A Test of Dual-Process Reasoning in Charitable Giving

Zachary Grossman* Joël J. van der Weele† Ana Andrijevik‡

November 7, 2014

Abstract

Previous economic experiments on dual-process reasoning in altruistic decisions have yielded inconclusive results. However, these studies do not create a conflict between affective and cognitive motives, resulting in imperfect identification. We interact standard cognitive and affective manipulations in a giving task, and hypothesize that the affective manipulation has stronger effects when we simultaneously put the cognitive system under load. In line with earlier results, we find little evidence for dual-process reasoning in giving. Our independent treatment checks cast doubt on the effectiveness of standard treatment manipulations and show that both cognitive and affective manipulations consistently have opposite effects on the two sexes. We discuss the implications of our findings for economic experiments in this nascent research field.

Keywords: dual-process reasoning, charitable giving, dictator games, experimental economics.

JEL Codes: C91, D64.

*grossman@econ.ucsb.edu

†Corresponding author. University of Amsterdam. Email: vdweele@uva.nl. Tel. +31 (0)20 5254213. Address: CREED, Department of Economics, University of Amsterdam, Roeterstraat 11, 1018WB Amsterdam, the Netherlands. Joël gratefully acknowledges financial support, received from the "Forschungstopf" at the Goethe University Frankfurt, and research assistance supplied by the chair of Ferdinand von Siemens. We would like to thank Paul Gortner for research assistance and Wim de Neys for valuable suggestions.

‡aandrijevik@gmail.com

1 Introduction

Dual-process theories assert that decision making is comprised of two systems: a slow, deliberative system and a fast, affective system. The evolutionarily older affective system generates mostly unconscious 'gut responses', whereas the younger deliberative system is responsible for conscious and 'rational' decision making. While this strict duality is generally recognized as a metaphor for a more complex modular brain structure (Evans and Stanovich, 2013), it has been applied fruitfully to core economic domains such as decision making under risk or intertemporal choice (Loewenstein and O'Donoghue, 2004; Kahneman, 2011).

Dual-process theories also inform inquiries into the nature of altruism. For example, Moore and Loewenstein (2004) contend that looking out for self-interest is an automatic and primal response, while understanding one's ethical obligations to others is a more conscious process. More generally, Loewenstein and O'Donoghue (2004) maintain that while the deliberative system operates on moral and ethical principles of how one ought to behave, the affective system is driven by anything from pure self-interest to extreme altruism, depending on the degree of empathy. Neurological evidence supports application of dual-process models to altruistic behavior, indicating that brain areas associated with affective and cognitive decision making both matter for altruistic decisions.[1]

While the dual-process framework has been used to organize experimental findings on sympathy and caring (Loewenstein and Small, 2007), the results of studies that investigate the role of cognitive factors in altruistic behavior are mixed and inconclusive. A common approach is to suppress the role of the deliberative system by placing the decision maker under cognitive load, so that behavior more strongly reflects the goals of the affective system. For example, Schulz *et al.* (2014) find that players in the role of dictators are somewhat more generous under high cognitive load. However, Hauge *et al.* (2014) do not find any difference and Cappelletti *et al.* (2011) find no effect of cognitive load on proposer behavior in an ultimatum game. Kessler and Meier (2014) find that the cognitive load can increase charitable giving, but that the effect is not robust to small manipulations.[2]

[1] Moll *et al.* (2006) finds that both affective and cognitive parts of the brain are active during the process of charitable giving. Sanfey *et al.* (2003) shows that activity of a part of the brain often associated with emotions (the anterior insula) correlates with rejections of unfair offers in the ultimatum game, while a part associated with cognitive activity (the prefrontal cortex) is active with acceptance and rejection of such offers. While these are correlational studies, Knoch *et al.* (2006) use magnetic stimulation to deactivate (part of the) prefrontal cortex and finds that this leads to more acceptance of unequal offers in the ultimatum game.

[2] Studies that use response time to proxy for cognitive reasoning are similarly inconclusive. Piovesan and Wengström (2009) finds that subjects who decide faster are more selfish in a modified dictator game. Cappelletti *et al.* (2011) finds that proposers in ultimatum games offer more under time pressure, but argue that this is due

We address two pitfalls that may contribute to the lack of clarity on the role of dual-process reasoning in giving behavior. The first is that without exception, studies in this literature manipulate only the cognitive system. This should lead to variation in behavior only when the cognitive system and the affective system have conflicting goals (Skitka *et al.*, 2002). If both systems approximately "agree" on the right amount of giving, which may well be the case in the rather abstract dictator games that are the focus of the literature, manipulations of the cognitive system will not result in different decisions. This may explain why previous studies have found no clear results from such manipulations.

To address this concern, we conduct a charitable giving experiment in which we manipulate both systems in a 2×2 design. Our manipulation of the deliberative system is a standard cognitive load task where participants have to remember a string of numbers (Gilbert and Osborne, 1989; Shiv and Fedorikhin, 1999). The affective system is manipulated by the display (or not) of vivid images of victims helped by the charity under consideration, which is a standard way to induce affect in the psychology literature (e.g Olofsson *et al.*, 2008) and draws on research on the identifiable victim effect (Small *et al.*, 2007). This design allows us to study whether the cognitive system constrains the affective system, where we hypothesize that the affective manipulation has stronger effects when the cognitive system is under load.

The second pitfall is that economic experiments that vary cognitive load typically do not evaluate whether the manipulations actually affect reasoning capabilities. In this study, we provide two independent checks of our cognitive load manipulation, a "cognitive reflection test" (CRT, see Frederick, 2005) that participants complete under load, and an opportunity for participants to revise their giving decision after cognitive load has been lifted. In addition, we study the impact of our affective manipulation by eliciting emotional ratings from a separate group of participants in both affect treatments.

We do not find statistically significant effects of our treatment manipulations. Consistent with some of the papers cited above, we find that cognitive load does not change behavior when affect is low. Contrary to our expectations and the evidence on the identifiable victim effect, our affective manipulation also has little effect on donations in both the high or the low load treatment.

When we look at the checks of our cognitive load manipulation, we find no evidence that it has an effect on aggregate CRT scores or completion time. However, we find that cognitive load affects men and women differently: whereas men perform better under high load, women perform worse. A gender effect also appears in the ratings on our affective manipulations, where

to strategic considerations. Rand *et al.* (2012) and Rand (2013) find that faster subjects are more cooperative across a range of games, although at least some of these results have been criticized (see Tinghög *et al.*, 2013; Recalde *et al.*, 2014).

we find that men and women react in opposite ways to being shown images of victims. This may explain why women actually donate more under high affect, while men donate less, resulting in a gender gap under high affect.

Small *et al.* (2007) also investigates both affective and deliberative processes using a 2×2 design. However, that study is not designed to separate the two systems, and some of the treatment manipulations may affect both the deliberative and the affective system simultaneously. For example, in one treatment information about an identifiable victim is given at the same time as statistical information about the charity is withdrawn. In our design, the affective manipulation is designed to convey no relevant statistical information about the charity. Furthermore, our manipulation of cognitive load is closer to the standard practice.

A closely related, but hypothetical and not incentivized, study by Skitka *et al.* (2002) highlighted the importance of understanding how subgroups may respond differently to the same manipulation. In particular, changes in attitudes towards helping people who had acquired AIDS under differing circumstances of personal responsibility depend upon a subject's political leanings. More liberal subjects expressed more sympathy than conservatives towards personally responsible claimants under low cognitive load, but high cognitive load significantly reduced this correlation. While Skitka *et al.* (2002) do assess the success of their respective manipulations, these assessments are based upon self-reports, as opposed to behavioral measures or out-of-sample measures.

Our study adds to the literature not only by featuring real-stakes, incentivized decisions, but also by independently manipulating both systems and by examining independent or behavioral assessments of the manipulations. Our results raise important concerns about the study of dual-system theory and altruism in the economics laboratory. Even standard manipulations may fail to produce the intended effects, or may produce them only for some sub-groups in the population. In addition, we call for caution regarding literal interpretations of dual-process decision making models.

2 Design

We asked participants to make a donation decision to a charity, independently manipulating the cognitive and affective systems across treatments. Participants had the opportunity to donate to the German Red Cross (GRC) programs that provide aid to victims of conflict in Syria. The timing of the experiment was as follows. 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 had not yet been informed that they would be asked to make a donation to the GRC.

A third screen introduced the cognitive manipulation, which consisted of a rather standard numeric recall task. Participants were given a number and told that on two subsequent screens they would be asked to add a single digit (first 7, then 8) 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.

In the *Low Load* treatment the starting number was 13, yielding interim and final totals of 20 and 28. The starting number in the *High Load* treatment was 13987, yielding interim and final totals of 13994 and 14002. Our procedure implements a small variation of the standard design where high load typically implies memorizing a single six or seven digit number. A slightly shorter number will avoid that participants quickly "give up" if they forget the number early on, and the recurrent addition task means participants need to engage with the memory task throughout the experiment. 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.

On the fourth screen, participants were given an endowment of €10 and asked to choose how much of it to donate to the GRC, which constitutes our main variable of interest. The donation choice 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.

We took two measures to asses the effectiveness of the cognitive-system manipulation. First, on the fifth screen, 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. 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. 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.

After the cognitive load had thus been lifted, we applied our second check of our cognitive manipulation, by giving subjects the (unexpected) opportunity to revise their donation decisions. Larger and more frequent revisions in the *High Load* treatment would be consistent with and

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 donation screen) featured evocative images of victims and aid workers in areas affected by conflict in Syria. The four images that were identical on all screens, were chosen to elicit affective responses without providing additional information about the conflict victims or the charity. They were displayed on the charity information screen, the donation screen, and the donation revision screen. In the *Low Affect* treatment, no images were displayed on any screens.

The experiments took place at the Frankfurt Laboratory for EXperimental economics (FLEX) at Goethe University Frankfurt. Subjects were randomly recruited from the FLEX subject pool using the online system ORSEE (Greiner, 2003) and received a show-up fee of €2. Participants made their decisions on individual computer terminals and the interface was programmed using z-Tree (Fischbacher, 2007). Screenshots containing the instructions (in German) can be found in Appendix 5, followed followed by an English translation of the instructions. We conducted 12 sessions, each lasting about 25 minutes and with 12 to 23 participants each, for a total of 224 participants. The average donation was €4.07, so the average subject took home €7.93, including the €2 show-up fee.

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 the affective system and the cognitive system both have an optimal level of giving that may differ between the two systems. If the two optima differ, then 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 or and the presence of other tasks that require cognitive attention.

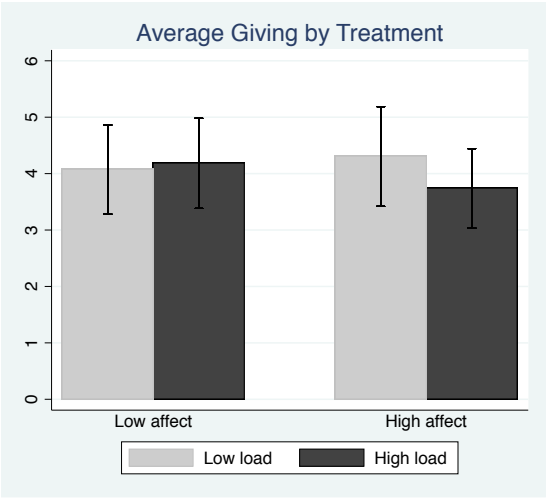
Unlike previous research, this experiment features not only a cognitive manipulation, but also a manipulation designed to increase the level of giving desired by the affective system. The use of pictures to evoke affect is standard in social psychology Olofsson *et al.* (2008), and is designed to increase 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, which leads to higher donations

both under *High Load* and under *Low Load*.

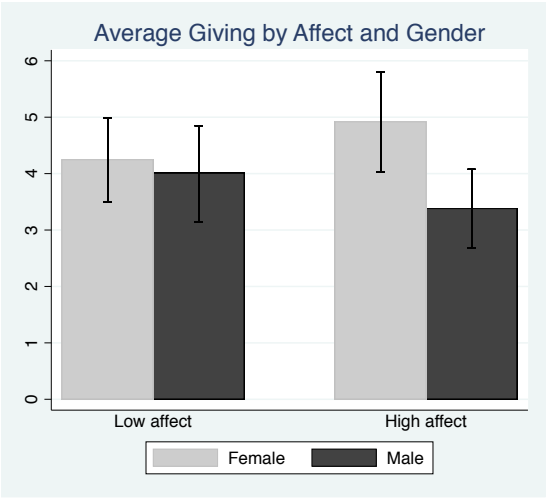
Moreover, under *High Load*, the deliberative system has less capacity available to influence the decision away from the 'affective optimum' than under *Low Load*. Thus, we hypothesize that the increase in giving resulting from the use of pictures of victims is larger under *High Load* than under *Low Load*. In other words, under *High Load*, we expect the 'whims' of the affective systems to be have a more powerful influence on behavior than under *Low Load*.

3 Results

Of the 224 participants, 53 percent identified as male, 52 percent identified Business or Economics as their field of studies, 12 percent were first-time participants in FLEX laboratory experiments, 72 percent had previously participated in three or more experiments, and 29 percent reported that they give money to charity "often" or "from time to time. Figure 1 shows mean donations by treatment in Panel 1a. Table 3 in Appendix A summarizes the descriptive statistics. As is apparent from the figure, differences in mean donations are small, and a series of two-sided Mann-Whitney U (MWU) does not reject the null hypothesis that the donation distributions are the same when comparing any two treatments.



(a) Mean donations by treatment with 95% confidence intervals.



(b) Mean donations by affect treatment and gender with 95% confidence intervals.

Figure 1: Mean donations by treatment.

Table 1 presents the result of a multivariate analysis. In column 1, we include dummies for the two treatment conditions as well as their interaction. In the second column, we include some

controls relating to the cognitive skills and/or effort that subjects displayed. "CRT Score" is the number of correct answers in the CRT test, and "Correct recall" is a dummy that is one if the subject correctly solved the load task. Since both variables may interact with the size of the cognitive load, we include interaction variables. In the third column, we add controls related to gender and their interaction with the treatment variables. Overall, we find no statistically significant effects. The only exception is the interaction between gender and affect, which we will discuss in more detail below.

Analysis by Gender

Although we did not initially hypothesize this, we the multivariate analysis points towards the existence of gender effects. Descriptive statistics for giving by gender are provided in Tables 4 and 5 in Appendix A. Comparing giving rates between gender (and across treatments), women contribute on average 88 cents more than men ($4.54 vs. $3.66), a difference which is significant at 5% in a t-test ($p = 0.02$).

On closer inspection, it appears that the gender difference is due to different reactions to the pictures of victims displayed in the *High Affect* treatment. Panel 1b of Figure 1 shows the effect of the affect manipulation by gender. The sexes respond in opposite ways to high affect: while women increase their donations, men decrease them. 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$). This result also underlies the marginally significant negative effect of affect for males under high affect in the regression (see Table 1, column 3).

4 Effectiveness of the Treatment Manipulations

Given the absence of aggregate treatment effects, one may ask if our treatments actually manipulated something. In this section, we provide evidence from our independent evaluations. Because we observed a gender gap in donation rates, we look at the effect of the manipulations both on aggregate and on both sexes separately.

4.1 Effectiveness of the Cognitive Manipulation

Before we consider the effect of cognitive load, we first study if participants took the task seriously. To do so, we investigate accuracy with which participants reported the number they were asked to compute and remember. The rate of successful recall was was 0.88 (98 out of 112)

	(1) Donations	(2) Donations	(3) Donations
Constant	4.071***	3.617***	3.732***
	(0.397)	(0.888)	(0.957)
High load	0.110	0.455	0.272
	(0.564)	(1.067)	(1.115)
High affect	0.232	0.130	0.901
	(0.562)	(0.593)	(0.727)
High load * High affect	-0.677	-0.599	-0.575
	(0.794)	(0.824)	(0.820)
CRT score		0.0611	0.131
		(0.300)	(0.298)
Correct recall		0.466	0.443
		(0.892)	(0.884)
High load * CRT score		-0.0946	-0.0841
		(0.397)	(0.395)
High load * Cor. recall		-0.227	-0.186
		(1.077)	(1.066)
Male			-0.383
			(0.690)
High load * Male			0.329
			(0.806)
High affect * Male			-1.344*
			(0.803)
Observations	224	224	224
R^2	0.005	0.007	0.042

Standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 1: Regression of donation on treatment dummies and controls for cognitive skills and gender.

in the *Low Load* treatment and 0.66 (74 out of 112) 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.[3]

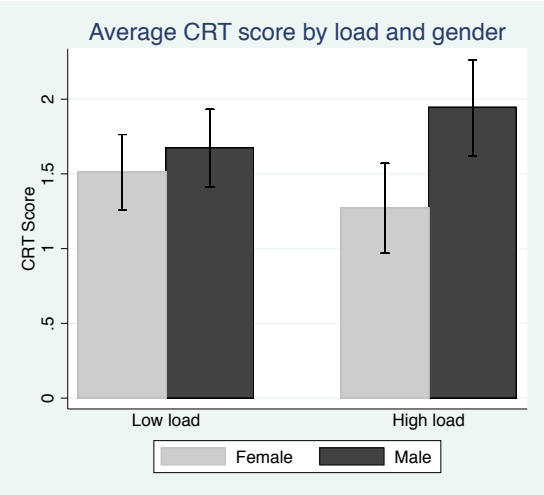
We now turn to the two features of the design that allows us to assess the effectiveness of the cognitive load manipulation. First, we compare participants' performance on the CRT test between the *High Load* and *Low Load* treatments. In both treatments, the average number of questions answered correctly was 1.60 out of 4, so on the basis of performance we cannot reject the possibility that the manipulation was ineffective. Note that this goes against the evidence in Johnson *et al.* (2014), who find that load, implemented by a variations in a different memory task does decrease CRT performance.

Second, we examine the total time that it took subjects to complete the four CRT questions. In the *Low Load* treatment 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). The absence any aggregate difference in performance and completion time casts doubt on the idea that subjects were affected by cognitive load.

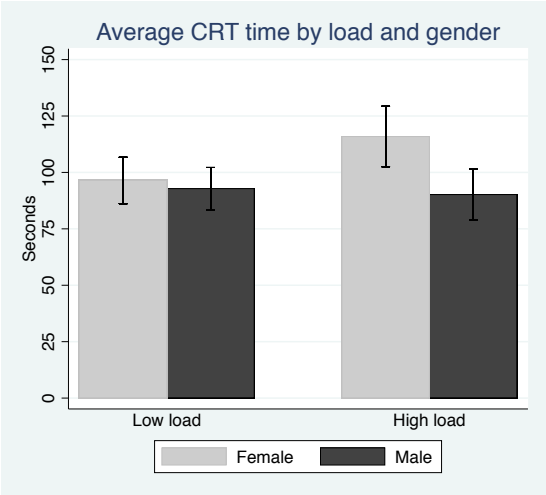
Disaggregating CRT performance and speed by gender reveals a divergent response to cognitive load. Figure 2 shows the mean CRT score and response time across genders and load treatments. Women in the *High Load* treatment answer on average 1.27 out of 4 CRT questions correctly, which is lower than the 1.51 average score for women in the *Low Load* treatment, although not significantly so ($p = 0.170$, MWU). 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 ($p = 0.203$, MWU), and their average response time drops trivially from 92.8 to 90.1 ($p = 0.364$, t-test). As Figure 2 indicates, these opposite tendencies by men and women result in a large gender gap under high load, both with respect to performance ($p = 0.002$, MWU) and decision time ($p = 0.004$, t-test).[4]

[3]In the *High Load* treatment, four people reported numbers that were within three of the correct answer. Furthermore, 12 people guessed close to the intermediate number, adding the first number but failing to add the second number. This implies that they were still under cognitive load in the donation screen. Another two people simply omitted one of the digits of the correct number. Pooling these participants, who were clearly trying to complete the task correctly, with those who were correct, reveals that at least 81% of the participants spent cognitive resources on the task.

[4]When pooling both cognitive load treatments, we find a gender difference in the performance on the cognitive reflection test, where the average number of correct answers is lower for women (1.41) than for men (1.77). A t-test rejects ($p = 0.01$) the hypothesis that these averages are the same. This echoes the results in Frederick



(a) CRT scores by cognitive load and gender.



(b) CRT answer times by cognitive load and gender.

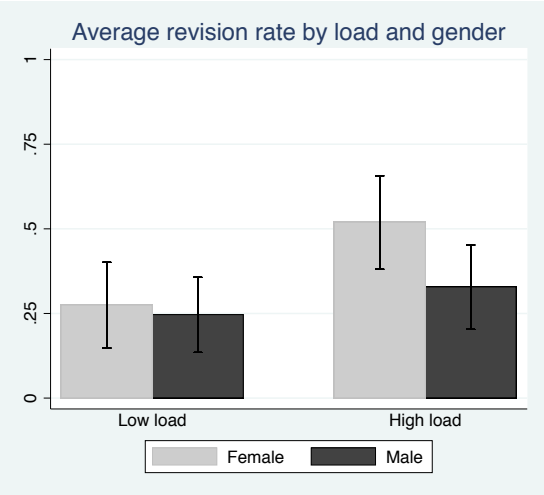
Figure 2: CRT performance and answer time by cognitive load and gender.

In addition, we judge the cognitive manipulation by evaluating how subjects revised their decisions after cognitive load was lifted.[5] The average participant revised her donation downward by €0.38 and 34 percent of participants made a non-zero revision. While 26 percent in the *Low Load* treatment chose to revise the original donation amount, this increased to 42 percent in the *High Load* treatment. Figure 3a 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 ($p = 0.016$, Fisher Exact Test (FET)), it is not for men ($p = 0.417$, FET).

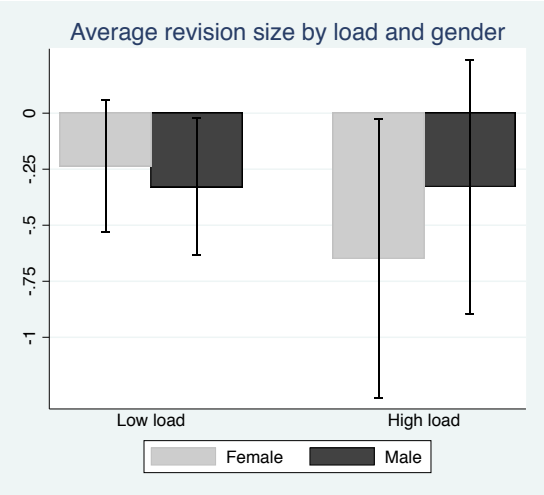
Figure 3b shows the average the size of revisions by gender and cognitive load treatment. Downward revisions are more extreme on average in the *High Load* treatment (€0.48) than in the *Low Load* treatment (€0.29), consistent with the idea that high load impairs decision making. Again, we see that women respond to higher load with a higher average revision size whereas men don't, although these effects don't reach conventional significance levels for either sex.

(2005).

[5]Note that in 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. Of course, one might speculate that seeing the same pictures another time does not have the same effect, so that the role of affect was weaker, but we have no way of verifying this.



(a) Rates of revision by cognitive load and gender.



(b) Revision size by cognitive load and gender.

Figure 3: Revision rate and size cognitive load and gender.

In sum, there is some conflicting evidence that the cognitive load treatment was effective. We find evidence that participants took the memory task seriously, but this does not result in difference in average test results across load treatments. Furthermore, we find that impact of the cognitive load treatment differed across gender. Women performed more poorly and slowly on the CRT when given the *High Load* task, but men actually improved slightly. Revision rates are higher for women under *High Load*.

4.2 Effectiveness of the Affect Manipulation

The absence of an aggregate effect of the affective manipulation on the initial giving decision raises the question whether the affective manipulation had the intended effect of increasing the level of giving preferred by the affective system. Furthermore, the divergent donation responses of male and female participants to the display of vivid images emphasize the need to better understand how the response might vary across subgroups within our sample.

To do so, we elicited affect ratings from participants in other, independent sessions.[6] Participants in these sessions thus only reported their feelings and were not asked to make any donation. They were presented with the same information screen about the GRC as in the main experiment and shown the same vivid images of the conflict in Syria in the *High Affect*

[6]Subjects in these sessions had participated in another, unrelated experiment in the FLEX laboratory. After the participants completed that experiment, but before they were paid, the instructions on their screens asked them complete one final, unrelated and unpaid task.

treatment, but not in the *Low Affect* treatment.

On the next screen, participants 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 scale featured six levels of agreement or disagreement and did not include a neutral option. The six items consisted of the following statements:

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 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.

On a final screen, participants completed the same questionnaire as in the donation experiment.

Ninety participants in ten sessions completed the affect ratings. Of these, 44 percent identified as male, 31 percent identified Business or Economics as their field of studies, 17 percent were first-time participants in FLEX laboratory experiments, 51 percent had previously participated in three or more experiments, and 42 percent reported that they give money to charity "often" or "from time to time.

Table 2: Total affect score varies little across affect treatment and gender

	Low Affect	*High Affect*	Total
Female	19.7	21.4	20.5
N	27	23	50
Male	20.5	19.8	20.2
N	23	17	40
Total	20.1	20.8	20.4
N	50	40	90

For each item, we mapped responses to numerical scores from one to six, with one corresponding to strong disagreement and six corresponding to strong agreement. For each individual we summed these scores over the six items, yielding a total affect score with a range of 6 to 30. The overall average affect score was 20.4 with a standard deviation of 5.6. Table 2 breaks down

the affect score by gender and affect treatment as well as showing aggregate values over gender. A Mann-Whitney test cannot reject the hypothesis that the mean affect score is the same for both affect levels ($p = 0.643$, MWU), nor can it reject the hypothesis that the mean affect score is the same across gender ($p = 0.705$, MWU).

Looking at treatment effects by gender, the average score for women increases from 19.7 to 21.3 when shown the images of conflict victims, but this difference falls short of significance ($p = 0.402$, MWU). Men respond to the images with a drop in average score from 20.5 to 19.8, which is also not a significant difference ($p = 0.752$, MWU).

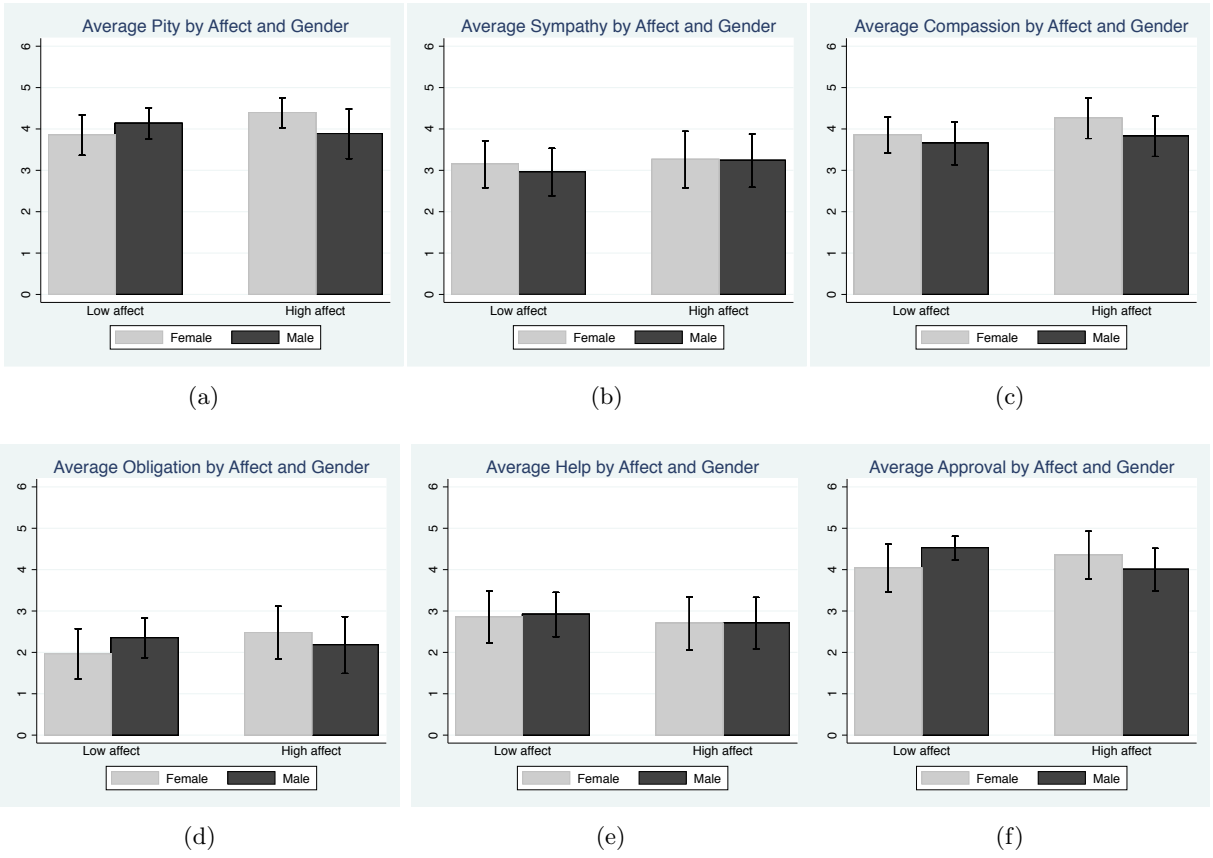


Figure 4: Comparison of mean affect ratings in six dimensions by gender and affect level.

While the total affect score reveals neither a divergent response across genders to being shown the images of conflict victims, nor any aggregate response, individual Likert items suggest differing affective responses across gender. Showing the images to women makes them express stronger feelings of pity and compassion at marginal significance levels ($p = 0.103$, MWU and $p = 0.068$, MWU respectively). Furthermore, that in each affect dimension, average women's ratings go up with the display of pictures, except for the "help" measure, for which there is

virtually no change.

This contrasts with the men's responses, 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 activities ($p = 0.077$, MWU). The opposite tendencies for men and women lead to marginally significant differences for high affect levels in the dimensions of compassion ($p = 0.069$, MWU) and approval ($p = 0.056$, MWU). Furthermore, under *High Affect*, women have higher scores than men in all dimensions, except for "Help" and "Sympathy" where the scores are virtually tied. Overall, the data show that 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, specifically the approval of the charity's activities.

While our data do not provide any evidence as to why men and women exhibit opposite reactions to the images, we offer two conjectures. First, men may be more prone to perceive the pictures as 'emotional blackmail' designed to make them give more, and thus react negatively to them. While this can explain the effect we observe on donations, this explanation is not relevant to the behavior of the participants making the affect ratings, to whom we made no mention of donations. Second, the images of foreign victims may trigger group identity and men are known to act less positively towards out-group members than women (Winterich *et al.*, 2009).

5 Discussion and conclusion

In this study we used two standard procedures from psychology in order to manipulate the cognitive and affective system in a giving task. We do not find aggregate effects of these manipulations. We do find substantial gender effects, with women responding positively to our affect manipulation and men responding negatively. Similar findings emerge when we use independent measurements to study the effect of our treatment manipulations. We find no aggregate effects, but we find opposite effects for both sexes. Women's cognition suffers under cognitive load, but not men's. A display of vivid pictures raises women's affective ratings but generally lowers men's.

To us, these observations suggest reason for caution for the nascent field of dual process research in economics. The effects of even standard treatment manipulations are subtle and may depend on unanticipated details. In the case of cognitive load, we are strengthened in this belief by the increasing number of studies that find conflicting or null results from this manipulation (see introduction). 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. To this, we add that manipulations may have different effects on different subgroups. In our experiment, gender shows up as an important variable to look at, but it is entirely possible that there is an effect of education level or or age, of which there was little variation in our study.

We believe these considerations also have implications for the way that researchers approach the dual-system 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 dual-system metaphor, there is an ongoing debate about the cogency of its different variations and its usefulness for scientific practice (e.g. Keren and Schul, 2009; Evans and Stanovich, 2013).

Treatments designed on the basis of such a simplified version of reality are unlikely to generate consistent results, which may explain the inconclusive findings in the economic experiments on dual process reasoning and altruism. Furthermore, there is increasing evidence that the relation between behavior and affective and cognitive manipulations is very complex. 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 (0) provide evidence that affective reactions can even reduce judgement biases.

We share the concern of Evans and Stanovich (2013) that casual assumptions about two systems of information processing may fail to advance or even harm our understanding of reasoning. Thus, we believe that researchers will increasingly need to go beyond the simple dichotomy implied by the dual process model. While our current state of knowledge may not yet permit such a strategy, the ultimate aim will be to look for treatment manipulations that more directly target different brain structures (Fehr and Rangel, 2011).

References

Blanchette, I., Gavigan, S. and Johnston, K. (2014). Does emotion help or hinder reasoning? The moderating role of relevance. *Journal of experimental psychology. General*, 143 (3), 1049–64.

Cappelletti, D., Güth, W. and Ploner, M. (2011). Being of two minds: an ultimatum experiment investigating affective processes. *Journal of Economic Psychology*, 32 (6), 940–950.

De Neys, W. and Schaeken, W. (2007). When people are more logical under cognitive load. *Experimental Psychology*, 54, 128–133.

Evans, J. S. B. T. and Stanovich, K. E. (2013). Dual-Process Theories of Higher Cognition: Advancing the Debate. *Perspectives on Psychological Science*, 8 (3), 223–241.

Fehr, E. and Rangel, A. (2011). Neuroeconomic Foundations of Economic Choice — Recent Advances. *The Journal of Economic Perspectives*, 25 (4), 3–30.

Fischbacher, U. (2007). z-Tree: Zurich Toolbox for Ready-made Economic Experiments. *Experimental Economics*, 10 (2), 171–178.

Frederick, S. (2005). Cognitive Reflection and Decision Making. *Journal of Economic Perspectives*, 19 (4), 25–42.

Gilbert, D. and Osborne, R. (1989). Thinking backward: Some curable and incurable consequences of cognitive busyness. *Journal of Personality and Social Pscyhology*, 57 (6), 940–949.

Greiner, B. (2003). An Online Recruitment System for Economic Experiments. *Forschung und wissenschaftliches Rechnen*, 63, 79–93.

Hauge, K. E., Brekke, K. A., Johansson, L.-O., Johansson-Stenman, O. and Svedster, H. (2014). Keeping others in our mind or in our heart? Distribution games under cognitive load. (600).

Johnson, E., Tubau, E. and De Neys, W. (2014). The unbearable burden of executive load on cognitive reflection: A validation of dual process theory. *Proceedings of the Annual Conference of the Cognitive Science Society*, 36, 2441–2446.

Kahneman, D. (2011). *Thinking, fast and slow*. MacMillan.

Keren, G. and Schul, Y. (2009). Two Is Not Always Better Than One: A Critical Evaluation of Two-System Theories. *Perspectives on psychological science*, 4 (6), 533–550.

Kessler, J. B. and Meier, S. (2014). Learning from (failed) replications: Cognitive load manipulations and charitable giving. *Journal of Economic Behavior & Organization*, 102 (0), 10 – 13.

Knoch, D., Pascual-Leone, A., Meyer, K., Treyer, V. and Fehr, E. (2006). Diminishing reciprocal fairness by disrupting the right prefrontal cortex. *Science*, 314 (5800), 829–832.

Kogut, T. and Ritov, I. (2005). The "identified victim" effect: An identified group, or just a single individual? *Journal of Behavioral Decision Making*, 18, 157–167.

Lench, H. C. and Bench, S. W. (0). Strength of affective reaction as a signal to think carefully. *Cognition & Emotion*, 0 (0), 1–16, pMID: 24717008.

Loewenstein, G. and O'Donoghue, T. (2004). Animal Spirits: Affective and Deliberative Processes in Economic Behavior. (04-14).

— and Small, D. a. (2007). The Scarecrow and the Tin Man: The vicissitudes of human sympathy and caring. *Review of General Psychology*, 11 (2), 112–126.

Moll, J., Krueger, F., Zahn, R., Pardini, M., de Oliveira-Souza, R. and Grafman, J. (2006). Human fronto-mesolimbic networks guide decisions about charitable donation. *Proceedings of the National Academy of Sciences of the United States of America*, 103 (42), 15623–8.

Moore, D. and Loewenstein, G. (2004). Self-interest, automaticity, and the psychology of conflict of interest. *Social Justice Research*, 17 (2).

Olofsson, J. K., Nordin, S., Sequeira, H. and Polich, J. (2008). Affective picture processing: an integrative review of ERP findings. *Biological psychology*, 77 (3), 247–65.

Piovesan, M. and Wengström, E. (2009). Fast or fair? A study of response times. *Economics Letters*, 105 (2), 193–196.

Rand, D. (2013). Intuitive cooperation and the Social Heuristics Hypothesis: Evidence from 15 time constraint studies. *SSRN working paper*.

Rand, D. G., Greene, J. D. and Nowak, M. a. (2012). Spontaneous giving and calculated greed. *Nature*, 489 (7416), 427–30.

Recalde, M., Riedl, A. and Vesterlund, L. (2014). Error Prone Inference from Response Time : The Case of Intuitive Generosity. *CESIfo Working Paper 4987*.

Sanfey, A. G., Rilling, J. K., Aronson, J. A., Nystrom, L. E. and Cohen, J. D. (2003). The neural basis of economic decision-making in the ultimatum game. *Science*, 300 (5626), 1755–1758.

Schulz, J. J. F., Fischbacher, U., Thöni, C. and Utikal, V. (2014). Affect and fairness: Dictator games under cognitive load. *Journal of Economic Psychology*, 41, 77–87.

Shiv, B. and Fedorikhin, A. (1999). Heart and mindin Conflict: The interplay of Affect Decision and Cognition in Consumer Decision Making. *Journal of consumer Research*, 26 (3), 278–292.

Skitka, L. J., Mullen, E., Griffin, T., Hutchinson, S. and Chamberlin, B. (2002). Dispositions, scripts, or motivated correction?: Understanding ideological differences in explanations for social problems. *Journal of personality and social psychology*, 83 (2), 470–487.

Small, D. a., Loewenstein, G. and Slovic, P. (2007). Sympathy and callousness: The impact of deliberative thought on donations to identifiable and statistical victims. *Organizational Behavior and Human Decision Processes*, 102 (2), 143–153.

Tinghög, G., Andersson, D., Bonn, C., Böttiger, H., Josephson, C., Lundgren, G., Västfjäll, D., Kirchler, M. and Johannesson, M. (2013). Intuition and cooperation reconsidered. *Nature*, 498 (7452), E1–E2.

Winterich, K. P., Mittal, V. and Ross Jr, W. T. (2009). Donation behavior toward in-groups and out-groups: The role of gender and moral identity. *Journal of Consumer Research*, 36 (2), 199–214.

Appendix A: Descriptive statistics.

Table 3: Mean initial donations vary little by treatment

	Low Affect	*High Affect*	Total
Low Load	4.07	4.30	4.19
N	56	56	112
High Load	4.18	3.74	3.96
N	55	57	112
Total	4.13	4.02	4.07
N	111	113	224

Table 4: Mean initial donations and number of observations by treatment for 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 5: Mean initial donations and number of observations by treatment for 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 C: Instructions and screenshots [NOT FOR PUBLICATION]

INSTRUKTIONEN: BITTE GENAU DURCHLESEN. FALLS SIE FRAGEN HABBEN, MELDEN SIE SICH BITTE

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.

OK

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 ich 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 Hygienepaketen versorgt und 30.000 Lebensmittelpaketen verteilt.

OK

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 ich 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 Hygienepaketen versorgt und 30.000 Lebensmittelpaketen verteilt.

OK

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.

OK

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.

OK

Verbleibende Zeit [sec]: 24

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 kontaktierem 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
- 3 euro
- 4 euro
- 5 euro
- 6 euro
- 7 euro
- 8 euro
- 9 euro
- 10 euro

OK

Verbleibende Zeit [sec]: 29

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 kontaktierem 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
- 3 euro
- 4 euro
- 5 euro
- 6 euro
- 7 euro
- 8 euro
- 9 euro
- 10 euro

OK

Verbleibende Zeit [sec]: 78

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 Pille 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?

OK

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.

OK

Bevor wir das Experiment beenden, bitte geben Sie die folgenden Informationen ein:

Geschlecht:
- ○ Weiblich
- ○ Männlich

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
- ○ Oft
- ○ 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 fur Ihre Spende entschieden haben?
- ○ Rationalen Gründen
- ○ Weiß nicht
- ○ Emotionalen Gründen

OK

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 kontaktierem 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

OK

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 kontaktierem 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

OK

Payment instructions

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 Experiments erhalten haben (einschließlich 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.

OK