Euro zwischen Ihnen selbst und den Aktivitäten des Deutschen Roten Kreuzes in Syrien aufzuteilen. Ihre Auszahlung ist 10 Euro abzüglich der Spende plus der 2 Euro Startgeld.

Am Ende des Experiment werden wir alle Spenden an das Deutsche Rote Kreuz weiterleiten um dessen Aktivitäten in Syrien zu unterstützen. Sie können uns kontaktieren falls Sie zusätzliche Information über die Spenden erhalten wollen.

Bitte addieren Sie 7 zu der Zahl die wir Ihnen vorher gezeigt haben und prägen Sie sich die Summe ein. Bis zum Ende des Experiment zeigen wir Ihnen EINE weitere Zahl, die zu dieser Summe addiert werden soll.

Bitte wählen Sie Ihre Spende an das DRK.

Meine Spende:

- 9 euro
- 1 euro
- 2 euro
- 3 euro
- 4 euro
- 5 euro
- 8 euro
- 7 euro
- 9 euro
- 10 euro
Bitte addieren Sie 8 zu der Summe die Sie sich merken sollten. Prägen Sie sich diese neue Summe ein. Vor Abschluss des Experiments werden wir Sie nach dieser Summe fragen.

Bitte beantworten Sie folgende Fragen. Sie haben insgesamt 120 Sekunden, oder 30 Sekunden pro Frage Zeit. Klicken Sie auf "OK" wenn Sie fertig sind.

Teile 30 durch 1/2 und addiere 10. Wie lautet die Antwort?

Ein Schläger und ein Ball kosten insgesamt 1,10 euro. Der Schläger kostet 1 euro mehr als der Ball. Wie viel kostet der Ball?

Ein Doktor gibt Ihnen drei (3) Pillen und erklärt Ihnen alle halbe Stunde Eine zu nehmen. Wie viele Minuten dauert es, bis Sie keine Pillen mehr übrig haben?

In einem See gibt es Seerosen. Jeden Tag verdoppelt sich die Anzahl an Seerosen. Wenn es 48 Tage dauert bis die Seerosen den gesamten See bedecken, wie lange würde es dauern für die Hälfte des Sees bedeckt ist?
Bitte tragen Sie die Gesamtsumme aller Zahlen, die wir Ihnen gezeigt haben, ein. Erinnern Sie sich, dass Sie gebeten wurden, zu einer zweistelligen Zahl zwei unterschiedliche einstellige Zahlen dazu zu addieren. Bitte tragen Sie die korrekte Summe unten ein.
Bevor wir das Experiment beenden, bitte geben Sie die folgenden Informationen ein:

**Geschlecht:**
- Weiblich
- Mannlich

**Studienfach:**
- Betriebs- oder Volkswirtschaft
- Technik
- Naturwissenschaft
- Mathematik
- Sozialwissenschaften
- Geisteswissenschaften
- Sonstiges

3. Wie oft haben Sie an Experimenten im FLEX Labor teilgenommen?
- Nie
- Einmal
- Zweimal
- Dreimal
- Mehr als Dreimal

4. Wie oft spenden Sie an wohltätige Organisationen?
- Nie
- Fast nie
- Von Zeit zu Zeit
- Ver
- Sehr oft

5. Die Fragen, die Sie vor ein paar Minuten beantwortet haben, sind Teil des Cognitive Reflection Test. Haben Sie schon mal von diesem Test gehört?
- Nein
- Weiß nicht
- Ja

6. Würden Sie sagen, dass Sie sich eher aus rationalen oder emotionalen Gründen für Ihre Spende entschieden haben?
- Rationalen Gründen
- Weiß nicht
- Emotionalen Gründen
Danke für die Teilnahme an dem Experiment.

Erinnern Sie sich an die zusätzlichen 10 Euro für die Teilnahme an dieser Studie. Weiter vorn haben Sie angegeben wie viel dieses Betrages Sie dem DRK spenden wollen.

Bevor das Experiment endet, haben Sie die Möglichkeit die Höhe Ihrer Spende an das DRK zu revidieren. Bitte wählen Sie unten den Betrag den Sie spenden wollen. Wir werden diesen neuen Betrag, unabhängig von dem vorher eingetragenen Betrag, verwenden. Ihre Auszahlung ist 10 Euro abzüglich der Spende plus der 2 Euro Startgeld.

Am Ende des Experiment werden wir alle Spenden an das Deutsche Rote Kreuz weiterleiten um dessen Aktivitäten in Syrien zu unterstützen. Sie können uns kontaktieren falls Sie zusätzliche Information über die Spenden erhalten wollen.

Bitte wählen Sie ihre Spende an das DRK.

Meine Spende:
- 0 euro
- 1 euro
- 2 euro
- 3 euro
- 4 euro
- 5 euro
- 6 euro
- 7 euro
- 8 euro
- 9 euro
- 10 euro
Danke für die Teilnahme an dem Experiment.

Erinnern Sie sich an die zusätzlichen 10 Euro für die Teilnahme an dieser Studie. Weiter vorn haben Sie angegeben wie viel dieses Betrages Sie dem DRK spenden wollen.

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Bitte wählen Sie Ihre Spende an das DRK.

Meine Spende:
- 0 euro
- 1 euro
- 2 euro
- 3 euro
- 4 euro
- 5 euro
- 6 euro
- 7 euro
- 8 euro
- 9 euro
- 10 euro
Das Experiment ist jetzt zu Ende, vielen Dank für Ihre Teilnahme.

Wichtig: Um Ihre Bezahlung zu erhalten, müssen Sie diesen Instruktionen folgen. Wir geben Ihnen nun einen Beleg über die 10 Euro die Sie während des Experiment der Spende) und den 2 Euro Startgebühr: insgesamt 12 Euro. Bitte schreiben Sie Ihren Namen oben auf den Beleg und unterschreiben Sie den Beleg auf der Unterseite.

Anschliessend falten sie das Papier auf die Rückseite und merken Sie sich Ihre ID Nummer:

1

Dies ist Ihre ID Nummer. Wir verwenden diese ausschließlich um Ihnen Ihre Zahlung zuzuordnen.

Wenn der Experimentleiter Sie an den Bezahlungstisch ruft, werfen Sie den Beleg in die vorgesehene Box. Der Experimentleiter wird den Umschlag mit Ihrer Bezahlung vorbereiten und an den Assistenten weitergeben. Nennen Sie dem Assistenten Ihre ID Nummer. Dieser wird Ihnen Ihren Umschlag aushändigen. Somit wird Ihre Anonymität gewährleistet.

Die Zahlung beträgt 12 minus der Spende. Ihre Spende war 2, und Ihre Auszahlung ist:

\[ 12 - 2 = 10 \]

Wenn alle Teilnehmer fertig sind, und die Auszahlungen vorbereitet worden sind, werden wir Sie bitten nacheinander nach vorne zu kommen. Wenn Sie Ihre Zahlung erhalten und geprüft haben dürfen Sie gehen.

Vielen Dank für Ihre Geduld und Mitarbeit.
**Instructions in English**

**Welcome Screen**

This is an experiment in the economics of decision-making. Several research institutions have provided funds for this research. Please do not talk, exclaim, or try to communicate with other participants during the experiment. Please put away all outside materials (such as book bags, notebooks, cellphones) before starting the experiment.

Please read the instructions carefully. They tell you everything you need to know to participate in the experiment. If you have a question during the experiment, raise your hand and an experimenter will come to your seat to assist you. Otherwise, no talking is allowed during the experiment.

Each participant will receive fee of 2 euros simply for showing up to the experiment; this will be paid at the end of the session. In the course of the experiment, you may also earn money. Your pay at the end of the session will be show-up fee plus the income that you have earned during the experiment. The payoff is private. No other participants or the experimenter will learn from your decisions.

**Charity Information**

In the first phase of the experiment, we will give you some information about the civil war in Syria and the local activities of the German Red Cross (DRK), which partly originate from the website of the DRC. This information is relevant for the experiment later.

As you've probably heard, Syria has been experiencing a civil war in which thousands of people have lost their lives. The humanitarian situation in Syria continues to deteriorate dramatically. Many houses have been destroyed. More than six million people are affected by the armed conflict and its consequences. Many Syrians have left their homes, seeking shelter from violence in refugee camps - in their own country and beyond the borders. More than 1.5 million people have fled Syria, more than 4 million are displaced within the country.

Despite the difficult security situation in Syria, the German Red Cross, together with the International Committee of the Red Cross and the Syrian Red Crescent, has been helping since the beginning of 2012. The DRK has provided relief supplies and support for the families affected. In shelters they receive food, warm blankets, a bed and medical care. In 2013, the DRK provided 63,000 families with hygiene packages and it distributed 30,000 food parcels.

**Cognitive Load**

In the remainder of the experiment, we will ask you to make some decisions while you try to remember some numbers. Below you will see a two digit number. Please memorize this number. During the remainder of the study, we will display two other numbers, each just a single digit. You should add these numbers to the number that you see below, keeping the sum of the numbers in your head. At the end of the study you will be asked to state this sum of all three numbers. You will not be able to write down the numbers anywhere, so you will have to remember and add them in your head.
Your number is 13

Please take a moment to memorize this number. When you are ready to continue, click the "OK" button.

Donation Choice

Recall that we previously provided you with some information about the DRK's activities in Syria. We now give you an additional 10 euro. Your task is to divide these 10 euros between yourself and the activities of the German Red Cross in Syria.

At the end of the experiment, you will be paid the 10 euros, minus your donation plus your 2 euros show-up fee.

Please add 7 to the number we showed you before and remember the total. Before the end of the experiment, we will show you ONE more number to be added to this total.

Please choose how much of the 10 euro you would like to donate to the DRK.

Cognitive Reflection Test

Please add 8 to the total you are keeping in your head. Remember the new total. Before the end of the experiment, we will ask you for this total.

Divide 30 by \( \frac{1}{2} \) and add 10. What is the answer?

A bat and a ball cost a total of 1.10 euros. The bat costs 1 euro more than the ball. How much does the ball cost?

A doctor gives you three (3) pills, and tells you to take one every half an hour. How many minutes will it be until you no longer have any pills?

In a lake there are water lilies. Every day the number of water lilies doubles. If it takes 48 days for the water lilies cover the entire lake, how long it would take for them to cover half the lake?

Number Recall

Please enter the total of all the numbers that we have shown you. Recall that there was a two-digit number, to which we asked you to add two different single-digit numbers. Please enter the correct total below.

Questionnaire

Before we conclude the experiment, please provide the following information about yourself:

1. Gender: _Female _Male
2. Field of studies: _Business and Economics _Engineering _Physical Sciences _Mathematics _Other 
   Social Sciences _Arts and Humanities _Other
3. How frequently have you participated in experiments at the FLEX lab? _Never before today
   _Once before _Twice before _Three times before _More than three times before
4. How frequently do you donate to charities or causes outside of the laboratory? _Never _Very
   infrequently _Infrequently _Frequently _Very frequently
5. The questions you answered while remembering your number were part of the Cognitive
   Reflection Test. Have you ever heard of this test or seen any of these questions before? _No
   _Not sure _Yes
6. Would you say that you chose your donation for rational or emotional reasons? _Rational
   reasons _I don’t know _Emotional reasons

Revise Donation

Thank you for participating in this experiment.

Recall that we gave you an additional 10 euros for participating in this study. Previously, you told us how
much of this you would like to donate to the DRK.

Before we end the experiment, you have a chance to revise the amount you would like to donate to the
DRK. Please enter a number below for your donation amount. We will use that amount, regardless of
what you had entered previously. You will be paid whatever is left of the 10 euros at the end of the
experiment.

Please choose how much of the 10 euros you would like to donate to the DRK: