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# Differences attract: an experimental study of focusing in economic choice\*

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July 1, 2016

## Abstract

Several recent models of choice build on the idea that decision makers are more likely to choose an option if its attributes stand out compared to the attributes of the available alternatives. One example is the model of focusing by Kőszegi and Szeidl (2013) where decision makers focus disproportionately on the attributes in which the available options differ more, implying that some attributes will be overweighted. We test this prediction in a controlled experiment. We find that subjects are more likely to make inconsistent choices when we manipulate the choice set by adding new options that are unchosen, but affect the maximal difference in attributes among the options. Hence, our results suggest that there exists a focusing effect.

*Keywords:* Individual decision making, focus, attention, salience, decoy, experiments

*JEL Codes:* D03, D12, C91

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# 1 Introduction

Traditional economic models typically assume rational economic agents with stable individual preferences. Recently, a more complicated account of economic decision making has emerged. One vein in this development is the recognition that people have limited cognitive capabilities, which makes it hard to consider, and properly evaluate, all aspects of the available options before making a decision. This may lead people to focus too much on certain features and attributes "that stand out" and this bias may vary depending on the choice context and the set of alternatives at offer. For example, Schkade and Kahneman (1998) suggest that people overestimate easily observed and distinctive differences when making judgments of the quality of life in different states in the US. They claim that a distinctive difference like the climate is given disproportionate attention when comparing the quality of life in the Midwest and California. Which attributes attract attention can hence depend on the set of options under consideration.

More recently, Bordalo et al. (2013) and Köszegi and Szeidl (2013) have proposed models of focusing building on similar ideas.<sup>1</sup> They use slightly different modeling approaches, but both assume that decision makers are more likely to choose an option if its attributes stand out compared to the attributes of the available alternatives. For example, a person contemplating whether to go to the gym or not may pay too much attention to the immediate and concentrated effort costs of working out, on the expense of the more disperse future health benefits. An individual choosing between paying a consumer durable directly in the store, or using a delayed payment scheme, faces a similar situation. Paying immediately has a concentrated large expenditure, which makes the cost more salient compared to the spread out expenditures of the delayed payment scheme (even though the total expenditures are larger in the delayed payment scheme).

In fact, such focusing effects could be the cause behind many well-known choice patterns, such as time-inconsistent preferences, the Allais paradox, and preference reversals (see for example Bordalo et al. 2012, 2013; Köszegi and Szeidl 2013; Cunningham 2013;

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<sup>1</sup>Bordalo et al. (2013) use the word salience instead of focusing to denote this phenomenon.

Bushong et al. 2015; Azar 2007). Moreover, firms may exploit focusing effects to shroud or highlight certain attributes, which may have negative implications for competition and welfare on markets (see for example Akerlof and Shiller, 2015, Bordalo et al., 2016, Grubb, 2015 and Gabaix et al., 2006). To alleviate the negative aspects, understanding how focusing affects choice becomes crucial.

To date, there is little controlled empirical evidence testing the models of focusing. In line with much of the theoretical literature, the few existing empirical studies have focused on a specific type of focusing effect referred to as the diminishing sensitivity phenomenon (i.e. the tendency for focusing to decrease when the value of an attribute is increased for all goods). Diminishing sensitivity is the central theme of Azar (2007) and Bordalo et al. (2012; 2013). The empirical literature on diminishing sensitivity is mixed, but tilts in favor of the hypothesis. In Azar (2011) the hypothesis is tested in a field experiment as well as a hypothetical study. Notably, while the hypothetical study supports the diminishing sensitivity hypothesis the field results reject it. Yet, both Dertwinkel-Kalt et al. (2016) and Webb et al. (2015) find behavior consistent with diminishing sensitivity in the lab.

Even less attention has been given to studying the underlying principle—assumed by Schkade and Kahneman (1998) and Kőszegi and Szeidl (2013)—that the size of the differences in attributes affects the decision makers’ focus. We report evidence from a controlled experimental test and to the best of our knowledge, our study is the first attempt to test this key underlying principle. Kőszegi and Szeidl (2013) assume that individuals increase their focus on the attributes in which the available options differ more, and the focusing weight of a particular attribute is equal for all options in the consideration set.<sup>2</sup> The model of Kőszegi and Szeidl (2013) is most closely related to that of Bushong et al. (2015), which departs in one important aspect, namely that they assume that more attention is paid to attributes with small differences, instead of large differences. Our study is hence an indirect test also of their modeling assumptions.

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<sup>2</sup>This stands in contrast to the model put forward in Bordalo et al. (2013) where the focusing weight of a particular attribute of an option is a function of how the attribute departs from the average of this attribute across all options in the consideration set. Despite this difference the main predictions from Bordalo et al. (2013) remain under this framework, however, less stark.

In addition, we test the effect of focusing in relation to the well-known decoy effect, also referred to as the attraction effect (see e.g. Huber et al. 1982). The decoy effect implies that introducing an irrelevant option, whose attributes are dominated by one option but not by the others, will increase the likelihood of the dominating option being chosen. Recently, some attempts to replicate the decoy effect have failed (Yang and Lynn, 2014; Huber et al., 2014). One potential reason is that there is a conflict between focusing effects and decoy effects. To test this, we construct choice sets in which decoy and focusing give different predictions, shedding light on focusing as a potential constraint of the decoy effect.

Our experiment was conducted with over 600 subjects using Amazon’s Mechanical Turk (MTurk) platform. The subjects were presented with a number of choice tasks asking them to choose among different inter-temporal payoff streams. We are not interested in intertemporal decision making per se, but the framework offers a straightforward way of implementing incentivized multi-attribute options, and it is one of the leading examples in Kőszegi and Szeidl (2013). The dates for the payments were identical among the different options but the amounts varied. Our experimental strategy proceeded in two stages. The first stage was aimed at calibrating the set of decision tasks by finding options which the subject was close to indifferent between. In the second step, we manipulated the payments of irrelevant (unchosen) options, to enhance focusing and decoy effects with the hypothesis that this would lead to inconsistent choices compared to choices in the first step. To rule out that this was driven by noisy behavior rather than focusing or decoy effects, a set of control decision tasks were not manipulated in the sense that they were neutral with regards to focusing or decoy effects. Our main identification strategy is to compare outcomes, within subject, of the manipulated decision tasks to outcomes of the non-manipulated control decision tasks.

The results show that there exists a focusing effect. Subjects are around 10% more likely to make an inconsistent choice when the decision task is manipulated to increase focusing. Moreover, the focusing effect is stronger than the decoy effect in our choice context. Our results are robust to controlling for socio-demographic variables, cognitive skills and personality traits.

This paper is organized as follows. Section 2 outlines the theoretical framework of Kőszegi and Szeidl (2013) and describes the experimental design and our research hypotheses. Section 3 presents the results and in Section 4 we conclude and point out directions for future research.

## 2 Experimental design and hypotheses

We use Kőszegi and Szeidl (2013) as a theoretical reference point and construct an experiment that tests the behavioral predictions of the model in a context of inter-temporal choice. As their model is quite straightforward we believe it is instructive to start by presenting the model before turning to describing the experimental design and stating our research hypotheses.

### 2.1 Theoretical framework

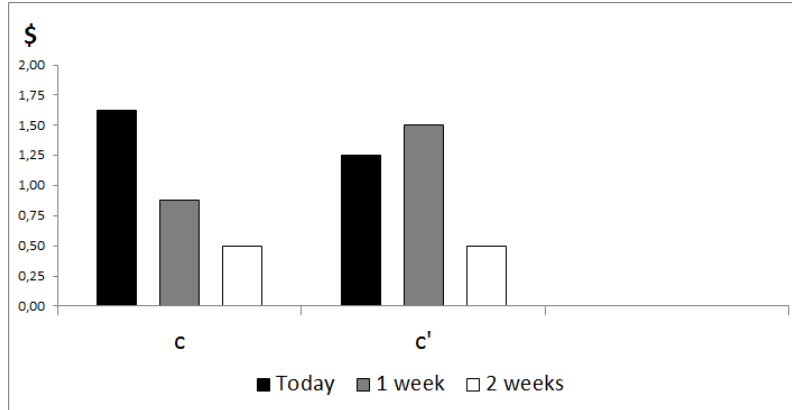
As a basic building block Kőszegi and Szeidl (2013) assume that decision makers evaluate consumption options,  $c$ , from a restricted set of options,  $C$ , referred to as the consideration set. Note, that  $C$  only contains the set of options that the decision maker actively evaluates and it may be different from the decision maker's entire set of possible options. That is, some options may be too inferior and therefore excluded from the consideration set. However, how this restriction applies to a decision maker is left unspecified by the authors and in our experiment we take  $C$  to be the entire choice set presented to the decision maker. Each consumption option,  $c \in C \subset \mathbb{R}^K$ , is a  $K$ -dimensional vector  $(c_1, c_2, \dots, c_K)$  where each dimension represents an attribute. The consumption utility is given by  $U(c) = \sum_{k=1}^K u_k(c_k)$ . However, when making decisions, the decision maker is affected by the specifics of the consideration set and instead of maximizing the consumption utility, the decision maker acts to maximize  $\tilde{U}(c, C) = \sum_{k=1}^K g_k \times u_k(c_k)$ , where  $g_k = g(\Delta_k(C))$  is a strictly increasing function and  $\Delta_k(C) \equiv \max_{c \in C} u_k(c_k) - \min_{c \in C} u_k(c_k)$ . Since  $g_k$  is a strictly increasing function, the basic prediction from this model is that consumers will attach more weight to

attributes with large differences between the options. In the special case of  $g_k = 1$  for every  $k$  we are back in the standard model. If instead  $g_k$  is strictly decreasing we would obtain a model equivalent to that of Bushong et al. (2015), and in that respect our experimental design entails an indirect test of their model.

## 2.2 Experimental design and hypotheses

We will now present the main experimental design. Figures 1 - 3 are decision tasks from the experiment, which serve to illustrate our approach. A decision task consists in choosing one among various payoff streams over time. The payoff streams have three attributes: payment today, payment in 1 week, and payment in 2 weeks. Note that we are not interested in the subjects' intertemporal choice behavior but we find the intertemporal setting to offer an appealing way of incentivizing a multi-attribute choice environment.

Figure 1: Decision task

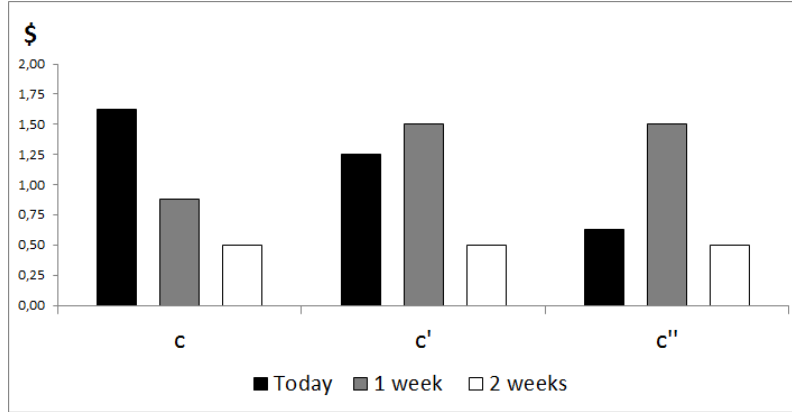


Assume that the decision maker prefers payoff stream  $c'$  over  $c$  in Figure 1. Our aim is to test the influence of expanding the consideration set by introducing a new (unchosen) option  $c''$  on the likelihood of choosing  $c$ . If the theoretical prediction of the model is borne out, i.e.  $g_k > 1$ , introducing the new option can reverse the preference ordering over the original options so that  $c$  becomes preferred over  $c'$ . Such inconsistencies can occur if the new option increases the maximal difference between options in the attribute dimension in which  $c$  dominates  $c'$ . In Figure 1,  $c$  dominates  $c'$  in the payment today attribute, so



adding a new option that increases the maximal difference in the today attribute will cause some decision makers to choose  $c$  since attributes with a bigger difference across options will be given more focus weight in the utility function  $\tilde{U}(\cdot)$ . These inconsistencies would thus stem from a change in focus and not in the underlying utility of the attributes  $u$  as  $c$  and  $c'$  remain constant. Figure 2 illustrates this scenario as the introduction of  $c''$  amplifies the maximal difference in the payment today attribute.

Figure 2: Decision task introducing  $c''$

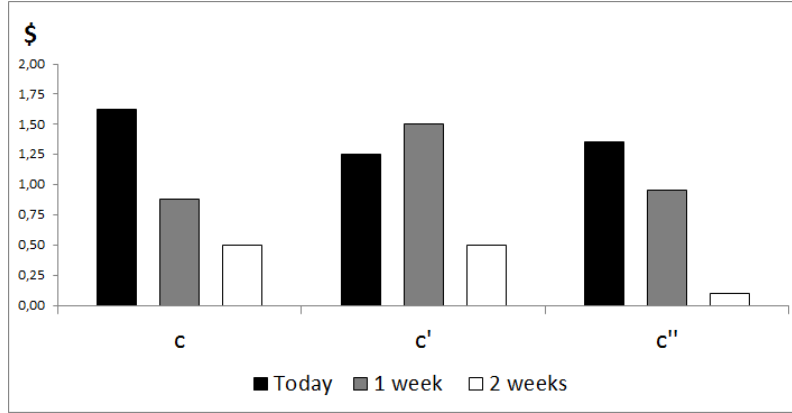


To test whether focusing effects based on the size of the difference in attributes exist or not, we will look at the fraction of inconsistent choices when  $c''$  is constructed to manipulate the focus weights. In order to make a reasonable comparison, we will in addition construct a set of non-manipulated control tasks where the new option,  $c''$ , does not affect the maximal differences in the attributes. Figure 3 shows an example of the non-manipulated control decision tasks where  $c''$  does not change the focus weights in any dimension in which the two original options differ. By comparing the fraction of inconsistent choices in these two types of decision tasks, we rule out that these are simply caused by noisy behavior.

This leads to our first hypothesis:

**Hypothesis 1.** *More subjects will prefer an option  $c$  over  $c'$  if the new option,  $c''$ , is chosen to increase the focus on an attribute dimension in which  $c$  dominates  $c'$  compared to the non-manipulated control tasks in which the new option,  $c''$ , is chosen not to affect the focusing weights.*

Figure 3: Control decision task



The idea that adding irrelevant alternatives may lead to inconsistent choices is also at the heart of the literature on the attraction/decoy effect (see e.g. Huber, Payne, and Puto 1982). The decoy effect implies that introducing an irrelevant option, which is dominated in terms of attributes by one option but not by the others, will increase the likelihood of the dominating option being chosen. Some attempts to replicate the decoy effect have failed lately (Yang and Lynn 2014 and Huber et al. 2014) and potentially this may be caused by a conflict between focusing effects and the decoy effect. Figure 2 shows how focusing and the decoy effect can be incompatible. As discussed above, according to focusing, the introduction of  $c''$  suggests that more decision makers should choose  $c$ . However,  $c''$  is also a decoy to option  $c'$ . Hence, focusing and the decoy effect generate opposite predictions in decision tasks such as the one presented in Figure 2. To test this conflict, we construct consideration sets in which decoy and focusing give different predictions, shedding light on focusing as a potential constraint of the decoy effect. This leads to our second hypothesis:

**Hypothesis 2.** *More subjects will prefer an option  $c'$  over  $c$  if the new option,  $c''$ , is a decoy in the sense that it is dominated by  $c'$  but not by  $c$  in all attribute dimensions compared to the non-manipulated control tasks in which the new option,  $c''$ , is not dominated by neither  $c$  nor  $c'$ .*

## 2.3 Decision tasks

The main part of the experiment consists of 16 decision tasks, evenly divided into two stages. The purpose of Stage 1 is to find options  $c$  and  $c'$  between which a subject is close to indifferent. These options are then used to design the decision tasks in Stage 2, where a third option  $c''$  is introduced. In Stage 2 the focus weights are either manipulated or remain unchanged by altering  $c''$ . If we successfully find option  $c$  and  $c'$  between which the subject is close to indifferent, the changes in the focus weights in stage 2 should be more likely to result in an inconsistent choice. We conduct two treatments using this procedure where the main difference between them is that we have two options in Stage 1 of Treatment 1 and three options in Treatment 2. Both treatments have three options in Stage 2. The main reason for the second treatment was to control that the expansion from two to three options (as in Treatment 1) between the two stages was not the reason for the inconsistencies found in Stage 2. Indeed we do not find this expansion to have a significant impact on our findings. In what follows we explain the experimental procedure for Treatment 1 and explain the differences to Treatment 2 at the end of this section.

### 2.3.1 Stage 1

Stage 1 comprises of eight decision tasks. In each decision task, the subjects are presented with two options,  $c$  and  $c'$ . In Table 1, the dollar payments for the options in the different decision task are shown and, as an example, Figure 1 shows how decision task 5 was presented to the subjects.<sup>3</sup> To find an indifference,  $c$  is identical in all decision tasks while  $c'$  becomes more attractive with each decision task. This is achieved by gradually increasing the 1-week payment for  $c'$ . In this way, the setup of Stage 1 is reminiscent of the widely used multiple price list format, but each decision task is presented on a separate screen.

A subject is expected to prefer  $c$  in early decision tasks and at some point switch to prefer  $c'$ . The first decision task in Stage 1 where a subject chooses  $c'$  is referred to as the subject's switch point. In order to increase the probability that subjects reveal their true

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<sup>3</sup>Figure 1 has been modified slightly to become suitable for black and white printing. The original format can be seen in the screenshots of Appendix A.

Table 1: Dollar payment of the options in Stage 1

Decision task	$c$			$c'$		
	Today	1 week	2 weeks	Today	1 week	2 weeks
1	1.625	0.875	0.5	1.25	1	0.5
2	1.625	0.875	0.5	1.25	1.125	0.5
3	1.625	0.875	0.5	1.25	1.25	0.5
4	1.625	0.875	0.5	1.25	1.375	0.5
5	1.625	0.875	0.5	1.25	1.5	0.5
6	1.625	0.875	0.5	1.25	1.625	0.5
7	1.625	0.875	0.5	1.25	1.75	0.5
8	1.625	0.875	0.5	1.25	1.875	0.5

switch point, the order of the decision tasks and options is not randomized in Stage 1.

### 2.3.2 Stage 2

The choices made in Stage 1 suggest that a subject is roughly indifferent between options  $c$  and  $c'$  at the decision task prior to and at the switch point. These options are used to design the decision tasks in Stage 2, which are eight in total. In all of them, a third option,  $c''$ , is added to  $c$  and  $c'$ . Table 2 gives an overview of the decision tasks in Stage 2. In decision task 9 and 10,  $c''$  only changes the focus weights. In decision task 11 and 12,  $c''$  both change the focus weights and serve as a decoy to  $c$  or  $c'$ . The remaining four are control tasks. The payoffs of the full set of decision tasks are described in Appendix B.

Decision task 9 is constructed using  $c$  and  $c'$  from the decision task prior to the switch point.<sup>4</sup>  $c''$  is chosen with a low payment in 1 week, thereby increasing the focus weight for this attribute. If a subject is affected by focus, this should make  $c'$  more attractive as it has the largest payment in 1 week. However, choosing  $c'$  is an inconsistent choice compared to the choice made at the decision task prior to the switch point. Thus, the consistent option for decision task 9 is  $c$ . Decision task 10 is constructed using  $c$  and  $c'$  from the switch point. This time,  $c''$  is chosen to increase the focus weight for the payment today

<sup>4</sup>For subjects whose switch point is the first decision task in the list there is no prior decision task. The options from the first decision tasks are instead used as a basis for designing all decision tasks in Stage 2.

Table 2: Structure of decision tasks in Stage 2

Hypotheses	Decision task	Focus boosts	Decoy boosts	Consistent option
Hypothesis 1	9	$c'$	-	$c$
	10	$c$	-	$c'$
Hypothesis 1 & 2	11	$c'$	$c$	$c'$
	12	$c$	$c'$	$c'$
Control decision tasks	13	Control for decision task 9		$c$
	14			$c'$
	15	Controls for decision tasks 10 - 12		$c'$
	16			$c'$

*Notes:* Note that in Treatment 2 decision task 14 was a control for task 9.

attribute. Therefore,  $c$  seems more attractive, which if chosen is an inconsistent choice as  $c'$  is consistent with the choice at the switch point. Decision task 11 and 12 are designed to test focus against the decoy effect. In decision task 11 (12),  $c''$  is designed as a decoy to  $c$  ( $c'$ ) and to increase the focus weight for the attribute 1 week (today). Focus suggests that  $c'$  ( $c$ ) becomes more attractive. According to the decoy effect, however,  $c$  ( $c'$ ) seems more attractive after the introduction of  $c''$ . The focus and the decoy effect thus give opposite predictions in these decision tasks. Both decision tasks are created using  $c$  and  $c'$  from the switch point. Focus thereby favors making a consistent choice in decision task 11 and the decoy effect favors a consistent choice in decision task 12. The remaining four decision tasks in Stage 2 are control tasks. To balance the experiment, one control task used  $c$  and  $c'$  from the decision task prior to the switch point and the three remaining are designed using the options from the switch point. Consequently, the consistent choice in decision task 13 is  $c$  and in decision tasks 14 - 16 is  $c'$ . In the manipulations stage, both the order of the decision tasks and the horizontal positioning of the the options are randomized.

### 2.3.3 Second treatment

The experiment has two treatments. Only the third option  $c''$  and the control questions vary slightly between treatments. In the first treatment, subjects are faced with two options in each decision task in Stage 1, as explained above. The subjects in the second treatment

face three options in Stage 1, but  $c$  and  $c'$  are the same across treatments. In Stage 1 of the second treatment, the third option  $c''$  is designed to keep the maximal difference in the first two attributes (today and 1 week) constant across all decisions tasks. The third option always has the lowest payments in these attributes. The main reason for adding the third option is to keep the number of options constant between stages in order to make the decision situations as comparable as possible. In Stage 2, decision task 9-12 are the same in both treatments. The control tasks differ slightly, however. In the second treatment, they are designed with a slight increase in focus favoring the consistent option. This change is necessary to prevent presenting identical decision tasks as in Stage 1. Moreover, two control tasks are designed using  $c$  and  $c'$  from the switch point and the other two from the decision task before the switch point. See Appendix B for full details of the payoffs of the decision tasks of the second treatment.

## 2.4 Details of the experiment

The experiment was conducted online using the MTurk web-interface and Qualtrics was used for implementing the experiment. Instructions and screenshots of the experiment are presented in Appendix A. One pilot and two regular sessions were ran and in total, 602 subjects participated. The subjects were U.S citizens that have previously signed up to the Mturk platform.<sup>5</sup> The experiment consisted of an introduction, two control questions, the 16 decision tasks and a survey. The rules and procedures of the experiment were explained in the introduction. In the first control question, the subjects were displayed a hand-written sentence, which they were asked to enter. This question aimed at controlling for computer bots. The second control question checked that the subjects had understood the decision tasks. In this question, subjects were presented with a decision task where one option clearly dominated another option (see appendix A for details).

Subjects had 20 seconds to complete each decision task. If this requirement was not met, the subject was automatically redirected to the next decision task in the experiment. The

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<sup>5</sup>In a recent article Berinsky et al. (2012) show that participants on Mturk is often more representative of the population than the usual convenience sample provided by recruiting university students.

time remaining in any decision task was shown in the upper left corner of the screen. After completing the decision tasks, subjects elicited background information such as age, years of college/university education, gender etc. They also performed a Cognitive Reflection Test that consisted of answering the four questions proposed by Toplak et al. (2014). To collect data on the subjects' degree of maximization and satisficing behavior (see Schwartz et al., 2002), the subjects answered the three-dimensional version of the brief maximization scale proposed by Nenkov et al. (2008). See Appendix A for a complete description of the questions of the survey.

One decision task was randomly drawn for payment at the end of the experiment. The three payments were then paid out at the announced dates. The payment today was transacted to the subject's account within 24 hours of completion. The payment was conditional on that the subject completed the chosen decision task within 20 seconds. Subjects received a fixed fee of \$0.10 for participating in the experiment. To receive any payment at all, subjects had to enter a code into Mturk. This code was presented to the subjects once they had completed all the steps of the experiment. Subjects earned on average around \$3.20. Subjects spent on average 13 minutes on completing the experiment. The average earnings per hour was \$14.75, which is far above the typical wage of Mturk workers.

### 3 Results

As previously mentioned, 602 subjects logged on to the experiment, and out of these, 102 subjects failed to answer our second control question and are dropped from the analysis as we can not calibrate their decision tasks for Stage 2. This leaves us with 500 subjects that form our main sample. We did not detect any substantial differences between treatments and the results we present in this section are based on the merged data including subjects from both treatments. In Appendix C we report results broken down by treatment.

In this section, we present evidence on how subjects react to the focus manipulations. We start with graphical illustrations and non-parametric tests, and then perform a regres-

sion analysis. Subsequently we analyze the tension between focusing and decoy effects. The main analysis will concern behavior in Stage 2, but for sake of completeness we begin with presenting some descriptives about Stage 1 behavior.

## 3.1 Descriptives

### 3.1.1 Stage 1

In Table 3, we present summary statistics of the first switch point (from  $c$  to  $c'$ ) in Stage 1. As can be seen, a majority of the subjects make their first switch before the third decision task. The first switch point will form a basis for the manipulations in Stage 2 where we try to induce inconsistent choices.

Table 3: Switch point in Stage 1

Decision task	Freq.	Percent	Cum.
1	119	23.8	23.8
2	136	27.2	51.0
3	100	20.0	71.0
4	54	10.8	81.8
5	24	4.8	86.6
6	22	4.4	91.0
7	7	1.4	92.4
8	38	7.6	100.0
Total	500	100.0	

*Notes:* Switch point refers to the first decision task in which the subject preferred  $c'$  over  $c$ .

As is common in these types of lists, some subjects violate monotonicity and switch back and forth several times. As can be seen in Table 4 the vast majority of our subjects switch zero or one time, which is consistent with monotonic preferences. Whereas about thirty percent of subjects have multiple switch points. Since our Stage 2 tasks use the Switch point in Stage 1 as a base, we have to decide how to deal with subjects that have zero or multiple switch points. In the former case with zero switch points we simply use the last decision task as a base in Stage 2. For those with multiple switches, we use the first switch point to construct the Stage 2 tasks. We perform a robustness analysis in the



appendix where we exclude subjects with multiple switch points and show that results are essentially unaltered.

Table 4: Number of Switch points in Stage 1.

#Switch points	Freq.	Percent	Cum.
0	34	6.8	6.8
1	312	62.4	69.2
2	121	24.2	93.4
3	28	5.6	99.0
4	4	0.8	99.8
5	1	0.2	100.0
Total	500	100.0	

### 3.1.2 Stage 2

Throughout this section, we drop individual decision tasks where the subject took more than 20 seconds to reach a decision, the reason being that they faced no financial incentives after 20 seconds. We drop around 1.6% of the observations due to this restriction.<sup>6</sup> Moreover, an observation is also dropped if the subject chose  $c''$  in that decision task; 3.65% of the observations are dropped because of this.<sup>7</sup>

In Table 5 below we remind about the structure of the decision tasks previously displayed in Table 2 and show the average consistency of choices in the rightmost columns. Evidently, the level of consistency was quite low, but higher in tasks 9 and 13 in which  $c$  was the consistent option. Note, however, since we use decision tasks from Stage 1 where the subject is close to indifference the low level of consistency may not be too surprising. We will control for these difference in consistency in the regression analysis of the next section. It is also important to recall that we are not interested in the level of inconsistencies, but the difference in inconsistencies between the manipulations and controls.

<sup>6</sup>In Appendix C we report regression results keeping subjects that took more than 20 seconds to take a decision. The reported results in this section remain intact.

<sup>7</sup>In Table 27 of Appendix C, the number and fraction of missing observation split by decision task can be found.

Table 5: Decision tasks and frequencies of consistent choices in Stage 2

Decision Task	Focus boosts	Decoy boosts	Consistent option	Fraction of consistent choices	
				Treatment 1	Treatment 2
9	$c'$	-	$c$	.625	.648
10	$c$	-	$c'$	.402	.433
11	$c'$	$c$	$c'$	.493	.498
12	$c$	$c'$	$c'$	.390	.458
13	Control for task 9		$c$	.691	.679
14			$c'$	.445	.662
15	Controls for tasks 10-12		$c'$	.462	.520
16			$c'$	.481	.488

*Notes:* Note that in Treatment 2 Decision Task 14 was a control for task 9.

### 3.2 Focusing effects

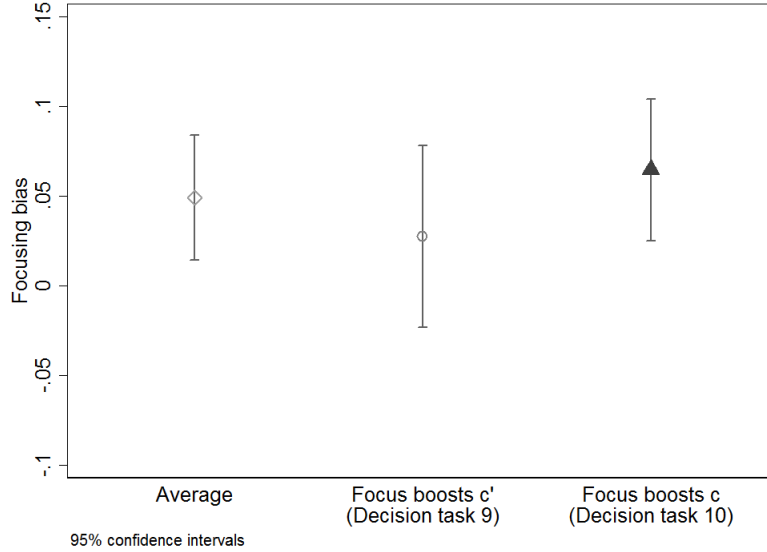
Our main findings on focusing effects can be summarized by comparing the difference in the fraction of consistent choices between each of the manipulated decision tasks (9 and 10) and their corresponding non-manipulated control task(s) (see Table 5).<sup>8</sup> We call the difference in inconsistent choice "Focusing bias". Figure 4 displays the Focusing bias for the two decision tasks. On average, there is a positive bias indicating that subjects' behavior are in line with Hypothesis 1. The size of the bias is on average about 5 percentage points. Breaking this down by decision tasks we find that the effect is driven by decision task 9 when focusing boosts  $c$  and the effect is less pronounced in decision task 10 when focusing boosts  $c'$ .<sup>9</sup>

To see if the Focusing bias is statistically different from zero we perform a Wilcoxon matched-pairs signed-ranks test (see Table 28 in Appendix C for a breakdown by treatment). The focusing effect is significant for the average ( $p$ -value = 0.008) and  $c$  ( $p$ -value =

<sup>8</sup>More specifically, in Treatment 1 we take decision task 13 to form a control for decision task 9 and the average of decision tasks 14, 15 and 16 to form a control for decision task 10. In Treatment 2, the average of decision tasks of 13 and 14 form the control for decision task 9 and the average of tasks 15 and 16 form the control for decision task 10. When calculating the total effect for tasks 9 and 10 in treatment 1, we take into account the fact that there is only one control task in which  $c$  is the consistent choice. We do this by giving equal weight to task 13 and the average of tasks 14,15 and 16.

<sup>9</sup>Figure 31 in Appendix C breaks down the Focusing bias by treatment.

Figure 4: Focusing bias



*Notes:* Focusing bias refers to the difference in the fraction of inconsistent choices between the manipulated tasks and the control tasks.

0.001) but not for  $c'$  ( $p$ -value = 0.462). As hypothesized there is a statistically significant Focusing bias on average, which is driven by a bias on  $c$ .

We also perform a regression analysis to see if the Focusing bias is robust to controlling for the control variables we collected. In Table 6 we present summary statistics for the variables included. As dependent variable we use Consistent choice. As previously explained, in a given decision task in Stage 2 a decision is deemed consistent if it confirms the decision taken in Stage 1. The variable Decision time measures the time from the decision task is first displayed until a decision is made and the subject moves on to a new decision task. Our cognitive reflection measure (CRT) comes from a four-item test and counts the number of correct answers (0-4). We also include a measure for switch point in Stage 1 as well as a dummy for multiple switching.<sup>10</sup> In addition, we include controls for age, gender, number of years in collage/university education (Education). We also asked a set of personality questions aimed at capturing the difficulty taking a decision (Decision

<sup>10</sup>In Appendix C we also report regressions where we have excluded subjects with more than one switch point.

difficulty), effort spent on looking for alternatives (Alternative search) and the tendency to hold high standards (High Standards).

Table 6: Summary Statistics

	Mean	Standard deviation	Observations	Min	Max
Consistent choice	.505	.50	3,936	0	1
Decision time	6.82	3.67	3,936	0	19.90
CRT	1.65	1.36	491	0	4
Switch point	3.04	2.02	491	1	8
Multiple switch	.38	.47	491	0	1
Age	35.68	11.06	491	19	74
Female	.50	.50	491	0	1
Education	3.15	2.04	491	0	11
Decision difficulty	4.00	1.53	491	1	7
Alternative search	4.51	1.38	490	1	7
High standards	4.55	1.41	491	1	7

Table 7 presents results from a series of OLS regressions with consistent choice as the dependent variable.<sup>11</sup> We include dummies for focus on  $c$  and  $c'$  (Focus boosts  $c$  and Focus boosts  $c'$  respectively). Since we previously noted that consistency is particularly high when  $c$  is the consistent choice we also create a dummy to capture that effect ( $c$  consistent). Standard errors are clustered at the individual levels to capture serial correlation within subjects. In the most simple specification (Model 1), we find a significant focusing effect on  $c$  which corresponds to a 6.2 percentage point drop in consistency. Although the sign is negative also for  $c'$  the coefficient is much smaller and insignificant. Hence, the regression estimates corroborates the findings from Figure 4 and the non-parametric tests.

These regression estimates remain more or less constant as we introduce more controls (Models 2-5). As expected, our measure of cognitive reflection is significantly and positively related to making consistent choices. The measures of switching behavior in Stage 1 are related to consistent choices in Stage 2. We note that the switch point seems to matter for the level of consistency. It could be that decision makers have noisy preferences, which then, for a given time preference, increase the probability for an early switch in Stage 1.

<sup>11</sup>In Table 30 in Appendix C we display results from probit regressions. The results are qualitatively similar.

This explanation is supported by the data as there is a significant and positive correlation between the switch point and our indicator for multiple switching (Pearson's correlation coefficient = -0.299,  $p$ -value = 0.000). The dummy variable for multiple switching is also positively related to making inconsistent choices. This may in part be due to the fact that we are less likely to capture a decision maker's true switch point if she adopted several switch points. Yet, these relationships between multiple switching should relate equally to the manipulations and control tasks and can hence not drive our results on the effect of focusing. Our socioeconomic controls add little to the explanation of our data.

Table 7: Focus: Regression results from OLS regressions with consistent choice as dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5
Focus boosts $c$	-0.0618*** [0.0202]	-0.0628*** [0.0202]	-0.0627*** [0.0202]	-0.0629*** [0.0203]	-0.0640*** [0.0203]
Focus boosts $c'$	-0.0294 [0.0238]	-0.0278 [0.0242]	-0.0274 [0.0242]	-0.0272 [0.0242]	-0.0278 [0.0243]
$c$ consistent	0.198*** [0.0326]	0.195*** [0.0330]	0.195*** [0.0330]	0.195*** [0.0330]	0.197*** [0.0331]
CRT			0.0187*** [0.00657]	0.0184*** [0.00678]	0.0176** [0.00736]
Decision time			-0.000590 [0.00251]	-0.00106 [0.00255]	-0.00113 [0.00253]
Switch point				0.0109** [0.00461]	0.0119*** [0.00452]
Multiple switch				-0.0418** [0.0201]	-0.0424** [0.0201]
Age					-0.000595 [0.000737]
Female					0.00812 [0.0191]
Education					0.00131 [0.00400]
Decision difficulty					0.0145*** [0.00538]
Alternative search					-0.00311 [0.00632]
High standards					-0.00133 [0.00612]
Treatment 2		0.0102 [0.0173]	0.0124 [0.0173]	0.0110 [0.0170]	0.0123 [0.0171]
Constant	0.479*** [0.0182]	0.475*** [0.0199]	0.447*** [0.0276]	0.431*** [0.0349]	0.405*** [0.0613]
Observations	2,877	2,877	2,877	2,877	2,871
R <sup>2</sup>	0.043	0.043	0.046	0.050	0.053
N	495	495	495	495	494

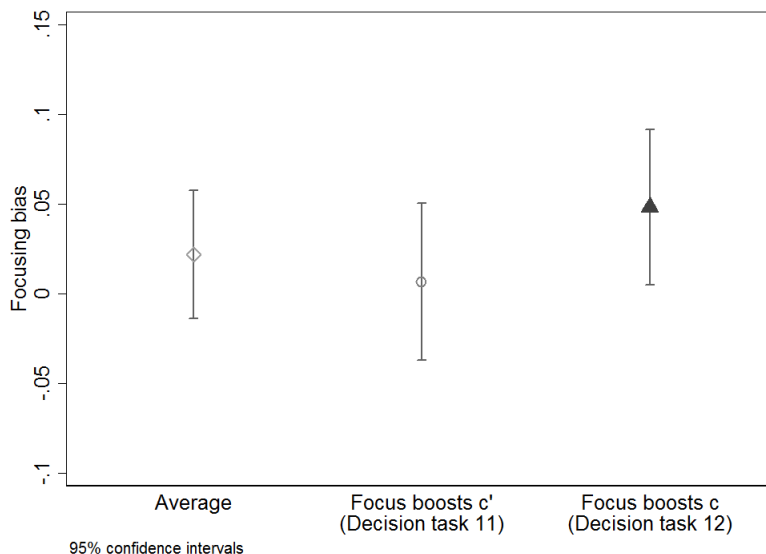
*Notes:* Robust standard errors in brackets clustered at the individual level.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### 3.3 Focusing vs. decoy

We now turn to the issue of trying to distinguish between focusing and decoy effects. As explained earlier, we introduced two decision tasks (11 and 12) trying to capture this. Figure 5 is equivalent to Figure 4 but now a negative coefficient would imply that subjects are on average biased by decoy effects (Figure 32 in Appendix C presents the data by treatment). Clearly, as the coefficients are positive, focusing dominates the decoy bias. Yet, effect sizes are somewhat smaller than previously. As before, using a Wilcoxon matched-pairs signed-ranks test, the focus effect is significant when focus boosts  $c$  ( $p$ -value = 0.020) but not when focus makes  $c'$  more attractive ( $p$ -value = 0.835). Moreover, there is no statistically significant effect on average ( $p$ -value = 0.111).<sup>12</sup>

Figure 5: Focusing vs. decoy



*Notes:* Focusing bias refers to the difference in the fraction of inconsistent choices between the manipulated tasks and the control tasks.

We also run OLS regressions using the same battery of controls as in Section 3.2. Table 8 summarizes the results from these estimations. As previously, we find a significant and robust effect of focusing on  $c$  but not on  $c'$ . The impact of cognitive reflection seems weaker

<sup>12</sup>See Table 29 in Appendix C for a breakdown by experiment.

in this setting, whereas switch point and multiple switching seem to affect decision making.

Table 8: Focus vs. decoy: Results from OLS regressions with consistent choice as dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5
Focus boosts $c$	-0.0549** [0.0215]	-0.0589*** [0.0215]	-0.0589*** [0.0214]	-0.0596*** [0.0214]	-0.0609*** [0.0215]
Focus boosts $c'$	0.0159 [0.0224]	0.0119 [0.0223]	0.0116 [0.0224]	0.0136 [0.0224]	0.0144 [0.0225]
CRT			0.00687 [0.0123]	0.00614 [0.0123]	0.00200 [0.0127]
Decision time			0.000300 [0.00378]	-0.00127 [0.00361]	-0.000927 [0.00361]
Switch point				0.0365*** [0.00998]	0.0382*** [0.00989]
Multiple switch				-0.140*** [0.0363]	-0.132*** [0.0356]
Age					-0.00246* [0.00143]
Female					-0.0125 [0.0332]
Education					-0.00402 [0.00761]
Decision difficulty					0.00974 [0.0104]
Alternative search					-0.0118 [0.0117]
High standards					-0.0191* [0.0108]
Treatment 2		0.0401 [0.0332]	0.0411 [0.0333]	0.0352 [0.0318]	0.0319 [0.0316]
Constant	0.479*** [0.0182]	0.463*** [0.0238]	0.449*** [0.0407]	0.396*** [0.0546]	0.602*** [0.116]
Observations	2,102	2,102	2,102	2,102	2,098
N	496	496	496	496	495
R <sup>2</sup>	0.003	0.004	0.005	0.053	0.061

*Notes:* Robust standard errors in brackets clustered at the individual level.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$



## 4 Concluding discussion

A long standing thought in the literature on multi-attribute choice is that the attractiveness of an option is related to how much that option stands out compared to the alternatives. One line of research postulates that adding an inferior option causes the dominant option to become more attractive (Huber et al., 1982). Others have suggested that the attractiveness is determined by the decision maker’s focus and in particular, that a decision maker focuses disproportionately on certain attributes (Kőszegi and Szeidl, 2013; Bordalo et al., 2013). The key assumption of the model of focusing by Kőszegi and Szeidl (2013) is that focus is increasing in the size of the difference in attributes among the options under consideration. We report evidence from an experiment specifically designed to test this assumption. We find that introducing a new option that increases the maximal difference in an attribute affects behavior. In particular, we find that subjects are more likely to choose an option when the maximal difference in the option’s strongest attribute dimension is increased. As Bushong et al. (2015) make the opposing assumption that focusing is decreasing in the size of the difference in attributes our results also show that their assumption fails to hold, at least in the context of the current experiment.

We also report that the focus effect is stronger when the focus is on the large immediate payment of option  $c$ . One possible explanation is that in Kőszegi and Szeidl (2013), the focus weights are determined by differences in utility rather than differences in payments. Since subjects typically value payments today higher than later payments, the focus effect for a given payment difference will be stronger in the today attribute. Relatedly, we observe a higher frequency of  $c$  choices in Stage 2. It could be that the  $c$  option is more salient to subjects since they have been more exposed to it. Recall, that  $c$  was held constant in Stage 1, whereas  $c'$  varied. Another potential explanation is based on the fact that in the later decisions of Stage 1,  $c$  was inferior to  $c'$  for most subjects. Compared to these late decisions of Stage 1,  $c$  is then made relatively more attractive in Stage 2, which could make subjects more prone to choose it. In our current design, we are not able to test these different explanations, but future research should try to shed more light on this issue.

From a policy perspective, focusing effects may be harmful to society as it may be exploited by firms to distort competition and thereby welfare. To alleviate the negative aspects, understanding how focusing affects choice becomes crucial. As we have shown in this paper, focusing effects are real and drive biases in decision making. This also introduces the possibility to amend such biases by shifting the focus of the decision maker. For instance, a societal planner can serve a purpose by softly and non-intrusively influencing the individual perceptions regarding the alignment of individual and societal goods. These policies would influence those most receptive without depriving those not prone to mistakes from their individual freedom.

To facilitate effective policy intervention it is important to gain more knowledge about which choice contexts and personality types that are prone to focusing. For example, future research needs to explore to how our results relate to the complexity of the choice tasks. One interesting issue in this direction is to study how focus interacts with the number of attributes. It also seems interesting to address the effects of focusing in strategic settings. In this vein, Avoyan and Schotter (2015) find that when subjects play several games at the same time, the amount of attention (measured in time) that they devote to a specific game depends on the characteristics of the other games that they are playing. Another avenue for future research is to assess focusing using eye-tracking methods.

## References

- Akerlof, G. A., Shiller, R. J., 2015. *Phishing for phools: The economics of manipulation and deception*. Princeton University Press.
- Avoyan, A., Schotter, A., 2015. *Attention in games: An experimental study*. Unpublished manuscript.
- Azar, O. H., 2007. Relative thinking theory. *The Journal of Socio-Economics* 36 (1), 1–14.
- Azar, O. H., 2011. Does relative thinking exist in real-world situations? a field experiment with bagels and cream cheese. *Economic Inquiry* 49 (2), 564–572.

- Berinsky, A. J., Huber, G. A., Lenz, G. S., 2012. Evaluating online labor markets for experimental research: Amazon. com’s mechanical turk. *Political Analysis* 20 (3), 351–368.
- Bordalo, P., Gennaioli, N., Shleifer, A., 2013. Saliency and consumer choice. *Journal of Political Economy* 121 (5), 803–843.
- Bordalo, P., Gennaioli, N., Shleifer, A., 2012. Saliency in experimental tests of the endowment effect. *The American Economic Review* 102 (3), 47–52.
- Bordalo, P., Gennaioli, N., Shleifer, A., 2016. Competition for attention. *The Review of Economic Studies* 83 (2), 481–513.
- Bushong, B., Rabin, M., Schwartzstein, J., 2015. A model of relative thinking. Tech. rep., working paper.
- Cunningham, T., 2013. Comparisons and choice. Unpublished manuscript.
- Dertwinkel-Kalt, M., Köhler, K., Lange, M. R., Wenzel, T., et al., 2016. Demand shifts due to saliency effects: Experimental evidence. forthcoming in *Journal of the European Economic Association*.
- Gabaix, X., Laibson, D., et al., 2006. Shrouded attributes, consumer myopia, and information suppression in competitive markets. *The Quarterly Journal of Economics* 121 (2), 505–540.
- Grubb, M. D., 2015. Behavioral consumers in industrial organization: An overview. *Review of Industrial Organization* 47 (3), 247–258.
- Huber, J., Payne, J. W., Puto, C., 1982. Adding asymmetrically dominated alternatives: Violations of regularity and the similarity hypothesis. *Journal of consumer research*, 90–98.
- Huber, J., Payne, J. W., Puto, C. P., 2014. Let’s be honest about the attraction effect. *Journal of Marketing Research* 51 (4), 520–525.

- Kőszegi, B., Szeidl, A., 2013. A model of focusing in economic choice. *The Quarterly Journal of Economics* 128 (1), 53–104.
- Nenkov, G. Y., Morrin, M., Ward, A., Schwartz, B., Hulland, J., 2008. A short form of the maximization scale: Factor structure, reliability and validity studies. *Judgment and Decision Making* 3 (5), 371–388.
- Schkade, D. A., Kahneman, D., 1998. Does living in california make people happy? a focusing illusion in judgments of life satisfaction. *Psychological Science* 9 (5), 340–346.
- Schwartz, B., Ward, A., Monterosso, J., Lyubomirsky, S., White, K., Lehman, D. R., 2002. Maximizing versus satisficing: happiness is a matter of choice. *Journal of personality and social psychology* 83 (5), 1178.
- Toplak, M. E., West, R. F., Stanovich, K. E., 2014. Assessing miserly information processing: An expansion of the cognitive reflection test. *Thinking and Reasoning* 20 (2), 147–168.
- Webb, E. J. D., Nielsen, C. S., Sebald, A. C., Gotfredsen, A., 2015. Looking for salience: Eye-tracking and preference reversals.
- Yang, S., Lynn, M., 2014. More evidence challenging the robustness and usefulness of the attraction effect. *Journal of Marketing Research* 51 (4), 508–513.

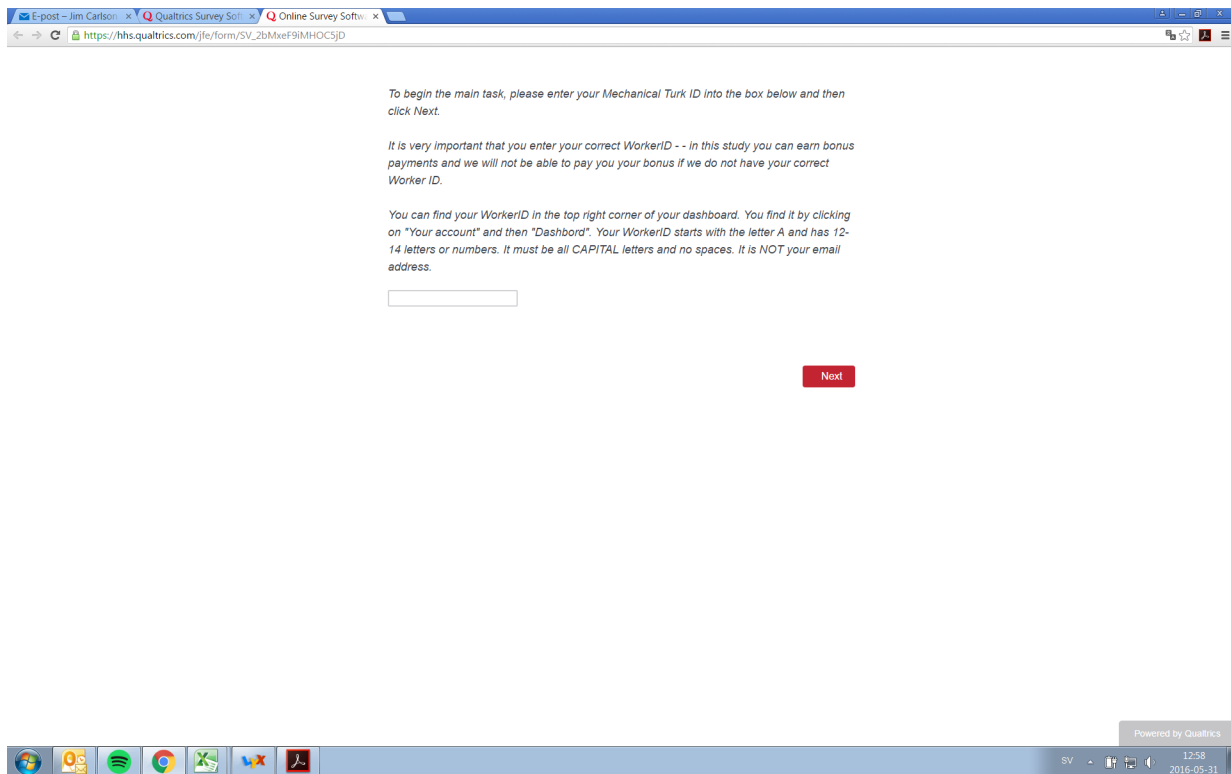
# Appendix

## A Appendix - Instructions and screenshots

This section displays screenshots of the various stages of the experiment. The order of the stages in the experiment is identical to the order in which the stages are presented in this section. In the experiment a choice, i.e,  $c$ ,  $c'$  or  $c''$  was labeled an Option.

### A.1 First screen

Figure 6: First screen



As several sessions were run, the first screen was included in order to exclude subjects who had already done the experiment in a previous session. The text was the following:

“To begin the main task, please enter your Mechanical Turk ID into the box below and then click Next.

It is very important that you enter your correct WorkerID - - in this study you can earn bonus payments and we will not be able to pay you your bonus if we do not have your correct Worker ID.

You can find your WorkerID in the top right corner of your dashboard. You find it by clicking on "Your account" and then "Dashbord". Your WorkerID starts with the letter A and has 12-14 letters or numbers. It must be all CAPITAL letters and no spaces. It is NOT your email address."

## A.2 Instructions

Figure 7: Instructions



This screenshot displays the instructions. The browser was zoomed out when taking this screenshot. In practice, the subjects had to scroll down to be able to read all the instructions. The experiment had two treatments and the instructions differed depending on treatment. The two instructions are given in the following two sections.

### A.2.1 Instructions treatment 1

Instructions:

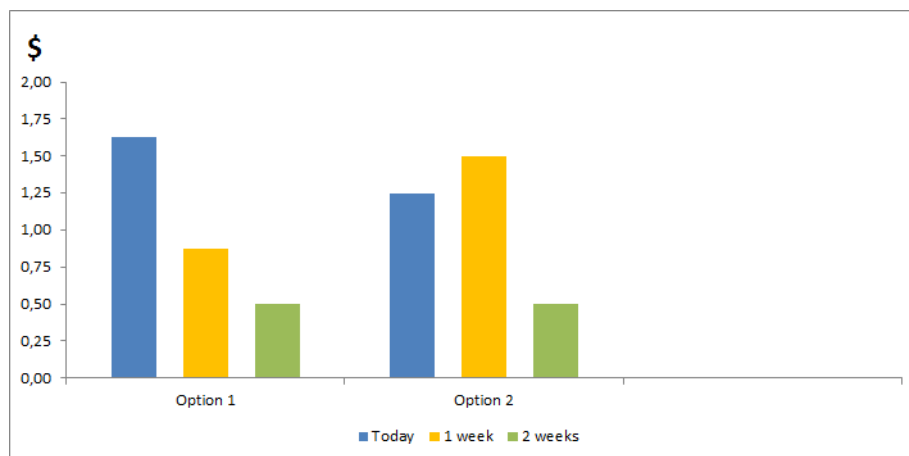
You will be making 17 decisions between options that promise to pay different amounts of money today, in 1 week or in 2 weeks. For each decision you will have 20 seconds to decide.

When you have made your 17 decisions we will conclude the study by asking you a couple of questions.

An example of a decision is displayed in Figure 3, where you have two options: Option 1 and Option 2. Option 1 consists of the three leftmost bars while Option 2 consists of the three rightmost bars. On the vertical axis you can read how much each bar promises to pay. Option 1 promises to pay \$1.625 today, \$0.875 in 1 week and \$0.5 in 2 weeks. Option 2 promises to pay \$1.25 today, \$1.5 in 1 week and \$0.5 in 2 weeks. We simply ask you to choose your most preferred option.

When you have selected an option you need to press the Next button in the lower right corner for your decision to be valid.

Figure 8: Instructions - Treatment 1



Payment:

By completing the study you are guaranteed the amount listed on the Mechanical Turk HIT that you accepted. On top of this you will earn a bonus payment determined in the

following way:

At the end of the study we will let a random draw select one of the decisions that you were presented. This decision will be paid out to you according to the time profile of the selected option. However, if you fail to select an option within 20 seconds on the decision chosen for payment, you will only receive the guaranteed amount. The random draw will be presented to you at the end of the study.

For example, if within 20 seconds you select Option 1 in Figure 3 and this decision is drawn to be paid out. Then we will pay you \$1.625 today, \$0.875 in 1 week and \$0.5 in 2 weeks.

Please note that the payment “today” will be transferred to your account within 24 hours after your completion of the HIT.

At the end of the study you will be presented a completion code. You have to enter this code into Mechanical Turk in order to receive any payment.

At the next screen you will be shown a written sentence which you are asked to enter into a text box. Failing to do so will make your HIT invalid and you will receive no payment. After the next screen the study starts.

In order to proceed to the subsequent screen press the Next button at the bottom of the screen.

### **A.2.2 Instructions treatment 2**

Instructions:

You will be making 17 decisions between options that promise to pay different amounts of money today, in 1 week or in 2 weeks. For each decision you will have 20 seconds to decide.

When you have made your 17 decisions we will conclude the study by asking you a couple of questions.

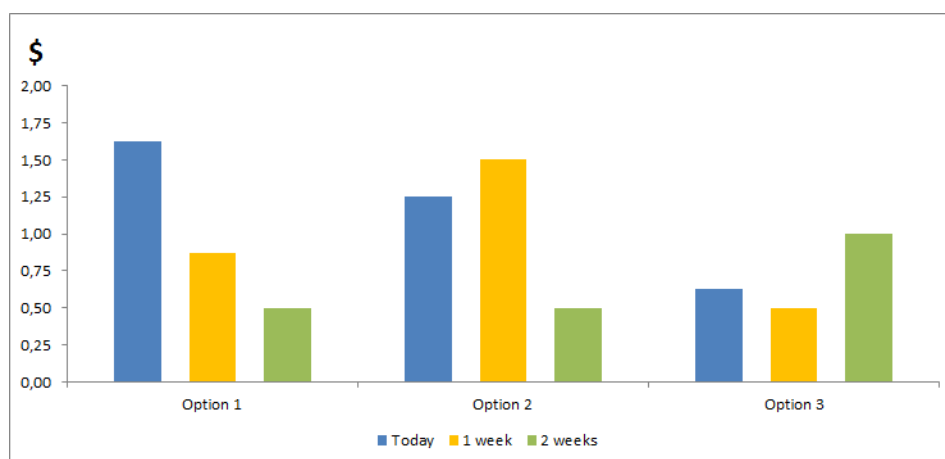
An example of a decision is displayed in Figure 4, where you have three options: Option 1, Option 2, and Option 3. Option 1 consists of the three leftmost bars while Option 2



consists of the three middle bars and Option 3 consists of the three rightmost bars. On the vertical axis you can read how much each bar promises to pay. Option 1 promises to pay \$1.625 today, \$0.875 in 1 week and \$0.5 in 2 weeks. Option 2 promises to pay \$1.25 today, \$1.5 in 1 week and \$0.5 in 2 weeks. Option 3 promises to pay \$0.625 today, \$0.5 in 1 week, and \$1 in 2 weeks. We simply ask you to choose your most preferred option.

When you have selected an option you need to press the Next button in the lower right corner for your decision to be valid.

Figure 9: Instructions - Treatment 2



Payment:

By completing the study you are guaranteed the amount listed on the Mechanical Turk HIT that you accepted. On top of this you will earn a bonus payment determined in the following way:

At the end of the study we will let a random draw select one of the decisions that you were presented. This decision will be paid out to you according to the time profile of the selected option. However, if you fail to select an option within 20 seconds on the decision chosen for payment, you will only receive the guaranteed amount. The random draw will be presented to you at the end of the study.

For example, if within 20 seconds you select Option 1 in Figure 4 and this decision is drawn to be paid out. Then we will pay you \$1.625 today, \$0.875 in 1 week and \$0.5 in 2 weeks.

Please note that the payment “today” will be transferred to your account within 24 hours after your completion of the HIT.

At the end of the study you will be presented a completion code. You have to enter this code into Mechanical Turk in order to receive any payment.

At the next screen you will be shown a written sentence which you are asked to enter into a text box. Failing to do so will make your HIT invalid and you will receive no payment. After the next screen the study starts.

In order to proceed to the subsequent screen press the Next button at the bottom of the screen.

## **A.3 Control questions**

The experiment contained two control questions, which are presented in the following sections.

### **A.3.1 Control question 1**

The first control question was aimed at controlling for computer bots. In order to pass the question, the subject had to enter “The woman saw a dog” into the text box.

Figure 10: Control question 1

The screenshot shows a web browser window with the address bar displaying [https://hhs.qualtrics.com/jfe/form/SV\\_2bMxeF9iMHOC5jD](https://hhs.qualtrics.com/jfe/form/SV_2bMxeF9iMHOC5jD). The browser tabs include "E-post - Jim Carlsson", "Qualtrics Survey Software", and "Online Survey Software". The main content area of the survey has a heading that reads: "Please enter the following written text into the text box below. Failure of doing this will make your HIT invalid." Below this is a large text input field containing the handwritten text "The woman saw a dog". Underneath the input field is a smaller, empty rectangular box. At the bottom of the survey area, there is a red button labeled "Next". A footer note states: "By pressing the 'Next' button the survey starts." The bottom of the image shows a Windows taskbar with various application icons and a system tray indicating the time as 13:00 on 2016-05-31, with a "Powered by Qualtrics" logo.

### A.3.2 Control question 2

Control question 2 was aimed at checking that the subjects had understood the decision tasks and/or responded to incentives. Subjects passed the question by choosing Option 1.

To be consistent in the design, subjects in treatment 2 were also faced with a control question which consisted of three options:

Figure 11: Control question 2 - Treatment 1

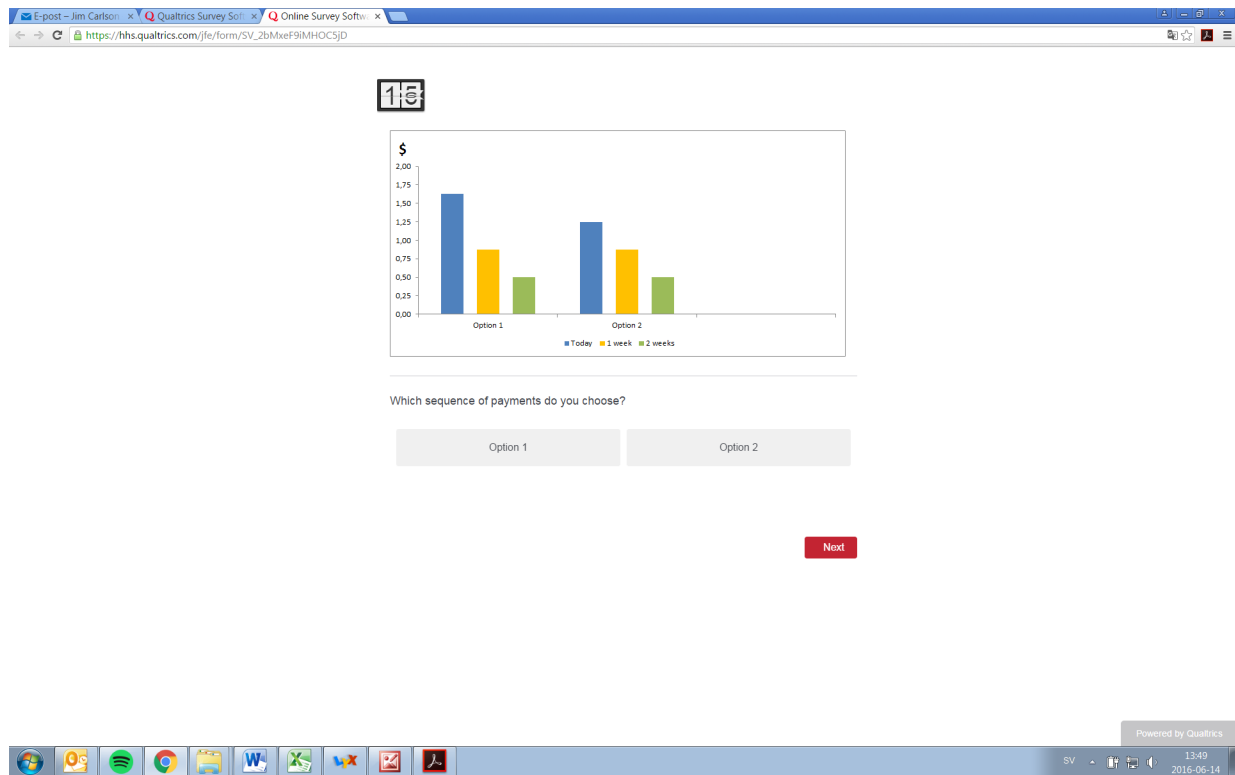
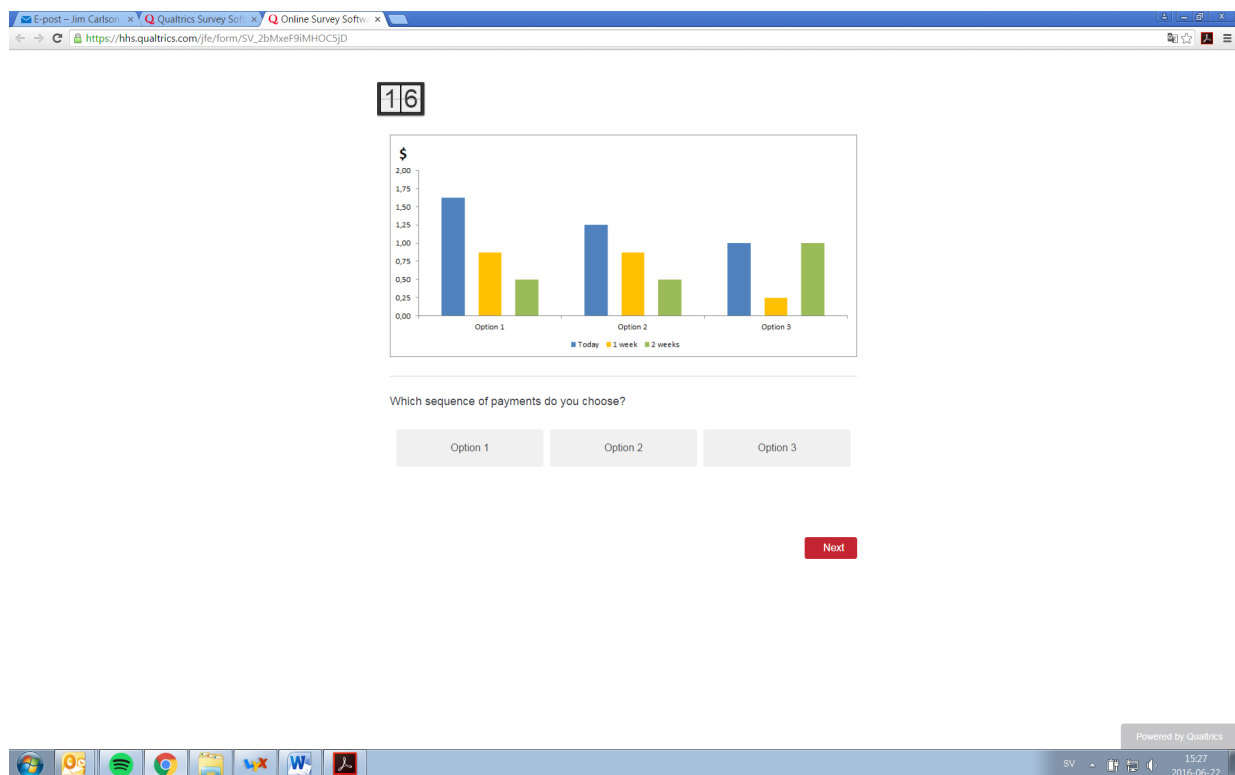


Figure 12: Control question 2 - Treatment 2



## A.4 Decision tasks

Two screenshots of the decision tasks are displayed in this section. The time remaining was shown in the upper left corner.

Figure 13: Example 1

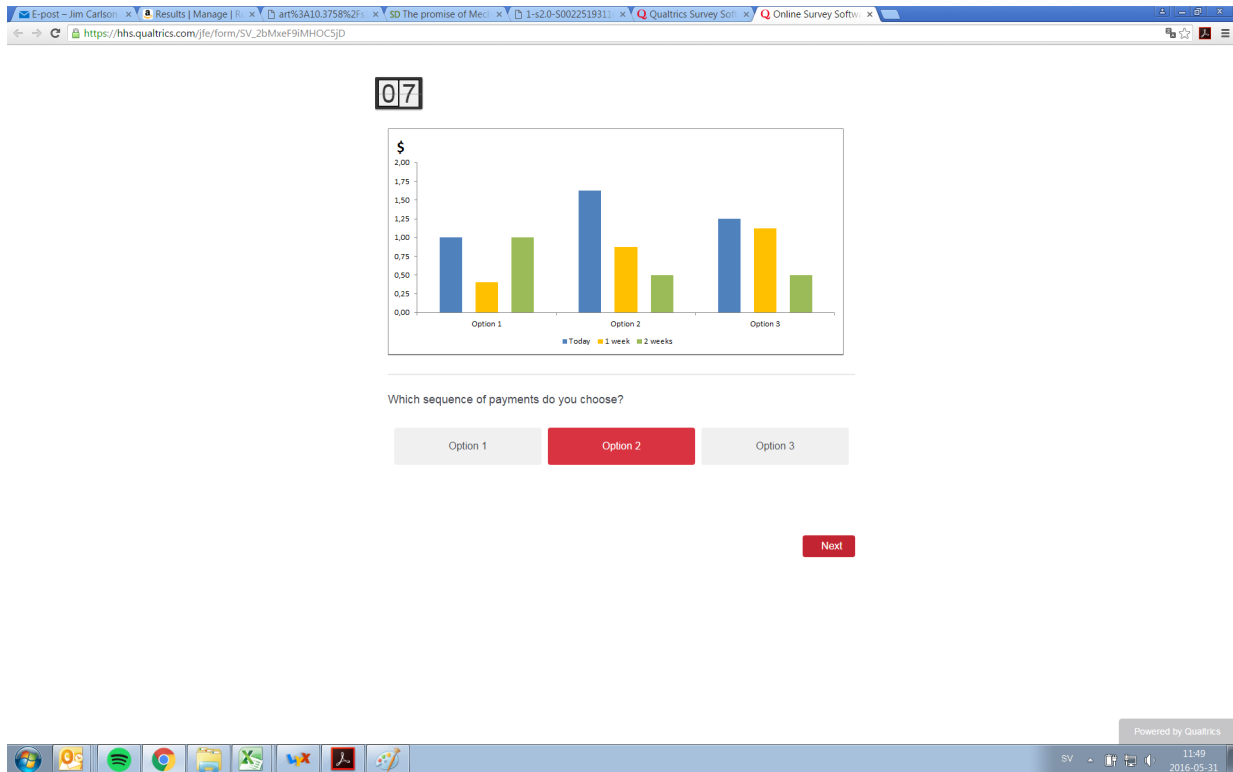
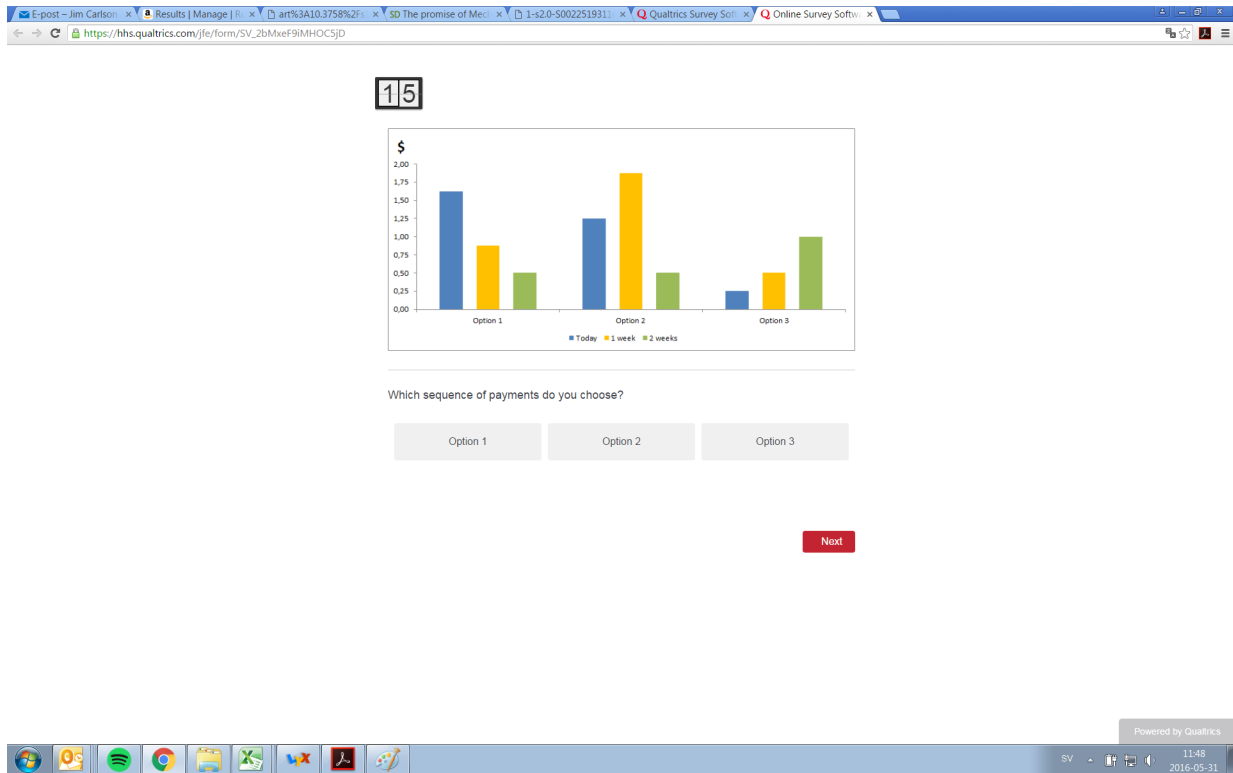


Figure 14: Example 2



## A.5 Cognitive Reflection Test

The Cognitive Reflection Test consisted of answering four questions proposed by Toplak et. al (2014). Each question is designed to have a correct answer and a different “intuitive” answer. The questions were the following:

1. If John can drink one barrel of water in 6 days, and Mary can drink one barrel of water in 12 days, how long would it take them to drink one barrel of water together? [Correct answer = 4 days; intuitive answer = 9 days]
2. Jerry received both the 15th highest and the 15th lowest mark in the class. How many students are in the class? [Correct answer = 29 students; intuitive answer = 30 students]
3. A man buys a pig for \$60, sells it for \$70, buys it back for \$80, and sells it finally for

\$90. How much has he made? [Correct answer = \$20; intuitive answer = \$10]

4. Simon decided to invest \$8,000 in the stock market one day early in 2008. Six months after he invested, on July 17, the stocks he had purchased were down 50%. Fortunately for Simon, from July 17 to October 17, the stocks he had purchased went up 75%. At this point, Simon has: a. broken even in the stock market, b. is ahead of where he began, c. has lost money [Correct answer = c, because the value at this point is \$7000; intuitive answer = b].

In the following, the screenshots of the for questions from the experiment are displayed.

Figure 15: CRT question 1

If John can drink one barrel of water in 6 days, and Mary can drink one barrel of water in 12 days, how long would it take them to drink one barrel of water together?

0 10 20 30 40 50 60 70 80 90 100

Days

Next

Powered by Qualtrics

SV 13:51 2016-06-14

Figure 16: CRT question 2

The screenshot shows a web browser window with three tabs: "E-post - Jim Carlsson", "Qualtrics Survey Software", and "Online Survey Software". The address bar shows the URL "https://hhs.qualtrics.com/jfe/form/SV\_2bMxeF9iMHOC5jD". The main content area displays a survey question: "Jerry received both the 15th highest and the 15th lowest mark in the class. How many students are in the class?". Below the question is a horizontal slider with numerical labels from 0 to 100 in increments of 10. The slider is currently set to 15, with a red dot at the 15 mark and the word "Students" written below the slider line. A red "Next" button is located to the right of the slider. At the bottom of the browser window, a taskbar is visible with icons for Windows, Outlook, Spotify, Chrome, File Explorer, Word, PowerPoint, OneDrive, and a folder. The system tray on the right shows "Powered by Qualtrics", "SV", and the date and time "1351 2016-06-14".

Jerry received both the 15th highest and the 15th lowest mark in the class. How many students are in the class?

0 10 20 30 40 50 60 70 80 90 100

Students

Next

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SV 1351 2016-06-14



Figure 17: CRT question 3

The screenshot shows a web browser window with three tabs: "E-post - Jim Carlsson", "Qualtrics Survey Software", and "Online Survey Software". The address bar shows the URL "https://hhs.qualtrics.com/jfe/form/SV\_2bMxeF9iMHOC5jD". The survey question is displayed in the center of the browser window. It reads: "A man buys a pig for \$60, sells it for \$70, buys it back for \$80, and sells it finally for \$90. How much has he made?". Below the question is a horizontal slider with numerical labels from 0 to 100 in increments of 10. A red dot is positioned at the 0 mark, and a dollar sign (\$) is placed to the left of the slider. To the right of the slider is a red button labeled "Next". At the bottom of the browser window, a taskbar is visible with icons for various applications including Windows, Outlook, Spotify, Chrome, File Explorer, Word, PowerPoint, Teams, OneDrive, and a pencil icon. The system tray on the right shows the text "Powered by Qualtrics", the letters "SV", and the date and time "1351 2016-06-14".

A man buys a pig for \$60, sells it for \$70, buys it back for \$80, and sells it finally for \$90.  
How much has he made?

0 10 20 30 40 50 60 70 80 90 100

\$

Next

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SV 1351 2016-06-14

Figure 18: CRT question 4

The screenshot shows a web browser window with three tabs: "E-post - Jim Carlsson", "Qualtrics Survey Software", and "Online Survey Software". The address bar shows the URL "https://hhs.qualtrics.com/jfe/form/SV\_2bMxeF9iMHOC5jD". The survey content is as follows:

Simon decided to invest \$8,000 in the stock market one day early in 2008. Six months after he invested, on July 17, the stocks he had purchased were down 50%. Fortunately for Simon, from July 17 to October 17, the stocks he had purchased went up 75%. At this point, Simon has:

- a. broken even in the stock market,
- b. is ahead of where he began,
- c. has lost money

Below the options are three buttons labeled "a.", "b.", and "c.". A red "Next" button is located to the right of the options.

At the bottom of the browser window, the Windows taskbar is visible with icons for Internet Explorer, Outlook, Spotify, Chrome, File Explorer, Word, Excel, PowerPoint, OneDrive, and a folder icon. The system tray shows "SV", a volume icon, a network icon, and the date and time "13:52 2016-06-14". A "Powered by Qualtrics" logo is in the bottom right corner.

## A.6 Socioeconomics

The subjects were asked to submit their age, gender, nationality, and years of college/university education.

## A.6.1 Age

Figure 19: Age

What is your age?

0 10 20 30 40 50 60 70 80 90 100

Age

Next

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SV 13:52 2016-06-14

## A.6.2 Gender

Figure 20: Gender

The image is a screenshot of a web browser displaying a Qualtrics online survey. The browser's address bar shows the URL [https://hhs.qualtrics.com/jfe/form/SV\\_2bMxeF9lMHOC5JD](https://hhs.qualtrics.com/jfe/form/SV_2bMxeF9lMHOC5JD). The survey question is "What is your gender?". Below the question are two light gray buttons labeled "Male" and "Female". To the right of these buttons is a red button labeled "Next". The browser's taskbar at the bottom shows various application icons, including Google Chrome, Microsoft Word, and others. The system tray in the bottom right corner displays the time as 13:52 and the date as 2016-06-14. A small "Powered by Qualtrics" logo is visible in the bottom right corner of the survey area.

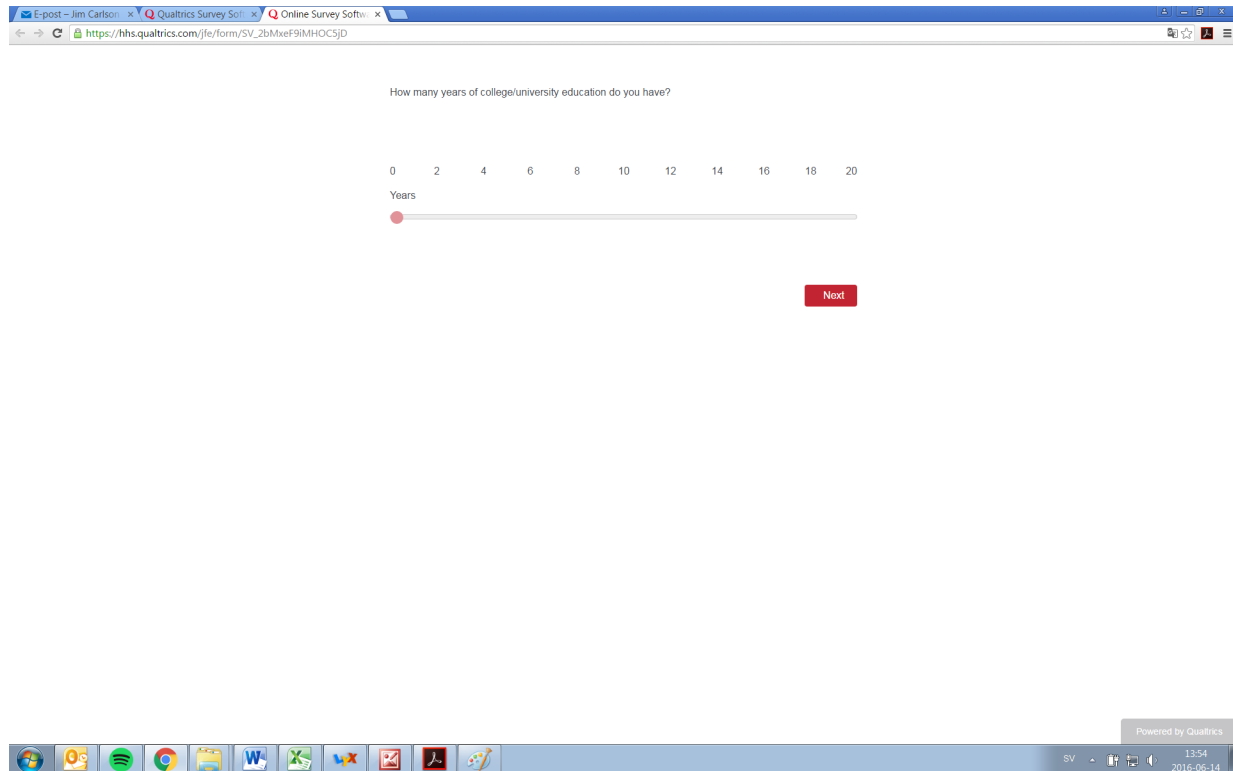
### A.6.3 Nationality

Figure 21: Nationality

The image is a screenshot of a web browser displaying a Qualtrics survey. The browser's address bar shows the URL [https://hhs.qualtrics.com/jfe/form/SV\\_2bMxf9lMHOC5jD](https://hhs.qualtrics.com/jfe/form/SV_2bMxf9lMHOC5jD). The survey question is "What is your nationality?", followed by a single-line text input field. To the right of the input field is a red button labeled "Next". The browser's taskbar at the bottom shows various application icons, including Windows, Outlook, Spotify, Chrome, and Word. The system tray in the bottom right corner indicates the date and time as "13:54 2016-06-14". A small "Powered by Qualtrics" logo is visible in the bottom right corner of the survey area.

#### A.6.4 Years of college/university education

Figure 22: Years of college/university education



How many years of college/university education do you have?

0 2 4 6 8 10 12 14 16 18 20

Years

Next

### A.7 Brief maximization scale

In order to collect data on decision making style, subjects responded to the six statements of the Brief maximization scale proposed by Nenkov et. al. (2008). The six statements were evenly divided into three categories: alternative search, decision difficulty, and high standards. Each subject rated how true each statement was to them. The rating was between 1 and 7 where 7 meant completely agree and 1 completely disagree.

#### A.7.1 Alternative search

A subject's degree of alternative search was determined by the answers to the following two statements:

1. No matter how satisfied I am with my job, it's only right for me to be on the lookout for better opportunities.
2. When I am listening to the radio, I often check other stations to see if something better is playing, even if I am relatively satisfied with what I'm listening to.

Figure 23: Alternative search - Question 1

No matter how satisfied I am with my job, it's only right for me to be on the lookout for better opportunities.

Completely disagree 1 2 3 4 5 6 7 Completely agree

Next

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SV 13:54 2015-06-14

Figure 24: Alternative search - Question 2

When I am listening to the radio, I often check other stations to see if something better is playing, even if I am relatively satisfied with what I'm listening to.

Completely disagree 1 2 3 4 5 6 7 Completely agree

Next

### A.7.2 Decision difficulty

A subject's degree of decision difficulty was determined by the answers to the following two statements:

1. I often find it difficult to shop for a gift for a friend.
2. Choosing which movie to watch is really difficult. I'm always struggling to pick the best one.



Figure 25: Decision difficulty - Question 1

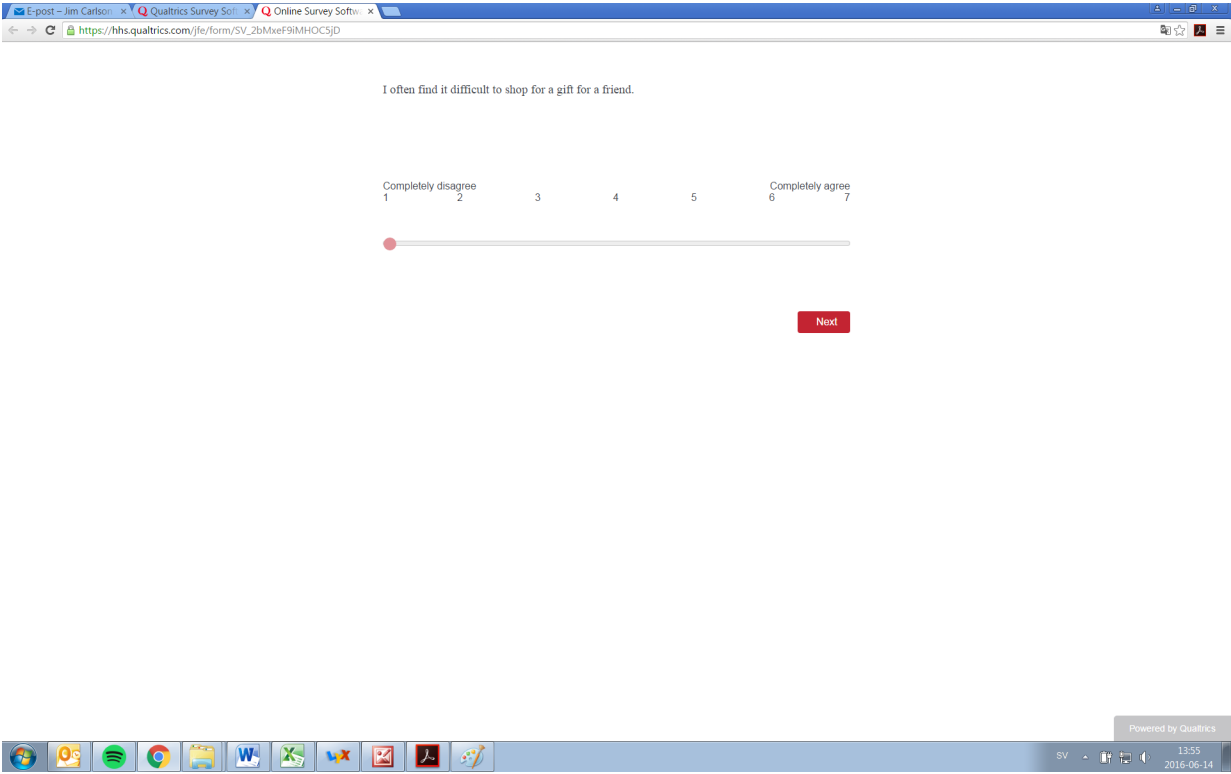


Figure 26: Decision difficulty - Question 2

Choosing which movie to watch is really difficult. I'm always struggling to pick the best one.

Completely disagree 1 2 3 4 5 6 7 Completely agree

Next

### A.7.3 High standards

A subject's degree of high standards was determined by the answers to the following two statements:

1. I never settle for second best.
2. No matter what I do, I have the highest standards for myself.

Figure 27: High standards - Question 1

I never settle for second best.

Completely disagree 1 2 3 4 5 6 7 Completely agree

Next

Powered by Qualtrics

SV 13:55 2016-06-14

Figure 28: High standards - Question 2

No matter what I do, I have the highest standards for myself.

Completely disagree 1 2 3 4 5 6 7 Completely agree

Next

Powered by Qualtrics

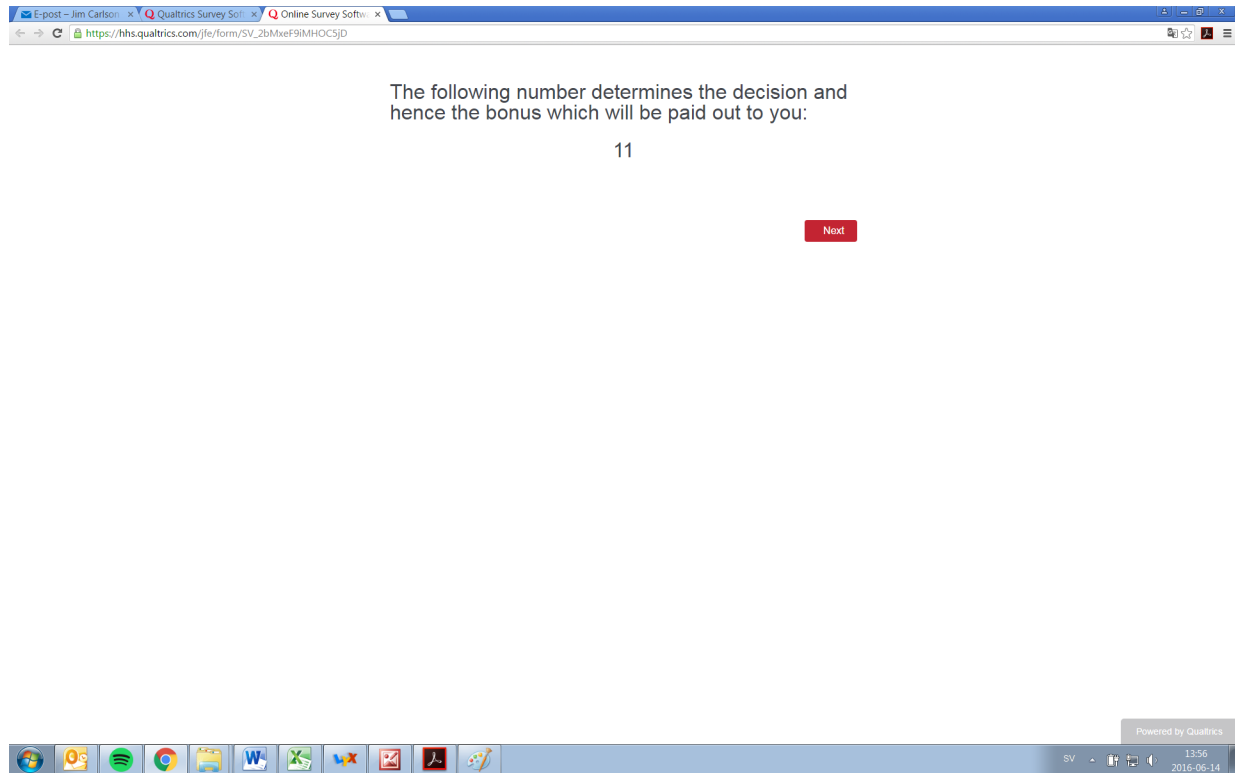
SV 13:55 2016-06-14

## A.8 Concluding screens

### A.8.1 Random draw deciding payment

The decision task which was chosen for payment was displayed to the subject at this screen. In particular, a number between 1 and 17 was randomly drawn and displayed to indicate which decision task was to be paid out.

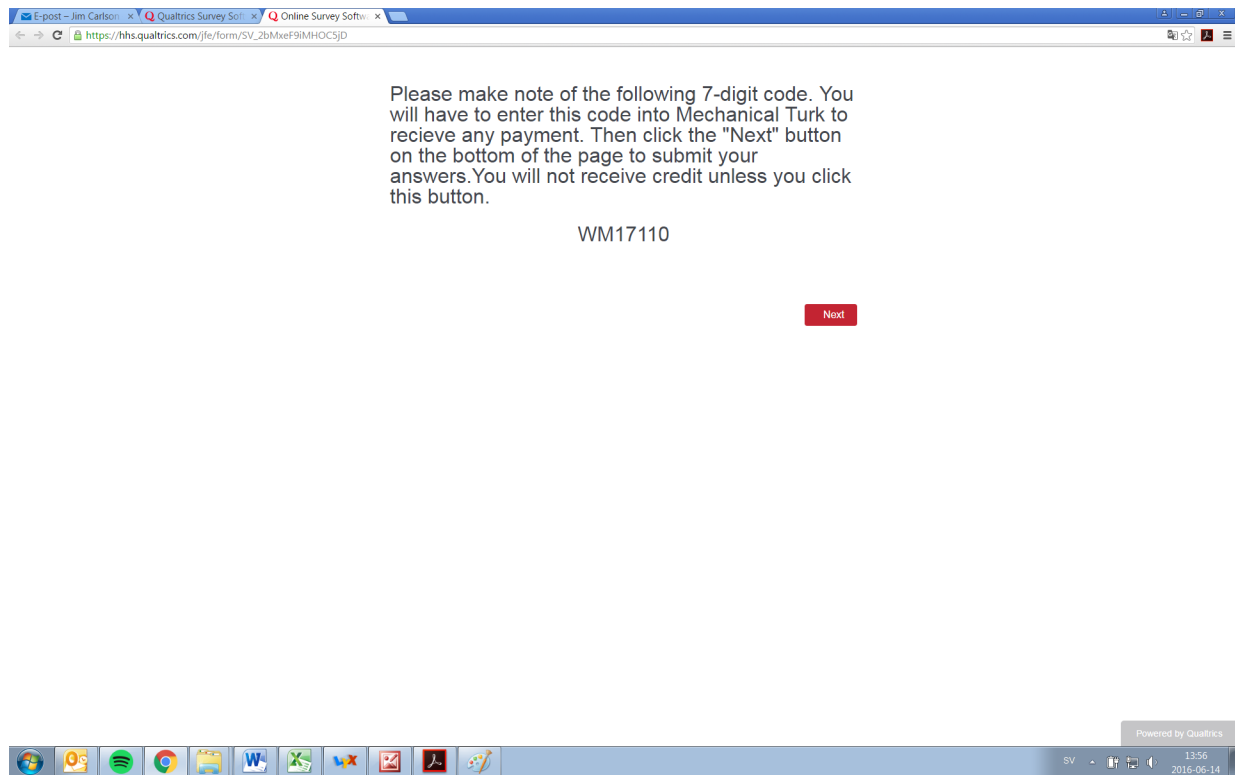
Figure 29: Random draw deciding payment



### A.8.2 Code to enter into M-turk

At the final screen, a randomly created code was displayed to the subject. In order to complete the experiment and receive any payment at all, the subject had to enter this code into Mturk.

Figure 30: Code to enter into M-turk



## B Payments of decision tasks

The dollar payments of the choices  $c$ ,  $c'$ , and  $c''$  for all possible decision tasks are displayed in this section. The payments are divided by treatment and stage. For stage 2 payments, the payments are also divided by switch point.

### B.1 Treatment 1

#### B.1.1 Stage 1 u

Table 9: Payments in Stage 1 - Treatment 1

Decision task	$c$				$c'$		
	Today	1 week	2 weeks		Today	1 week	2 weeks
1	1.625	0.875	0.5		1.25	1	0.5
2	1.625	0.875	0.5		1.25	1.125	0.5
3	1.625	0.875	0.5		1.25	1.25	0.5
4	1.625	0.875	0.5		1.25	1.375	0.5
5	1.625	0.875	0.5		1.25	1.5	0.5
6	1.625	0.875	0.5		1.25	1.625	0.5
7	1.625	0.875	0.5		1.25	1.75	0.5
8	1.625	0.875	0.5		1.25	1.875	0.5

#### B.1.2 Stage 2

Table 10: Payments - Switch point = 1

Decision Task	$c$				$c'$				$c''$		
	Today	1 week	2 weeks		Today	1 week	2 weeks		Today	1 week	2 weeks
9	1.625	0.875	0.5		1.25	1	0.5		1.125	0.1	1
10	1.625	0.875	0.5		1.25	1	0.5		0.1	0.5	1
11	1.625	0.875	0.5		1.25	1	0.5		1.625	0.5	0.5
12	1.625	0.875	0.5		1.25	1	0.5		1.125	1	0.5
13	1.625	0.875	0.5		1.25	1	0.5		1.3	0.95	0.1
14	1.625	0.875	0.5		1.25	1	0.5		1.35	0.9	0.05
15	1.625	0.875	0.5		1.25	1	0.5		1.4	0.9	0.05
16	1.625	0.875	0.5		1.25	1	0.5		1.35	0.9	0.1

Table 11: Payments - Switch point = 2

Decision Task	$c$				$c'$				$c''$		
	Today	1 week	2 weeks		Today	1 week	2 weeks		Today	1 week	2 weeks
9	1.625	0.875	0.5		1.25	1	0.5		1.125	0.1	1
10	1.625	0.875	0.5		1.25	1.125	0.5		0.1	0.5	1
11	1.625	0.875	0.5		1.25	1.125	0.5		1.625	0.5	0.5
12	1.625	0.875	0.5		1.25	1.125	0.5		1	1.125	0.5
13	1.625	0.875	0.5		1.25	1	0.5		1.3	0.9	0.2
14	1.625	0.875	0.5		1.25	1.125	0.5		1.35	0.95	0.1
15	1.625	0.875	0.5		1.25	1.125	0.5		1.4	0.9	0.15
16	1.625	0.875	0.5		1.25	1.125	0.5		1.3	1	0.1

Table 12: Payments - Switch point = 3

Decision Task	$c$				$c'$				$c''$		
	Today	1 week	2 weeks		Today	1 week	2 weeks		Today	1 week	2 weeks
9	1.625	0.875	0.5		1.25	1.125	0.5		1	0.1	1
10	1.625	0.875	0.5		1.25	1.25	0.5		0.1	0.5	1
11	1.625	0.875	0.5		1.25	1.25	0.5		1.625	0.5	0.5
12	1.625	0.875	0.5		1.25	1.25	0.5		0.875	1.25	0.5
13	1.625	0.875	0.5		1.25	1.125	0.5		1.3	0.9	0.2
14	1.625	0.875	0.5		1.25	1.25	0.5		1.35	0.95	0.1
15	1.625	0.875	0.5		1.25	1.25	0.5		1.4	0.9	0.15
16	1.625	0.875	0.5		1.25	1.25	0.5		1.3	1	0.1

Table 13: Payments - Switch point = 4

Decision Task	$c$				$c'$				$c''$		
	Today	1 week	2 weeks		Today	1 week	2 weeks		Today	1 week	2 weeks
9	1.625	0.875	0.5		1.25	1.25	0.5		0.875	0.1	1
10	1.625	0.875	0.5		1.25	1.375	0.5		0.1	0.5	1
11	1.625	0.875	0.5		1.25	1.375	0.5		1.625	0.5	0.5
12	1.625	0.875	0.5		1.25	1.375	0.5		0.75	1.375	0.5
13	1.625	0.875	0.5		1.25	1.25	0.5		1.3	0.9	0.2
14	1.625	0.875	0.5		1.25	1.375	0.5		1.35	0.95	0.1
15	1.625	0.875	0.5		1.25	1.375	0.5		1.4	0.9	0.15
16	1.625	0.875	0.5		1.25	1.375	0.5		1.3	1	0.1



Table 14: Payments - Switch point = 5

$c$				$c'$			$c''$		
Decision Task	Today	1 week	2 weeks	Today	1 week	2 weeks	Today	1 week	2 weeks
9	1.625	0.875	0.5	1.25	1.375	0.5	0.75	0.1	1
10	1.625	0.875	0.5	1.25	1.5	0.5	0.1	0.5	1
11	1.625	0.875	0.5	1.25	1.5	0.5	1.625	0.5	0.5
12	1.625	0.875	0.5	1.25	1.5	0.5	0.625	1.5	0.5
13	1.625	0.875	0.5	1.25	1.375	0.5	1.3	0.9	0.2
14	1.625	0.875	0.5	1.25	1.5	0.5	1.35	0.95	0.1
15	1.625	0.875	0.5	1.25	1.5	0.5	1.4	0.9	0.15
16	1.625	0.875	0.5	1.25	1.5	0.5	1.3	1	0.1

Table 15: Payments - Switch point = 6

$c$				$c'$			$c''$		
Decision Task	Today	1 week	2 weeks	Today	1 week	2 weeks	Today	1 week	2 weeks
9	1.625	0.875	0.5	1.25	1.5	0.5	0.625	0.1	1
10	1.625	0.875	0.5	1.25	1.625	0.5	0.1	0.5	1
11	1.625	0.875	0.5	1.25	1.625	0.5	1.625	0.5	0.5
12	1.625	0.875	0.5	1.25	1.625	0.5	0.5	1.625	0.5
13	1.625	0.875	0.5	1.25	1.5	0.5	1.3	0.9	0.2
14	1.625	0.875	0.5	1.25	1.625	0.5	1.35	0.95	0.1
15	1.625	0.875	0.5	1.25	1.625	0.5	1.4	0.9	0.15
16	1.625	0.875	0.5	1.25	1.625	0.5	1.3	1	0.1

Table 16: Payments - Switch point = 7

$c$				$c'$			$c''$		
Decision Task	Today	1 week	2 weeks	Today	1 week	2 weeks	Today	1 week	2 weeks
9	1.625	0.875	0.5	1.25	1.625	0.5	0.5	0.1	1
10	1.625	0.875	0.5	1.25	1.75	0.5	0.1	0.5	1
11	1.625	0.875	0.5	1.25	1.75	0.5	1.625	0.5	0.5
12	1.625	0.875	0.5	1.25	1.75	0.5	0.375	1.75	0.5
13	1.625	0.875	0.5	1.25	1.625	0.5	1.3	0.9	0.2
14	1.625	0.875	0.5	1.25	1.75	0.5	1.35	0.95	0.1
15	1.625	0.875	0.5	1.25	1.75	0.5	1.4	0.9	0.15
16	1.625	0.875	0.5	1.25	1.75	0.5	1.3	1	0.1

Table 17: Payments - Switch point = 8

Decision Task	$c$				$c'$				$c''$		
	Today	1 week	2 weeks		Today	1 week	2 weeks		Today	1 week	2 weeks
9	1.625	0.875	0.5		1.25	1.75	0.5		0.375	0.1	1
10	1.625	0.875	0.5		1.25	1.875	0.5		0.05	0.5	1
11	1.625	0.875	0.5		1.25	1.875	0.5		1.625	0.5	0.5
12	1.625	0.875	0.5		1.25	1.875	0.5		0.25	1.875	0.5
13	1.625	0.875	0.5		1.25	1.75	0.5		1.3	0.9	0.2
14	1.625	0.875	0.5		1.25	1.875	0.5		1.35	0.95	0.1
15	1.625	0.875	0.5		1.25	1.875	0.5		1.4	0.95	0.15
16	1.625	0.875	0.5		1.25	1.875	0.5		1.3	1	0.15

## B.2 Treatment 2

### B.2.1 Stage 1

Table 18: Payments in Stage 1 - Treatment 2

Decision Task	$c$				$c'$				$c''$		
	Today	1 week	2 weeks		Today	1 week	2 weeks		Today	1 week	2 weeks
1	1.625	0.875	0.5		1.25	1	0.5		1.125	0.5	1
2	1.625	0.875	0.5		1.25	1.125	0.5		1	0.5	1
3	1.625	0.875	0.5		1.25	1.25	0.5		0.875	0.5	1
4	1.625	0.875	0.5		1.25	1.375	0.5		0.75	0.5	1
5	1.625	0.875	0.5		1.25	1.5	0.5		0.625	0.5	1
6	1.625	0.875	0.5		1.25	1.625	0.5		0.5	0.5	1
7	1.625	0.875	0.5		1.25	1.75	0.5		0.375	0.5	1
8	1.625	0.875	0.5		1.25	1.875	0.5		0.25	0.5	1

### B.2.2 Stage 2

Table 19: Payments - Switch point = 1

Decision Task	$c$				$c'$				$c''$		
	Today	1 week	2 weeks		Today	1 week	2 weeks		Today	1 week	2 weeks
9	1.625	0.875	0.5		1.25	1	0.5		1.125	0.1	1
10	1.625	0.875	0.5		1.25	1	0.5		0.1	0.5	1
11	1.625	0.875	0.5		1.25	1	0.5		1.625	0.5	0.5
12	1.625	0.875	0.5		1.25	1	0.5		1.125	1	0.5
13	1.625	0.875	0.5		1.25	1	0.5		1.125	0.4	1
14	1.625	0.875	0.5		1.25	1	0.5		1.125	0.3	1
15	1.625	0.875	0.5		1.25	1	0.5		1.125	0.4	1
16	1.625	0.875	0.5		1.25	1	0.5		1.125	0.3	1

Table 20: Payments - Switch point = 2

Decision Task	$c$				$c'$				$c''$		
	Today	1 week	2 weeks		Today	1 week	2 weeks		Today	1 week	2 weeks
9	1.625	0.875	0.5		1.25	1	0.5		1.125	0.1	1
10	1.625	0.875	0.5		1.25	1.125	0.5		0.1	0.5	1
11	1.625	0.875	0.5		1.25	1.125	0.5		1.625	0.5	0.5
12	1.625	0.875	0.5		1.25	1.125	0.5		1	1.125	0.5
13	1.625	0.875	0.5		1.25	1	0.5		1	0.5	1
14	1.625	0.875	0.5		1.25	1	0.5		1.125	0.6	1
15	1.625	0.875	0.5		1.25	1.125	0.5		1	0.4	1
16	1.625	0.875	0.5		1.25	1.125	0.5		1.125	0.5	1

Table 21: Payments - Switch point = 3

Decision Task	$c$				$c'$				$c''$		
	Today	1 week	2 weeks		Today	1 week	2 weeks		Today	1 week	2 weeks
9	1.625	0.875	0.5		1.25	1.125	0.5		1	0.1	1
10	1.625	0.875	0.5		1.25	1.25	0.5		0.1	0.5	1
11	1.625	0.875	0.5		1.25	1.25	0.5		1.625	0.5	0.5
12	1.625	0.875	0.5		1.25	1.25	0.5		0.875	1.25	0.5
13	1.625	0.875	0.5		1.25	1.125	0.5		0.875	0.5	1
14	1.625	0.875	0.5		1.25	1.125	0.5		1	0.6	1
15	1.625	0.875	0.5		1.25	1.25	0.5		0.875	0.4	1
16	1.625	0.875	0.5		1.25	1.25	0.5		1	0.5	1

Table 22: Payments - Switch point = 4

Decision Task	$c$				$c'$				$c''$		
	Today	1 week	2 weeks		Today	1 week	2 weeks		Today	1 week	2 weeks
9	1.625	0.875	0.5		1.25	1.25	0.5		0.875	0.1	1
10	1.625	0.875	0.5		1.25	1.375	0.5		0.1	0.5	1
11	1.625	0.875	0.5		1.25	1.375	0.5		1.625	0.5	0.5
12	1.625	0.875	0.5		1.25	1.375	0.5		0.75	1.375	0.5
13	1.625	0.875	0.5		1.25	1.25	0.5		0.75	0.5	1
14	1.625	0.875	0.5		1.25	1.25	0.5		0.875	0.6	1
15	1.625	0.875	0.5		1.25	1.375	0.5		0.75	0.4	1
16	1.625	0.875	0.5		1.25	1.375	0.5		0.875	0.5	1

Table 23: Payments - Switch point = 5

Decision Task	$c$				$c'$				$c''$		
	Today	1 week	2 weeks		Today	1 week	2 weeks		Today	1 week	2 weeks
9	1.625	0.875	0.5		1.25	1.375	0.5		0.75	0.1	1
10	1.625	0.875	0.5		1.25	1.5	0.5		0.1	0.5	1
11	1.625	0.875	0.5		1.25	1.5	0.5		1.625	0.5	0.5
12	1.625	0.875	0.5		1.25	1.5	0.5		0.625	1.5	0.5
13	1.625	0.875	0.5		1.25	1.375	0.5		0.625	0.5	1
14	1.625	0.875	0.5		1.25	1.375	0.5		0.75	0.6	1
15	1.625	0.875	0.5		1.25	1.5	0.5		0.625	0.4	1
16	1.625	0.875	0.5		1.25	1.5	0.5		0.75	0.5	1

Table 24: Payments - Switch point = 6

Decision Task	$c$				$c'$				$c''$		
	Today	1 week	2 weeks		Today	1 week	2 weeks		Today	1 week	2 weeks
9	1.625	0.875	0.5		1.25	1.5	0.5		0.625	0.1	1
10	1.625	0.875	0.5		1.25	1.625	0.5		0.1	0.5	1
11	1.625	0.875	0.5		1.25	1.625	0.5		1.625	0.5	0.5
12	1.625	0.875	0.5		1.25	1.625	0.5		0.5	1.625	0.5
13	1.625	0.875	0.5		1.25	1.5	0.5		0.5	0.5	1
14	1.625	0.875	0.5		1.25	1.5	0.5		0.625	0.6	1
15	1.625	0.875	0.5		1.25	1.625	0.5		0.5	0.4	1
16	1.625	0.875	0.5		1.25	1.625	0.5		0.625	0.5	1

Table 25: Payments - Switch point = 7

Decision Task	$c$				$c'$				$c''$		
	Today	1 week	2 weeks		Today	1 week	2 weeks		Today	1 week	2 weeks
9	1.625	0.875	0.5		1.25	1.625	0.5		0.5	0.1	1
10	1.625	0.875	0.5		1.25	1.75	0.5		0.1	0.5	1
11	1.625	0.875	0.5		1.25	1.75	0.5		1.625	0.5	0.5
12	1.625	0.875	0.5		1.25	1.75	0.5		0.375	1.75	0.5
13	1.625	0.875	0.5		1.25	1.625	0.5		0.375	0.5	1
14	1.625	0.875	0.5		1.25	1.625	0.5		0.5	0.6	1
15	1.625	0.875	0.5		1.25	1.75	0.5		0.375	0.4	1
16	1.625	0.875	0.5		1.25	1.75	0.5		0.5	0.5	1

Table 26: Payments - Switch point = 8

Decision Task	$c$				$c'$				$c''$		
	Today	1 week	2 weeks		Today	1 week	2 weeks		Today	1 week	2 weeks
9	1.625	0.875	0.5		1.25	1.75	0.5		0.375	0.1	1
10	1.625	0.875	0.5		1.25	1.875	0.5		0.05	0.5	1
11	1.625	0.875	0.5		1.25	1.875	0.5		1.625	0.5	0.5
12	1.625	0.875	0.5		1.25	1.875	0.5		0.25	1.875	0.5
13	1.625	0.875	0.5		1.25	1.75	0.5		0.25	0.5	1
14	1.625	0.875	0.5		1.25	1.75	0.5		0.375	0.6	1
15	1.625	0.875	0.5		1.25	1.875	0.5		0.25	0.4	1
16	1.625	0.875	0.5		1.25	1.875	0.5		0.375	0.5	1

## C Robustness tests and additional statistical analysis

In this appendix we report some additional tables, figures and regression results. Table 27 starts by reporting the number and fraction of missing observations for each decision task in Stage 2 due to a choice of the third option  $c''$ . The total number of observations for any decision task before this exclusion is 500.

Table 27: Number and fraction of choices of  $c''$  by decision task

Decision task		Number of $c''$ choices	Fraction of $c''$
9		8	1.6 %
10		6	1.2%
11		52	10.4 %
12		22	4.4 %
13		8	1.6 %
14		20	4 %
15		14	2.8 %
16		16	3.2%
Average		18.25	3.65 %

We continue by showing our main specifications in the paper now split up by treatment. We then turn to robustness checks where we in run probit regressions instead of OLS regressions as in the main body of the paper. In addition we examine robustness to excluding subjects with multiple switch points in Stage 1 and including observations where a subject that took more than 20 second to make a decision Figure 31 we present Focusing bias by experiment. As can be seen the results are quite similar across the two treatments which is also confirmed in Table 28, reporting p-values from Wilcoxon matched-pair tests.

Figure 31: Focusing bias by experiment

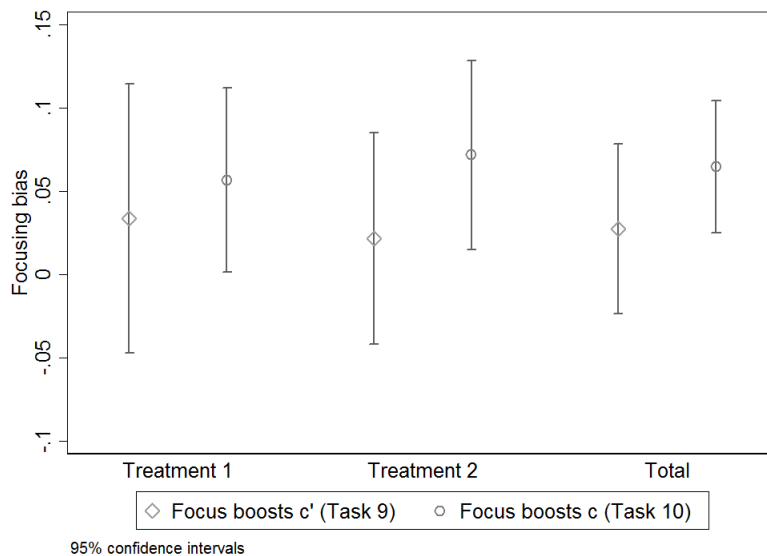


Table 28: Focus: Two-sided p-values from Wilcoxon matched-pairs signed-ranks test

	Average	$c$	$c'$
TOTAL	0.008	0.001	0.462
Treatment 1	0.046	0.024	0.824
Treatment 2	0.095	0.013	0.493

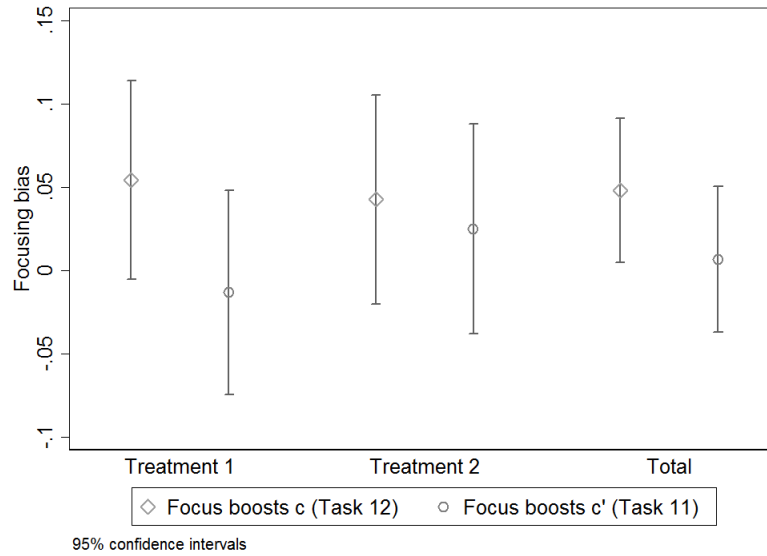
Figure 32 reports the equivalent of Figure 5 broken down by experiment and Table 29 p-values from from Wilcoxon matched-pairs signed-ranks test.

Table 29: Focus vs. Decoy: Two-sided p-values from Wilcoxon matched-pairs signed-ranks test

	Average	$c$	$c'$
TOTAL	0.111	0.020	0.835
Treatment 1	0.403	0.037	0.777
Treatment 2	0.175	0.281	0.475

Tables 30 and 31 report regression results using a probit model instead of a OLS as in the main body of the paper. As can be seen the qualitative results remain under this approach.

Figure 32: Focusing vs. decoy by experiment



Tables 32 and 33 report regression results corresponding to Tables 7 and 8 but restricting the sample to subjects with a unique switch point. As can be seen the main results remain significant albeit a bit weaker which is not unexpected given that we restrict the sample size.



Table 32: Focus: Regression results from OLS regressions with consistent choice as dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5
Focus boosts $c$	-0.0587** [0.0246]	-0.0598** [0.0246]	-0.0605** [0.0247]	-0.0605** [0.0247]	-0.0623** [0.0248]
Focus boosts $c'$	-0.0140 [0.0294]	-0.0122 [0.0297]	-0.0117 [0.0297]	-0.0119 [0.0297]	-0.0130 [0.0299]
$c$ consistent	0.115*** [0.0382]	0.112*** [0.0385]	0.113*** [0.0385]	0.112*** [0.0385]	0.115*** [0.0386]
CRT			0.0141* [0.00770]	0.0171** [0.00801]	0.0177** [0.00878]
Decision time			-0.00220 [0.00288]	-0.00172 [0.00290]	-0.00198 [0.00288]
Switch point				0.00825 [0.00518]	0.00976* [0.00511]
Age					0.000323 [0.000928]
Female					0.0274 [0.0240]
Education					0.00485 [0.00551]
Decision difficulty					0.0229*** [0.00685]
Alternative search					-0.00453 [0.00787]
High standards					0.00421 [0.00756]
Treatment 2		0.0114 [0.0209]	0.0118 [0.0210]	0.00904 [0.0210]	0.0160 [0.0210]
Constant	0.531*** [0.0213]	0.526*** [0.0235]	0.515*** [0.0338]	0.480*** [0.0405]	0.343*** [0.0751]
Observations	2,000	2,000	2,000	2,000	1,994
R <sup>2</sup>	0.018	0.018	0.019	0.020	0.027
N	343	343	343	343	342

Notes: Robust standard errors in brackets clustered at the individual level.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 33: Focus vs. decoy: Results from OLS regressions with consistent choice as dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5
Focus boosts $c$	-0.0305 [0.0250]	-0.0358 [0.0250]	-0.0348 [0.0249]	-0.0371 [0.0249]	-0.0374 [0.0250]
Focus boosts $c'$	0.0155 [0.0260]	0.0109 [0.0258]	0.0128 [0.0260]	0.0138 [0.0260]	0.0153 [0.0261]
CRT			-0.00245 [0.0144]	0.00852 [0.0146]	0.000476 [0.0154]
Decision time			-0.00392 [0.00419]	-0.00242 [0.00407]	-0.00274 [0.00406]
Switch point				0.0298*** [0.0109]	0.0309*** [0.0108]
Age					0.000339 [0.00178]
Female					-0.0237 [0.0426]
Education					0.00113 [0.00979]
Decision difficulty					0.0144 [0.0130]
Alternative search					-0.0211 [0.0146]
High standards					-0.0246* [0.0138]
Treatment 2		0.0502 [0.0397]	0.0486 [0.0399]	0.0376 [0.0395]	0.0355 [0.0396]
Constant	0.531*** [0.0213]	0.511*** [0.0281]	0.544*** [0.0508]	0.417*** [0.0623]	0.573*** [0.144]
Observations	1,465	1,465	1,465	1,465	1,461
R <sup>2</sup>	0.001	0.003	0.005	0.019	0.029
N	344	344	344	344	343

*Notes:* Robust standard errors in brackets clustered at the individual level.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

In Tables 34 and 35 report regression results including observation where a subject took more than 20 seconds to take a decision. As can be seen the main results are qualitatively identical to this inclusion.

Table 34: Focus: Regression results from OLS regressions with consistent choice as dependent variable all subjects

	Model 1	Model 2	Model 3	Model 4	Model 5
Focus boosts $c$	-0.0558*** [0.0201]	-0.0568*** [0.0200]	-0.0558*** [0.0201]	-0.0560*** [0.0202]	-0.0572*** [0.0202]
Focus boosts $c'$	-0.0296 [0.0236]	-0.0281 [0.0240]	-0.0277 [0.0240]	-0.0275 [0.0240]	-0.0281 [0.0241]
$c$ consistent	0.203*** [0.0324]	0.201*** [0.0328]	0.200*** [0.0328]	0.200*** [0.0328]	0.202*** [0.0329]
CRT			0.0196*** [0.00649]	0.0192*** [0.00672]	0.0186** [0.00733]
Decision time			-6.89e-06 [0.00228]	-0.000285 [0.00228]	-0.000463 [0.00226]
Switch point				0.0115** [0.00463]	0.0126*** [0.00454]
Multiple switch				-0.0417** [0.0197]	-0.0420** [0.0197]
Age					-0.000594 [0.000731]
Female					0.0102 [0.0189]
Education					0.000844 [0.00400]
Decision difficulty					0.0149*** [0.00536]
Alternative search					-0.00383 [0.00630]
High standards					-0.00192 [0.00609]
Treatment 2		0.0101 [0.0173]	0.0125 [0.0171]	0.0108 [0.0168]	0.0123 [0.0169]
Constant	0.477*** [0.0181]	0.473*** [0.0198]	0.439*** [0.0270]	0.420*** [0.0342]	0.399*** [0.0608]
Observations	2,920	2,920	2,919	2,919	2,913
R <sup>2</sup>	0.044	0.044	0.047	0.051	0.055
N	499	499	499	499	498

*Notes:* Robust standard errors in brackets clustered at the individual level..

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Due to a missing value we lose one subject in Model 5.

Table 35: Focus vs. decoy: Results from OLS regressions with consistent choice as dependent variable all subjects

	Model 1	Model 2	Model 3	Model 4	Model 5
Focus boosts $c$	-0.0564*** [0.0214]	-0.0603*** [0.0213]	-0.0601*** [0.0213]	-0.0607*** [0.0213]	-0.0618*** [0.0213]
Focus boosts $c'$	0.0231 [0.0222]	0.0191 [0.0221]	0.0196 [0.0222]	0.0215 [0.0222]	0.0220 [0.0223]
CRT			0.00883 [0.0121]	0.00725 [0.0121]	0.00288 [0.0126]
Decision time			-0.00102 [0.00346]	-0.00186 [0.00321]	-0.00151 [0.00319]
Switch point				0.0369*** [0.00998]	0.0385*** [0.00988]
Multiple switch				-0.141*** [0.0359]	-0.131*** [0.0352]
Age					-0.00222 [0.00142]
Female					-0.0133 [0.0328]
Education					-0.00531 [0.00755]
Decision difficulty					0.0108 [0.0104]
Alternative search					-0.0134 [0.0116]
High standards					-0.0208* [0.0107]
Treatment 2		0.0396 [0.0329]	0.0404 [0.0330]	0.0343 [0.0315]	0.0307 [0.0312]
Constant	0.477*** [0.0181]	0.461*** [0.0236]	0.453*** [0.0398]	0.396*** [0.0537]	0.609*** [0.115]
Observations	2,138	2,138	2,138	2,138	2,134
R <sup>2</sup>	0.003	0.005	0.005	0.054	0.063
N	500	500	500	500	499

*Notes:* Robust standard errors in brackets clustered at the individual level.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Due to a missing value we lose one subject in Model 5.

Table 30: Focus: Regression results from Probit regressions with consistent choice as dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5
Focus boosts $c$	-0.156*** [0.0514]	-0.159*** [0.0514]	-0.159*** [0.0516]	-0.161*** [0.0522]	-0.164*** [0.0523]
Focus boosts $c'$	-0.0805 [0.0650]	-0.0765 [0.0661]	-0.0758 [0.0663]	-0.0744 [0.0660]	-0.0757 [0.0666]
$c$ consistent	0.512*** [0.0866]	0.505*** [0.0877]	0.507*** [0.0879]	0.505*** [0.0880]	0.511*** [0.0884]
CRT			0.0495*** [0.0173]	0.0488*** [0.0179]	0.0469** [0.0194]
Decision time			-0.00157 [0.00653]	-0.00278 [0.00663]	-0.00298 [0.00661]
Switch point				0.0274** [0.0120]	0.0303** [0.0118]
Multiple switch				-0.108** [0.0526]	-0.110** [0.0527]
Age					-0.00151 [0.00194]
Female					0.0232 [0.0501]
Education					0.00360 [0.0105]
Decision difficulty					0.0383*** [0.0141]
Alternative search					-0.00750 [0.0165]
High standards					-0.00314 [0.0160]
Treatment 2		0.0257 [0.0450]	0.0313 [0.0449]	0.0274 [0.0444]	0.0314 [0.0447]
Constant	-0.0514 [0.0457]	-0.0620 [0.0502]	-0.137* [0.0711]	-0.176* [0.0905]	-0.255 [0.160]
Observations	2,877	2,877	2,877	2,877	2,871
N	495	495	495	495	494

*Notes:* Robust standard errors in brackets clustered at the individual level

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Table 31: Focus vs Decoy: Regression results from Probit regressions with consistent choice as dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5
Focus boosts $c$	-0.139**	-0.149***	-0.149***	-0.158***	-0.162***
	[0.0546]	[0.0546]	[0.0545]	[0.0568]	[0.0573]
Focus boosts $c'$	0.0399	0.0297	0.0289	0.0354	0.0383
	[0.0561]	[0.0560]	[0.0560]	[0.0585]	[0.0590]
Crt			0.0174	0.0164	0.00525
			[0.0310]	[0.0320]	[0.0336]
Decision time			0.000763	-0.00320	-0.00245
			[0.00951]	[0.00938]	[0.00942]
Switch point				0.0932***	0.0983***
				[0.0258]	[0.0259]
Multiple switch				-0.367***	-0.349***
				[0.0960]	[0.0947]
Age					-0.00661*
					[0.00381]
Female					-0.0309
					[0.0877]
Education					-0.0102
					[0.0204]
Decision difficulty					0.0262
					[0.0276]
Alternative search					-0.0316
					[0.0311]
High standards					-0.0502*
					[0.0288]
Treatment 2		0.101	0.104	0.0924	0.0831
		[0.0836]	[0.0840]	[0.0833]	[0.0833]
Constant	-0.0514	-0.0929	-0.129	-0.267*	0.278
	[0.0457]	[0.0599]	[0.103]	[0.141]	[0.306]
Observations	2,102	2,102	2,102	2,102	2,098
N	496	496	496	496	495

*Notes:* Robust standard errors in brackets clustered at the individual level.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$