Andersson, Ola; Ingebretsen Carlson, Jim; Wengström, Erik

Working Paper

Differences attract: An experimental study of focusing in economic choice

IFN Working Paper, No. 1145

Provided in Cooperation with:
Research Institute of Industrial Economics (IFN), Stockholm

Suggested Citation: Andersson, Ola; Ingebretsen Carlson, Jim; Wengström, Erik (2016) : Differences attract: An experimental study of focusing in economic choice, IFN Working Paper, No. 1145, Research Institute of Industrial Economics (IFN), Stockholm

This Version is available at:
https://hdl.handle.net/10419/183374

IFN Working Paper No. 1145, 2016

Differences Attract: An Experimental Study of Focusing in Economic Choice

Ola Andersson, Jim Ingebretsen Carlson and Erik Wengström

Research Institute of Industrial Economics
P.O. Box 55665
SE-102 15 Stockholm, Sweden
info@ifn.se
www.ifn.se

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

Ola Andersson† , Jim Ingebretsen Carlson‡and Erik Wengström§

December 9, 2016

Abstract

Several recent behavioral models of choice build on the idea that decision makers put more weight on attributes in which the available options differ more. We test this assumption in a controlled experiment where such biases will generate choice inconsistencies. As hypothesized, we find that subjects make more inconsistent choices when we add new options that affect the maximal difference in attributes among the options. Our findings suggest that the decision maker's focus is drawn to attributes that stand out. We also test the focusing effect against theories of decoy effects (asymmetric dominance), but we find that the focus effect dominates.

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

JEL Codes: D03, D12, C91

*We are thankful for constructive comments received from Tom Cunningham, Martin Dufwenberg, Georg Granic, Botond Köszegi, Gerhard Reiner, Adam Szeidl, seminar participants at Lund University, University of Copenhagen, University of Groningen, University of Barcelona, ESA European Meeting in Bergen, NCBEE in Oslo, and the SBEN workshop in Stockholm. We gratefully acknowledge financial support from the Jan Wallander and Tom Hedelius Foundation and Riksbankens Jubileumsfond.

†Research Institute of Industrial Economics, Sweden and Department of Economics, Lund University, Sweden. Email: ola.andersson@ifn.se.

‡Department of Economics, Lund University, Sweden. Email: jim.ingebretsen_carlson@nek.lu.se.

§Department of Economics. Lund University, Sweden and Department of Economics, University of Copenhagen. Denmark. Email: erik.wengstrom@nek.lu.se.

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 difficult to consider, and properly evaluate, all aspects of the available options. This may lead people to focus excessively on certain features and attributes "that stand out". 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. The authors claim that a distinctive difference such as climate is given disproportionate attention when comparing the quality of life in the Midwest and California. Hence, which attributes attract attention may depend on the set of options under consideration.

More recently, Bordalo et al. (2013) and Kőszegi and Szeidl (2013) propose models of focusing building on similar ideas.[1] The two studies use slightly different modeling approaches, but both assume that focusing-prone decision makers are more likely to choose an option if its attributes stand out compared to the attributes of the available alternatives. Such focusing effects could be the cause of many well-known choice patterns, such as time-inconsistent preferences, the Allais paradox, and preference reversals (see, for example, Bordalo et al. 2012a, 2013; Kőszegi and Szeidl 2013; Cunningham 2013; 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 in markets (see, for example, Akerlof and Shiller, 2015, Bordalo et al., 2016, Grubb, 2015 and Gabaix et al., 2006). To alleviate such negative aspects, understanding how focusing affects choice is crucial.

In this paper, we investigate the underlying principle—assumed by Schkade and Kahneman (1998) and Kőszegi and Szeidl (2013)—that the size of the difference in attributes affects the decision maker's focus. Specifically, Kőszegi and Szeidl (2013) presume that in-

[1] Bordalo et al. (2013) use the word salience instead of focusing to denote this phenomenon.

dividuals increase their focus on the attributes in which the available options differ more.[2] We report evidence of such focusing effects from a controlled experimental test and to the best of our knowledge, our study is the first attempt to directly test this key assumption.

To obtain an idea of how the focus-weighted utility suggested by Kőszegi and Szeidl (2013) affects choices, consider a store offering different payment schemes to a consumer considering whether to purchase a durable good. Initially, the consumer is offered the options of either paying \$100 upfront or paying using a dispersed payment scheme in which she pays \$60 upfront and \$50 in one month. The store would like the consumer to choose the dispersed payment scheme, as it earns an additional \$10 (assume a zero interest rate for simplicity). A focusing-prone consumer attaches more weight to payments in one month as that payment difference between the two options (\$50) is larger than the today payment difference (\$40). Assume that given these two options, the consumer elects to pay upfront. Now, suppose that the store introduces a new payment scheme: Pay nothing upfront and instead pay \$120 in two months. Clearly, this new option is not likely to be optimal, yet it attracts further attention to the upfront payment (the maximal difference in upfront payment among the options increases from \$40 to \$100), which makes the dispersed payment scheme seem more attractive compared to paying everything upfront. Consequently, a preference reversal may occur such that the consumer now prefers the dispersed payment scheme to the upfront payment, despite that these payment options have not changed. Moreover, the store earns an additional \$10. The experimental strategy in this paper follows the logic of this example: We attempt to induce, within-subject, choice inconsistencies between two options by manipulating a third option in a way that alters how much focus the different attributes receive.

The model of Kőszegi and Szeidl (2013) is most closely related to that of Bushong et al. (2015), which departs in one important respect, namely they assume that more attention

[2]Bordalo et al. (2013) instead assume that 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. This approach is somewhat different; however, in our experiment, Bordalo et al. (2013) and Kőszegi and Szeidl (2013) give the same predictions in approximately 70% of the decision tasks presented to subjects. More details can be found in Appendix D.

is paid to attributes with small differences, instead of large differences. Our study is hence also an indirect test of their modeling assumptions.

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, the attributes of which are (asymmetrically) dominated by one option but not by the others, will increase the likelihood of the dominating option being chosen. Some recent 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 yield different predictions, shedding light on focusing as a potential constraint on the decoy effect.

Our experiment was conducted with over 600 subjects using the Amazon Mechanical Turk (MTurk) online labor market.[3] The subjects were presented with a number of choice tasks asking them to choose among different intertemporal 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 across the different options, but the amounts varied. Our experimental strategy proceeded in two stages. The first stage was designed to calibrate the set of decision tasks used in the second stage.[4] In the second stage, we manipulated the payments of an unchosen option, to enhance focusing and decoy effects, with the hypothesis that this would lead to choices inconsistent with those in the first stage. To rule out the possibility that choice inconsistencies are driven by noisy behavior rather than focusing or decoy effects, a set of control decision tasks were not manipulated in the sense that they where neutral with respect to focusing or decoy effects. Our main identification strategy is to compare outcomes, within subjects, of the manipulated decision tasks to outcomes of the non-manipulated control

[3]See Horton et al. (2011) for a description of how MTurk works.

[4]This first stage was merely implemented to increase the probability that focus and decoy effects would generate choice inconsistencies in the second step.

decision tasks. If there is a significant increase in choice inconsistency, when comparing manipulated and control tasks, it is likely to be due to focusing.

The results reveal a significant focusing effect. Subjects are approximately 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.

Our paper is related to a small but growing literature that tests the behavioral implications of focusing. In line with much of the theoretical literature, the few existing empirical studies have honed in 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. (2012a; 2013). The empirical literature on diminishing sensitivity is mixed but leans in favor of the hypothesis. In Azar (2011), the hypothesis is tested in a field experiment and a hypothetical study. Notably, while the hypothetical study supports the diminishing sensitivity hypothesis, the field results reject it. Yet, both Dertwinkel-Kalt et al. (2016b) and Webb et al. (2015) find behavior consistent with diminishing sensitivity in the lab.[5]

Even less attention has been given to studying the relationship between attribute differences and focusing, which is the issue we address. The works closest to ours are Dertwinkel-Kalt and Riener (2016) and Dertwinkel-Kalt et al. (2016a). These studies experimentally test for a bias towards concentration, which is one of the behavioral implications of assuming that attributes with larger differences receive more weight. Both papers find evidence of a bias towards concentration, which is compatible with the existence of focusing effects.

One common feature in the existing empirical literature is that the choice data are used to test different implications of focusing but not the underlying assumptions directly. For example, Dertwinkel-Kalt and Riener (2016) and Dertwinkel-Kalt et al. (2016a) use

[5]Webb et al. (2015) also employ eye-tracking techniques, but the eye-tracking data are not consistent with focusing or salience driving their results.

the implication that focusing leads to a preference towards concentration. In contrast, we offer a more direct test of focusing. Both approaches have their merits, but one major drawback of using an indirect approach is the reliance on several auxiliary assumptions. For instance, a preference towards concentration may stem from other factors, such as subjects experiencing transaction costs of payments at different dates or having non-convex utility functions. We circumvent such issues by using an approach in which we manipulate the relevant features of the consideration set while holding the core choice options constant.

Finally, our findings also relate to the earlier literature on context-dependent preferences (see, e.g., Kahneman and Tversky 1979; Simonson and Tversky 1992; Tversky and Simonson 1993). In particular, it may offer a partial explanation of previously reported time-preference anomalies related to the framing of elicitation tasks (see, e.g., Loewenstein and Thaler 1989; Loewenstein and Prelec 1992; Loewenstein 1988) and to the vast variability in estimated discount factors (Frederick et al. 2002). Indeed, Kőszegi and Szeidl (2013) use one of the model's implications to explain present-biased behavior.

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 suggest 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 intertemporal choice. As their model is quite straightforward, we believe that it is instructive to begin by presenting the model before 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, which may differ from the decision maker's entire set of possible options. That is, some options may be too inferior and are 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 $(c_1, c_2, ..., c_K)$, 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

$$\tilde{U}(c, C) = \sum_{k=1}^{K} g_k \times u_k(c_k), \tag{1}$$

where $g_k = g(\triangle_k(C))$ is a strictly increasing function and $\triangle_k(C) \equiv \max_{c \in C} u_k(c_k) - \min_{c \in C} u_k(c_k)$. Since g_k is a strictly increasing function by assumption, the basic prediction of this model is that consumers will attach more weight to attributes with large differences between the options. If instead $g_k(\cdot) = a$, $a \neq 0$, for every k, we are back to the standard model.[6] If $g_k(\cdot)$ 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.

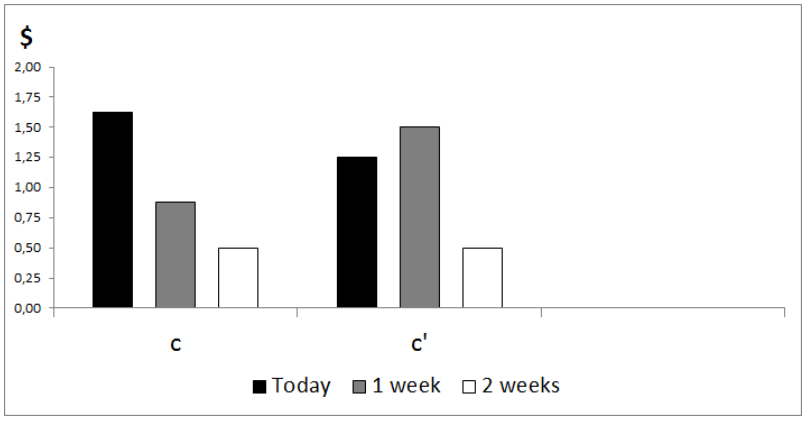
2.2 Experimental design and hypotheses

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

[6] If $a < 0$, then minimizing Equation 1 generates the same choice as the standard model.

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 that the intertemporal setting offers an appealing way of incentivizing a multi-attribute choice environment.

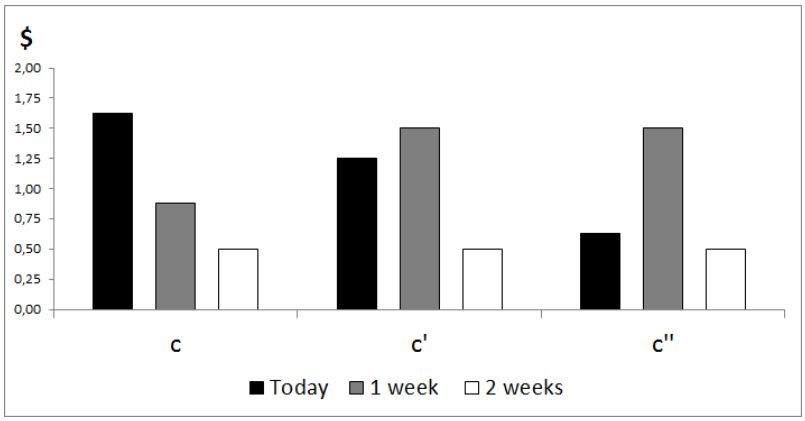
Figure 1: Decision task



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.[7] If the assumption of the theoretical model holds, i.e., $g'_k(\cdot)>0$, then for every k, introducing the new option may reverse the preference ordering over the original options such that c becomes preferred to c'. Such inconsistencies occur if the new option sufficiently 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, and thus, 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 larger difference across options will be given more focus weight in the utility function $\tilde{U}(\cdot)$. As c and c' remain constant, these inconsistencies would thus stem from a change in the focus weight and not in the underlying consumption utility of the attributes, $u_k(\cdot)$. Figure 2 illustrates this scenario, as the introduction of c'' amplifies the maximal difference in the payment today attribute.

[7] To ensure that our results were not driven by the expansion of the consideration set, we also conducted a treatment in which the number of options was fixed (at three) in both stages. We explain this treatment in greater detail in Section 2.3.3.

Figure 2: Decision task introducing c''



To test whether focus effects based on the size of the difference in attributes exist, we examine the fraction of inconsistent choices when c'' is constructed to manipulate the focus weights. This leads to our first hypothesis:

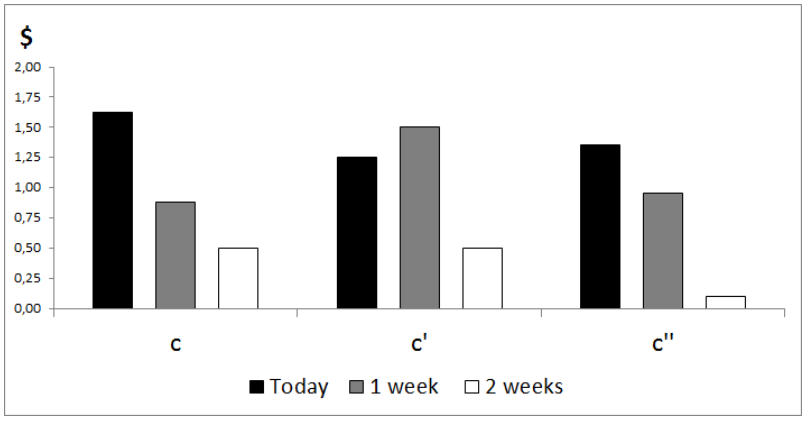
Hypothesis 1. *The likelihood that a subject prefers an option c over c' is increased if the new option, c'', is chosen to increase the focus on an attribute dimension in which c dominates c'.*

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 recent attempts to replicate the decoy effect have failed (Yang and Lynn 2014 and Huber et al. 2014), and 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 that 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 on the decoy effect. This leads to our second hypothesis:

Hypothesis 2. *The likelihood that a subject prefers an option c' over c is increased 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.*

As mentioned previously we are concerned that our choices may be tainted with background noise. When we subsequently test our hypotheses we compare choice inconsistencies in our tasks with focus (and possible decoy) manipulations with choice inconsistencies in 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 serve as a decoy, nor does it change the focus weights in any dimension in which the two original options differ. By comparing the fraction of inconsistent choices between the focus manipulated tasks and the control tasks, we control for decision noise.

Figure 3: Control decision task



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 options 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 in using a between-subjects design where the main difference between them is that we have two options in Stage 1 of Treatment 1 and three options in Stage 1 of Treatment 2. Both treatments have three options in Stage 2. The main reason for the second treatment is to ensure that the expansion from two to three options (as in Treatment 1) between the two stages are not causing inconsistencies in Stage 2. Indeed we do not find this expansion to have a significant impact on our findings. In what follows, we begin by outlining the experimental procedure for Treatment 1, and thereafter, we explain the distinct details of Treatment 2.

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.[8] To identify 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. To make the elicitation of the switch points less noisy, the order of the decision tasks and options is not randomized in Stage 1.

2.3.2 Stage 2

The decision tasks at the switch point and just before the switch point in Stage 1 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 presents an overview of the decision tasks in Stage

[8]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 payments 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

2. In decision tasks 9 and 10, c'' changes only the focus weights. In decision tasks 11 and 12, c'' changes both the focus weights and serves 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.

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'

Decision task 9 is constructed using c and c' from the decision task prior to the switch point.[9] 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 due 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

[9]For subjects whose switch point is the first decision task in Stage 1, 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.

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 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 tasks 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 1 week (today) attribute. 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 offer 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, i.e., they do not affect the focus weight or serve as a decoy. To balance the experiment, one control task uses c and c' from the decision task prior to the switch point, and the three remaining tasks 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 options are randomized.

2.3.3 Second treatment

The experiment has two treatments. Only the third option c'' and the control tasks 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 such that the maximal difference in the first two attributes (today and 1 week) is equal in monetary terms. 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, and, in particular, to ensure that it is not

the mere increase in the set of available options that generates choice inconsistencies. In Stage 2, decision tasks 9-12 are the same in both treatments.

The control tasks differ slightly between the two treatments. 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. The difference between Treatments 1 and 2 generates some variation in the magnitude and source of the focus and decoy effects. See Appendix B for full details of the payoffs of the decision tasks for both treatments and the variations.

2.4 Details of the experiment

The experiment was conducted using the online labour market MTurk, and Qualtrics was used for implementing the experiment.[10] Instructions and screenshots of the experiment are presented in Appendix A, and in total, 602 subjects participated. Of the subjects, 300 were randomly assigned to Treatment 1 and 302 to Treatment 2. The subjects were U.S citizens who had previously signed up for work at the Mturk platform.[11] 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 viewed a hand-written sentence, which they were asked to transcribe. The aim of this question was to control for computer bots. The second control question verified that the subjects had understood the decision tasks. In this question, subjects were presented with a decision task in which 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.

[10] MTurk has previously been used for conducting economic experiments and has proven to successfully replicate behavior from traditional lab experiments (see e.g., Horton et al. 2011; Suri and Watts 2011; Amir and Rand 2012; Dreber et al. 2013; Beranek et al. 2015).

[11] In a recent article, Berinsky et al. (2012) show that participants on Mturk are often more representative of the population than the usual convenience sample provided by recruiting university students.

The time remaining in any decision task was shown in the upper-left corner of the screen. After completing the decision tasks, subjects provided 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 transferred to the subject's account within 24 hours of completion. The payment was conditional on the subject having completed the chosen decision task within 20 seconds.[12] Subjects received a fixed fee of \$0.10 for participating in the experiment. To receive any payment, subjects had to enter a code into Mturk. This code was presented to the subjects once they had completed all of the steps of the experiment. Subjects earned on average \$3.20. Subjects spent on average 13 minutes completing the experiment. The average earnings per hour were \$14.75, which is far above the typical wage of Mturk workers.

3 Results

As previously mentioned, 602 subjects logged onto the experiment, and out of these, 102 subjects failed to answer our second control question and are subsequently dropped from the analysis, as we cannot calibrate their decision tasks for Stage 2. This leaves us with 500 subjects who 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.

[12]The 20-second rule was introduced to keep subjects focused on the task. Very few participants finished outside this time frame and most subjects chose an option well within the 20 seconds at their disposal.

In this section, we begin by presenting descriptive statistics data from Stage 1 and Stage 2 respectively. Then, we present evidence on how subjects react to the focus manipulations, beginning with graphical illustrations and non-parametric tests and then turning to regression analyses. Subsequently, we analyze the tension between focusing and decoy effects using a similar approach.

3.1 Descriptives

3.1.1 Stage 1

The main analysis will concern behavior in Stage 2, but for the sake of completeness, we begin with presenting some descriptives about Stage-1 behavior. 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 made their first switch before the third decision task. The first switch point will form a basis for the manipulations in Stage 2, where we attempt 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 violated monotonicity and switched back and forth several times. Yet, the figures in Table 4 show that the vast majority of our subjects did not switch or did so just once, which is consistent with monotonic preferences. Approximately 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 adress subjects who 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 from which 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 in which 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 1.6% of the observations due to this restriction.[13] Moreover, observations for which the subject chose c'' are also dropped; 3.65% of the observations are dropped for this reason.[14]

In Table 5 below, we recapitulate the structure of the decision tasks previously displayed in Table 2 and show the average inconsistency of choices in the rightmost columns. Evidently, the level of inconsistency was quite high, but it was lower in tasks 9 and 13 in which c was the consistent option. Note, however, that since we use decision tasks from Stage 1 in which the subject was close to indifference, the high level of inconsistency may

[13] In Appendix C we report regression results when retaining subjects who required more than 20 seconds to make a decision. The results reported in this section remain intact.

[14] In Table 27 of Appendix C, the number and fraction of missing observation split by decision task can be found.

not be particularly surprising. We will control for these differences in inconsistency in the regression analysis in 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.

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

Decision Task	Focus boosts	Decoy boosts	Consistent option	Fraction of inconsistent choices Treatment 1	Treatment 2
9	c'	-	c	0.375	0.352
10	c	-	c'	0.598	0.567
11	c'	c	c'	0.507	0.502
12	c	c'	c'	0.61	0.542
13	Control for task 9		c	0.309	0.321
14			c'	0.555	0.338
15	Controls for tasks 10-12		c'	0.538	0.48
16			c'	0.519	0.512

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

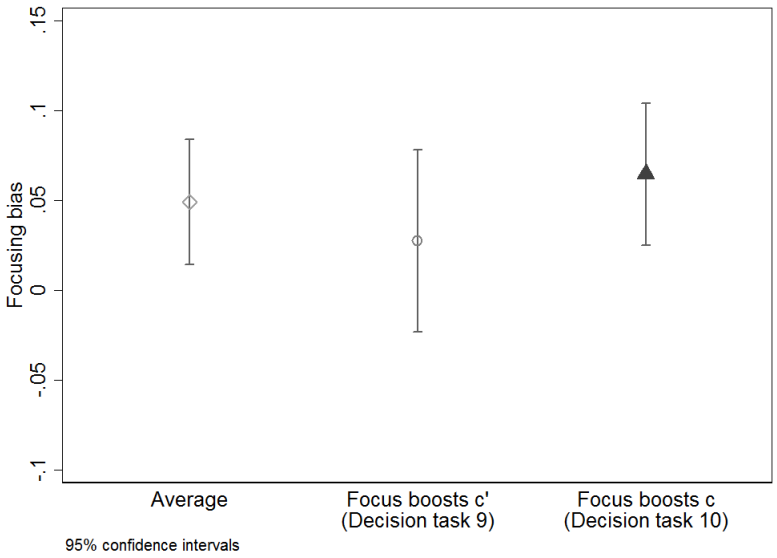
3.2 Focusing effects

Our main findings on focusing effects can be summarized by comparing the difference in the fraction of inconsistent choices between each of the manipulated decision tasks (9 and 10) and their corresponding non-manipulated control task(s) (see Table 5).[15] We call the difference in inconsistent choice "Focusing bias". Figure 4 displays the Focusing bias for the two decision tasks. On average, there is positive bias indicating that subjects' behaviors are in line with Hypothesis 1. The size of the bias is on average approximately 5 percentage points. Breaking this down by decision task, we find that the effect is driven by decision

[15]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.

task 10, which is when focusing boosts c, and the effect is less pronounced in decision task 9, when focusing boosts c'.[16]

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.

To determine whether 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 = 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. In Section 3.4, we discuss possible explanations for the asymmetry between the focus effect on c and c'.

We also perform a regression analysis to determine whether the Focusing bias is robust to controlling for the background variables we collected. In Table 6, we present summary statistics for the variables included. As the dependent variable we use inconsistent choice. As previously explained, in a given decision task in Stage 2 a decision is deemed inconsistent if it does not confirm the decision made in Stage 1. The variable "Decision time" measures the time from when the decision task is first displayed until a decision is made and the sub-

[16]Figure 31 in Appendix C breaks down the Focusing bias by treatment.

ject 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 and a dummy for multiple switching.[17] In addition, we include controls for age, gender, number of years in college/university education (Education). We also asked a set of personality questions intended to capture the difficulty in making a decision (Decision difficulty), effort spent on searching for alternatives (Alternative search) and the tendency to hold high standards (High standards).

Table 6: Summary Statistics

	Mean	Standard deviation	Observations	Min	Max
Inconsistent choice	.495	.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 inconsistent choice as the dependent variable.[18] We include dummies for focus on c and c' (Focus boosts c and Focus boosts c', respectively). Since we previously noted that inconsistency is particularity low when c is the consistent choice, we also create a dummy to capture that effect (c consistent). Standard errors are clustered at the individual level to capture serial correlation within subjects. In the simplest specification (Model 1), we find a significant focusing effect on c, which corresponds to to a 6.2 percentage point increase in inconsistency. Although the coefficient of c' is also positive, it is much smaller and insignificant. Hence, the regression estimates corroborate the findings from Figure 4 and the non-parametric tests.

[17] In Appendix C we also report regressions in which we excluded subjects with more than one switch point.

[18] In Table 30 in Appendix C, we display results from probit regressions. The results are qualitatively similar.

These regression estimates remain essentially constant as we introduce further controls (Models 2-5). Interestingly, our measure of cognitive reflection is significantly and negatively related to making inconsistent choices, which is in line with several recent findings on inconsistent choice and cognitive abilities in the context of risk preferences (Andersson et al., 2016) and time preferences (Benjamin et al., 2013; Dohmen et al., 2010). The measures of switching behavior (Switch point and Multiple switch) in Stage 1 are related to inconsistent choices in Stage 2. In particular, we note that the switch point seems to matter for the level of inconsistency. Indeed, it could be that decision makers have noisy preferences, which then, for a given time preference, increase the probability of an early switch in Stage 1. 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 hence cannot drive our results on the effect of focusing. Our socioeconomic controls add little additional explanatory power for our data.

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

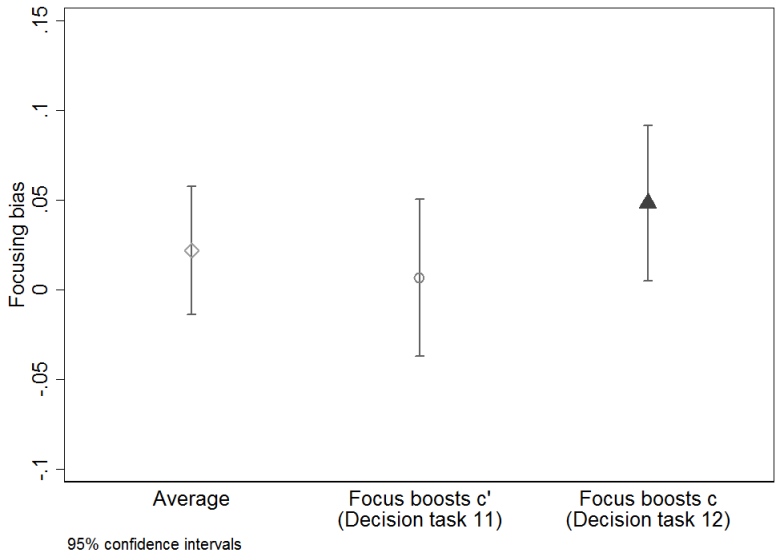
	Model 1	Model 2	Model 3	Model 4	Model 5
Focus boosts c	0.0618***	0.0628***	0.0627***	0.0629***	0.0640***
	[0.0202]	[0.0202]	[0.0202]	[0.0203]	[0.0203]
Focus boosts c'	0.0294	0.0278	0.0274	0.0272	0.0278
	[0.0238]	[0.0242]	[0.0242]	[0.0242]	[0.0243]
c consistent	-0.198***	-0.195***	-0.195***	-0.195***	-0.197***
	[0.0326]	[0.0330]	[0.0330]	[0.0330]	[0.0331]
CRT			-0.0187***	-0.0184***	-0.0176**
			[0.00657]	[0.00678]	[0.00736]
Decision time			0.000590	0.00106	0.00113
			[0.00251]	[0.00255]	[0.00253]
Switch point				-0.0109**	-0.0119***
				[0.00461]	[0.00452]
Multiple switch				0.0418**	0.0424**
				[0.0201]	[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	-0.0124	-0.0110	-0.0123
		[0.0173]	[0.0173]	[0.0170]	[0.0171]
Constant	0.521***	0.525***	0.553***	0.569***	0.595***
	[0.0182]	[0.0199]	[0.0276]	[0.0349]	[0.0613]
Observations	2,877	2,877	2,877	2,877	2,871
R^2	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 attempting to distinguish between focusing and decoy effects. As explained above, we introduced two decision tasks (11 and 12) in an effort to capture this. Figure 5 is similar 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, the effect sizes are somewhat smaller than those previously obtained. 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).[19] Taken together, we do not find support for Hypothesis 2.

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

[19] See Table 29 in Appendix C for a breakdown by experiment.

robust effect of focusing on c but not on c'. The impact of cognitive reflection seems weaker in this setting, whereas switch point and multiple switching seem to affect decision making in the same direction as in Table 7. In their model, Kőszegi and Szeidl (2013) assume that "clearly dominated options" should be excluded from the consideration set and hence not be included when forming focus weights. Whether asymmetric dominance, as introduced here by the decoy option, should be regarded as dominated, and therefore not part of the theoretical consideration set, is unclear. Yet, in our experimental data, those asymmetrically dominated options seem to matter for decision making and are therefore clearly in the consideration set, at least for some of the subjects. Furthermore, if some subjects disregard these options in their consideration set, this may be a potential explanation for our somewhat weaker results in this section.

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

	Model 1	Model 2	Model 3	Model 4	Model 5
Focus boosts c	0.0549**	0.0589***	0.0589***	0.0596***	0.0609***
	[0.0215]	[0.0215]	[0.0214]	[0.0214]	[0.0215]
Focus boosts c'	-0.0159	-0.0119	-0.0116	-0.0136	-0.0144
	[0.0224]	[0.0223]	[0.0224]	[0.0224]	[0.0225]
CRT			-0.00687	-0.00614	-0.00200
			[0.0123]	[0.0123]	[0.0127]
Decision time			-0.000300	0.00127	0.000927
			[0.00378]	[0.00361]	[0.00361]
Switch point				-0.0365***	-0.0382***
				[0.00998]	[0.00989]
Multiple switch				0.140***	0.132***
				[0.0363]	[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	-0.0411	-0.0352	-0.0319
		[0.0332]	[0.0333]	[0.0318]	[0.0316]
Constant	0.521***	0.537***	0.551***	0.604***	0.398***
	[0.0182]	[0.0238]	[0.0407]	[0.0546]	[0.116]
Observations	2,102	2,102	2,102	2,102	2,098
N	496	496	496	496	495
R^2	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

3.4 Discussion of results

Our results suggest that larger differences in attributes attract attention and influence subjects' choices as proposed by Kőszegi and Szeidl (2013). Since 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 more highly than later payments, the focus effect for a given payment difference will be stronger in the today attribute. Another issue, common to most empirical tests of multi-attribute choice models, is what the subjects actually perceive as the relevant attributes. For example, if a subject in our setting treats a payment in 1 week and a payment in 2 weeks as one attribute, then our manipulation is weaker and could in some cases even be reversed. This could explain why we do not find an effect of focus when boosting option c'. 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 attempt to shed further light on this issue.

Salience theory, developed by Bordalo et al. (2013), does not aid in understanding the asymmetry between options c and c'. The focus manipulations that were generated in decision tasks 9-12 boosted the intended option in only 56.9% of the cases according to salience theory. However, this number rises to 88.9% for the control tasks. As focus theory, salience theory does not predict an asymmetry of the focus effect for the decision tasks

with only a focus manipulation (9 and 10). However, for the decision tasks when focus was contrasted with the decoy effect, salience theory suggests that their ought to be a stronger effect of focus in decision task 11 than in decision task 12. This is opposite to the results presented in Section 3.3. A more detailed presentation of salience theory and its predictions in our experiment can be found in Section D of the Appendix.

We find no evidence of the decoy effect in our experimental setting, but the estimated effect of focus is smaller when option c'' is designed to be a decoy. This suggests that the focus effect is somewhat attenuated by the opposing decoy effect. However, the focus manipulations, measured as maximal differences in dollar payments in the attributes, are smaller in decision tasks 11-12 (where focus is contrasted against decoy) compared to decision tasks 9-10. This could explain the smaller effect of focus found in Section 3.3.

Finally, our results show that choice inconsistencies induced by focusing correlate with our measure of cognitive reflection. These results are in line with previous findings in the context of risk preferences (Andersson et al., 2016) and time preferences (Benjamin et al., 2013; Dohmen et al., 2010). Overall, these results add to the literature on cognitive reflection and decision biases (see, e.g., Hoppe and Kusterer, 2011 and Oechssler et al., 2009), showing that increases in cognitive ability decrease biases.

4 Conclusion

A long-standing consideration 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 attractiveness is determined by the decision maker's focus and, in particular, that a decision maker focuses disproportionately on certain attributes that stand out (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.

From a policy perspective, focusing effects may be harmful to society, as they may be exploited by firms to distort competition and, thereby, welfare. To alleviate such 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 could have a beneficial impact by softly and non-intrusively influencing individual perceptions regarding the alignment of individual and societal goods. These policies would influence those most receptive without depriving those not prone to mistakes of their individual freedom.

To facilitate effective policy intervention, it is important to gain additional knowledge about which choice contexts and personality types that are prone to focusing. For example, future research needs to explore 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.

Amir, O., Rand, D. G., 2012. Economic games on the internet: The effect of $1 stakes.

PloS one 7 (2), e31461.

Andersson, O., Holm, H. J., Tyran, J.-R., Wengström, E., 2016. Risk aversion relates to cognitive ability: Preferences or noise? Journal of the European Economic Association, forthcoming 14 (5), 1129–1154.

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.

Benjamin, D. J., Brown, S. A., Shapiro, J. M., 2013. Who is 'behavioral'? cognitive ability and anomalous preferences. Journal of the European Economic Association 11 (6), 1231–1255.

Beranek, B., Cubitt, R., Gächter, S., 2015. Stated and revealed inequality aversion in three subject pools. Journal of the Economic Science Association 1 (1), 43–58.

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., Gennailoi, N., Shleifer, A., 2013. Salience and consumer choice. Journal of Political Economy 121 (5), 803–843.

Bordalo, P., Gennaioli, N., Shleifer, A., 2012a. Salience in experimental tests of the endowment effect. The American Economic Review 102 (3), 47–52.

Bordalo, P., Gennaioli, N., Shleifer, A., 2012b. Salience theory of choice under risk. The Quarterly Journal of Economics 127 (3), 1243–85.

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. Unpublished manuscript.

Cunningham, T., 2013. Comparisons and choice. Unpublished manuscript.

Dertwinkel-Kalt, M., Gerhardt, H., Riener, G., Schwerter, F., Strang, L., 2016a. Concentration bias in intertemporal choice.

Dertwinkel-Kalt, M., Köhler, K., Lange, M. R., Wenzel, T., et al., 2016b. Demand shifts due to salience effects: Experimental evidence. forthcoming in Journal of the European Economic Association.

Dertwinkel-Kalt, M., Riener, G., 2016. A first test of focusing theory. Unpublished manuscript, Heinrich-Heine-Universität Düsseldorf, Düsseldorf Institute for Competition Economics (DICE).

Dohmen, T., Falk, A., Huffman, D., Sunde, U., 2010. Are risk aversion and impatience related to cognitive ability? The American Economic Review 100 (3), 1238–1260.

Dreber, A., Ellingsen, T., Johannesson, M., Rand, D. G., 2013. Do people care about social context? framing effects in dictator games. Experimental Economics 16 (3), 349–371.

Frederick, S., Loewenstein, G., O'donoghue, T., 2002. Time discounting and time preference: A critical review. Journal of economic literature 40 (2), 351–401.

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.

Hoppe, E. I., Kusterer, D. J., 2011. Behavioral biases and cognitive reflection. Economics Letters 110 (2), 97–100.

Horton, J. J., Rand, D. G., Zeckhauser, R. J., 2011. The online laboratory: Conducting experiments in a real labor market. Experimental Economics 14 (3), 399–425.

Huber, J., Payne, J. W., Puto, C., 1982. Adding asymmetrically dominated alternatives: Violations of regularity and the similarity hypothesis. Journal of consumer research 9 (1), 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.

Kahneman, D., Tversky, A., 1979. Prospect theory: An analysis of decision under risk. Econometrica 47 (2), 263–291.

Kőszegi, B., Szeidl, A., 2013. A model of focusing in economic choice. The Quarterly Journal of Economics 128 (1), 53–104.

Loewenstein, G., Prelec, D., 1992. Anomalies in intertemporal choice: Evidence and an interpretation. The Quarterly Journal of Economics 107 (2), 573–597.

Loewenstein, G., Thaler, R. H., 1989. Anomalies: intertemporal choice. The journal of economic perspectives 3 (4), 181–193.

Loewenstein, G. F., 1988. Frames of mind in intertemporal choice. Management Science 34 (2), 200–214.

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.

Oechssler, J., Roider, A., Schmitz, P. W., 2009. Cognitive abilities and behavioral biases. Journal of Economic Behavior & Organization 72 (1), 147–152.

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.

Simonson, I., Tversky, A., 1992. Choice in context: Tradeoff contrast and extremeness aversion. Journal of marketing research 29 (3), 281.

Suri, S., Watts, D. J., 2011. Cooperation and contagion in web-based, networked public goods experiments. PLoS One 6 (3), e16836.

Toplak, M. E., West, R. F., Stanovich, K. E., 2014. Assessing miserly information processing: An expansion of the cogintive reflection test. Thinking and Reasoning 20 (2), 147–168.

Tversky, A., Simonson, I., 1993. Context-dependent preferences. Management science 39 (10), 1179–1189.

Webb, E. J. D., Nielsen, C. S., Sebald, A. C., Gotfredsen, A., 2015. Looking for salience: Eye-tracking and preference reversals. Unpublished manuscript.

Yang, S., Lynn, M., 2014. More evidence challenging the robustness and usefulness of the attraction effect. Journal of Marketing Research 51 (4), 508–513.

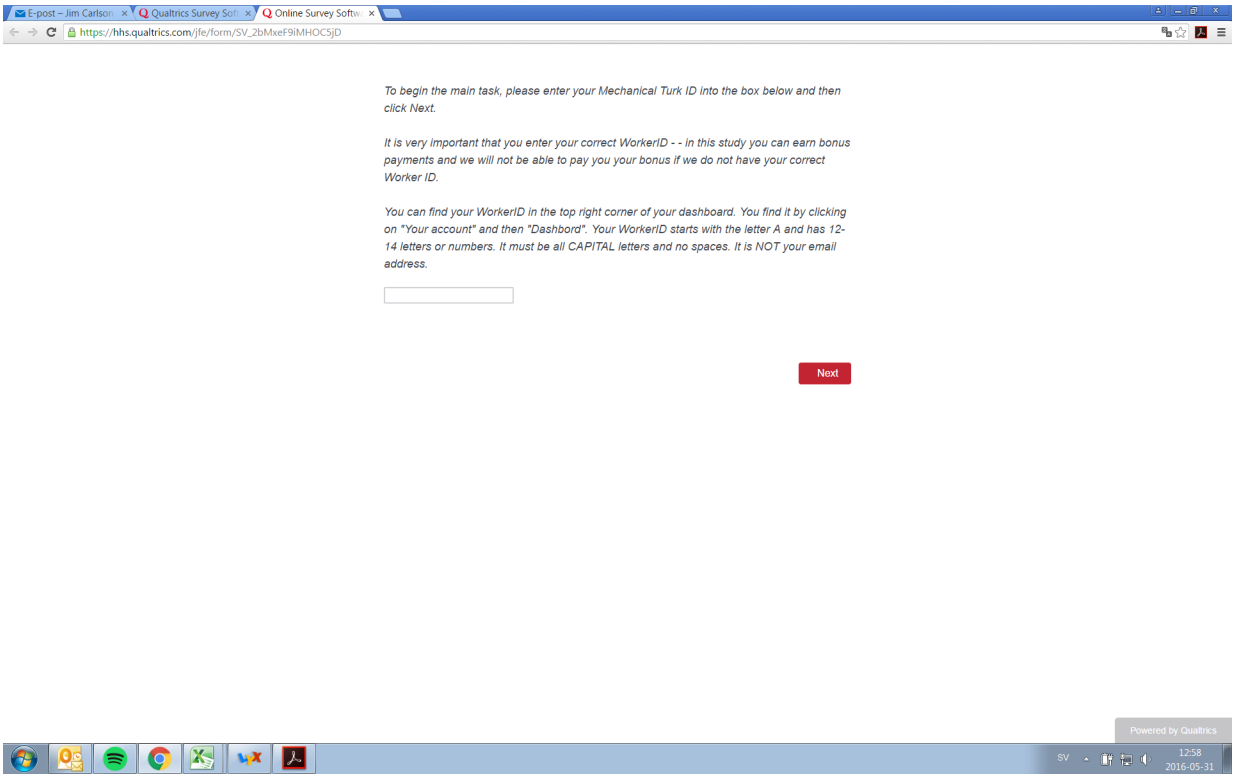
Appendix (online publication only)

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:

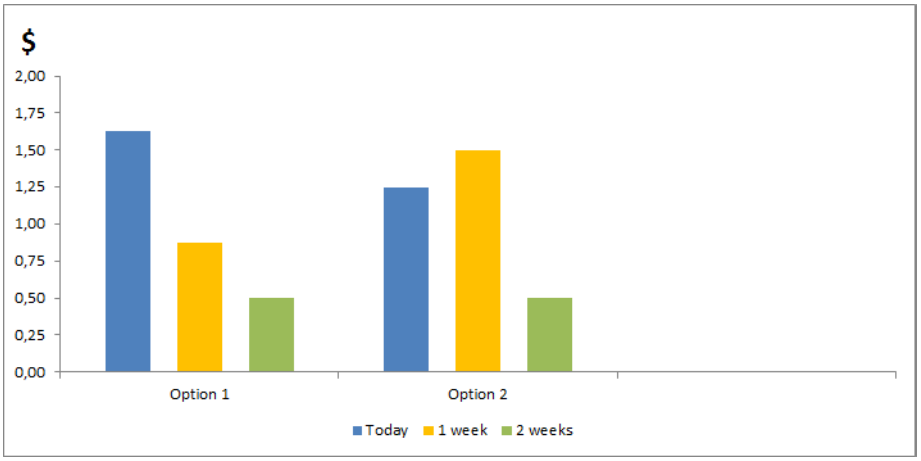
You will be making 17 decisions between options that promise to pay different amounts of money today, in 1 week or in 2 weeks. For each decision you will have 20 seconds to decide.

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 recieve any payment.

At the next screen you will be shown a written sentence which your are asked to enter into a text box. Failing to do so will make your HIT invalid and you will recieve 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.

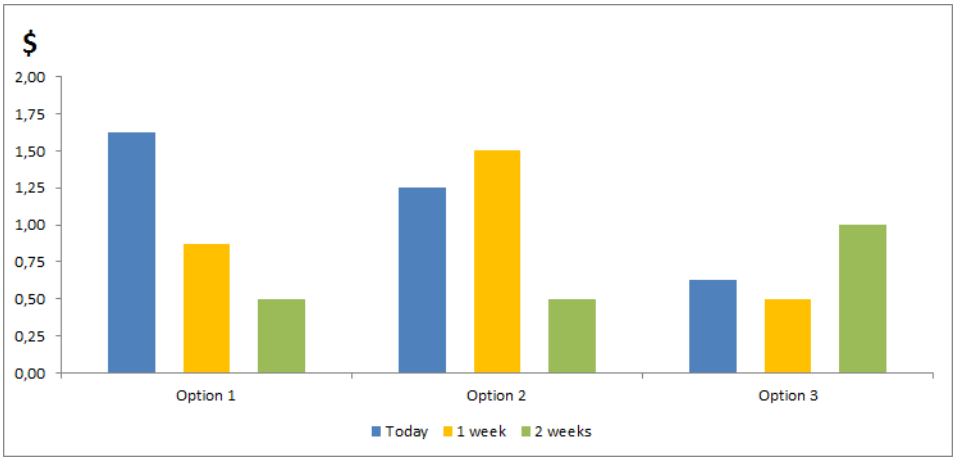
When you have made your 17 decisions we will conclude the study by asking you a couple of questions.

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 your 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.

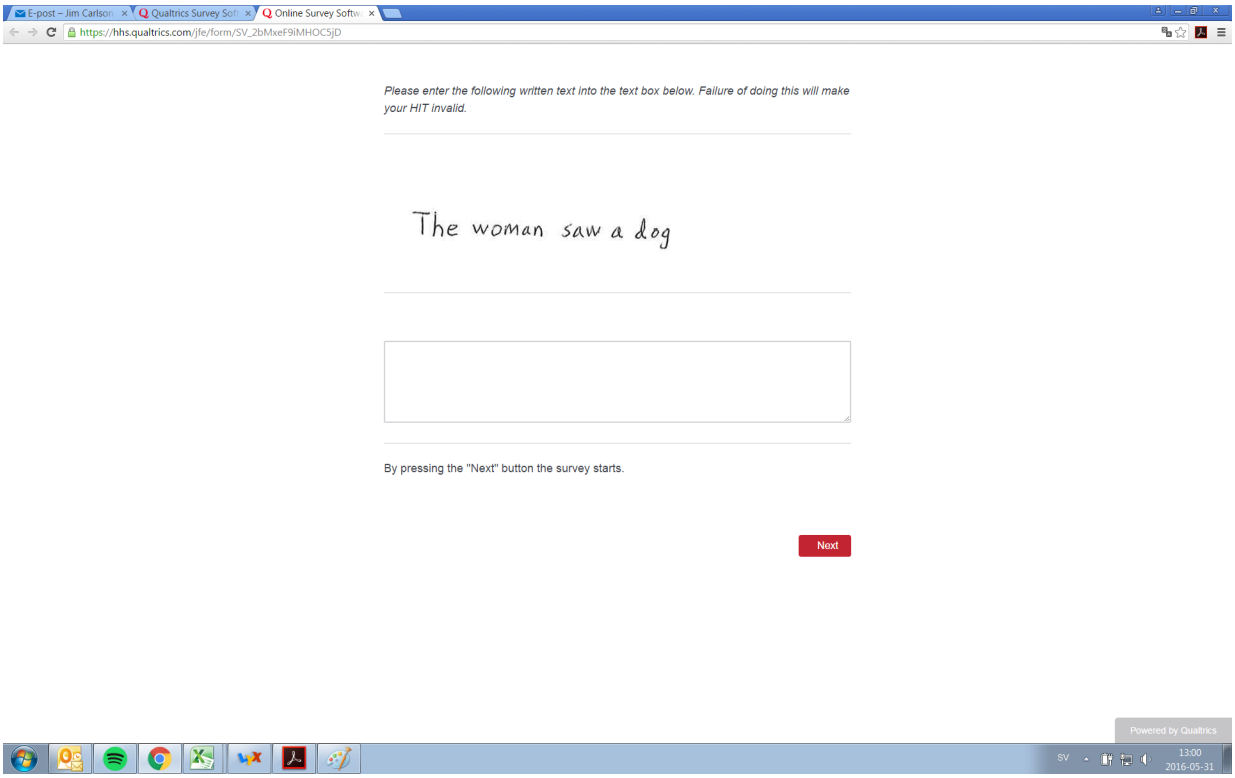
A.3 Control questions

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



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

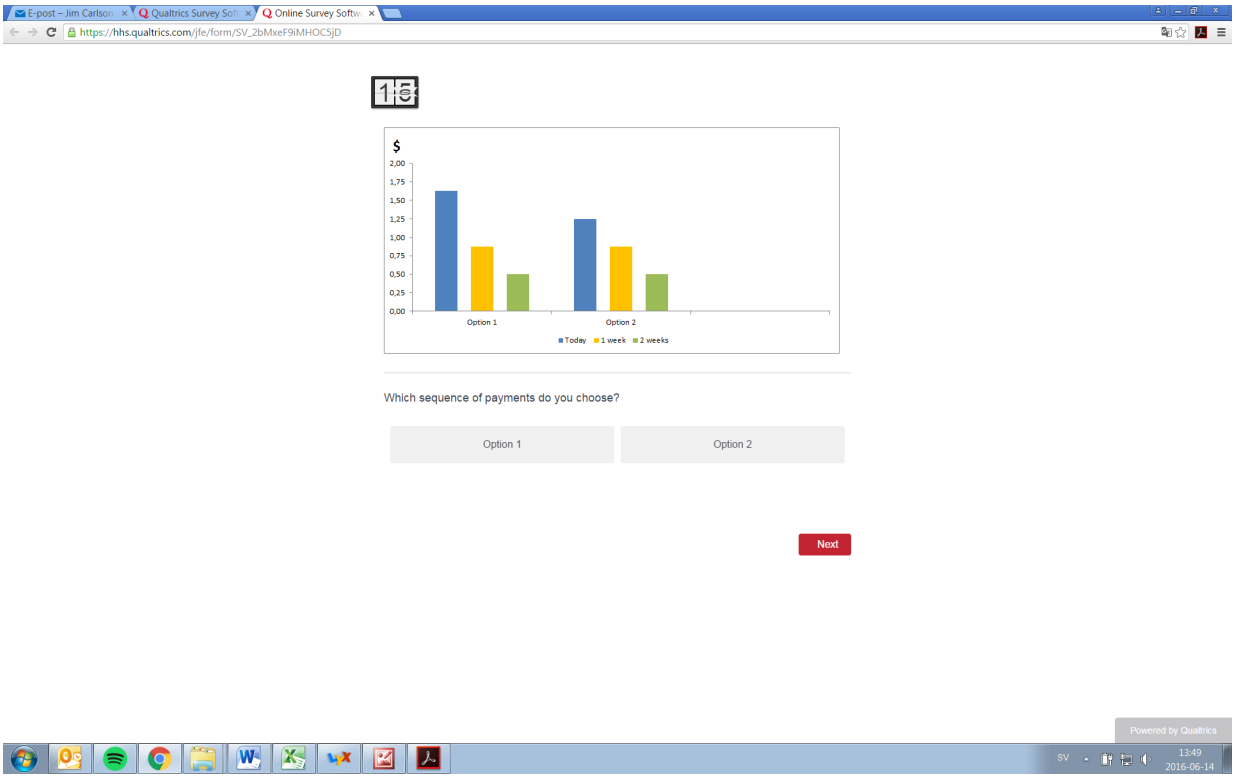
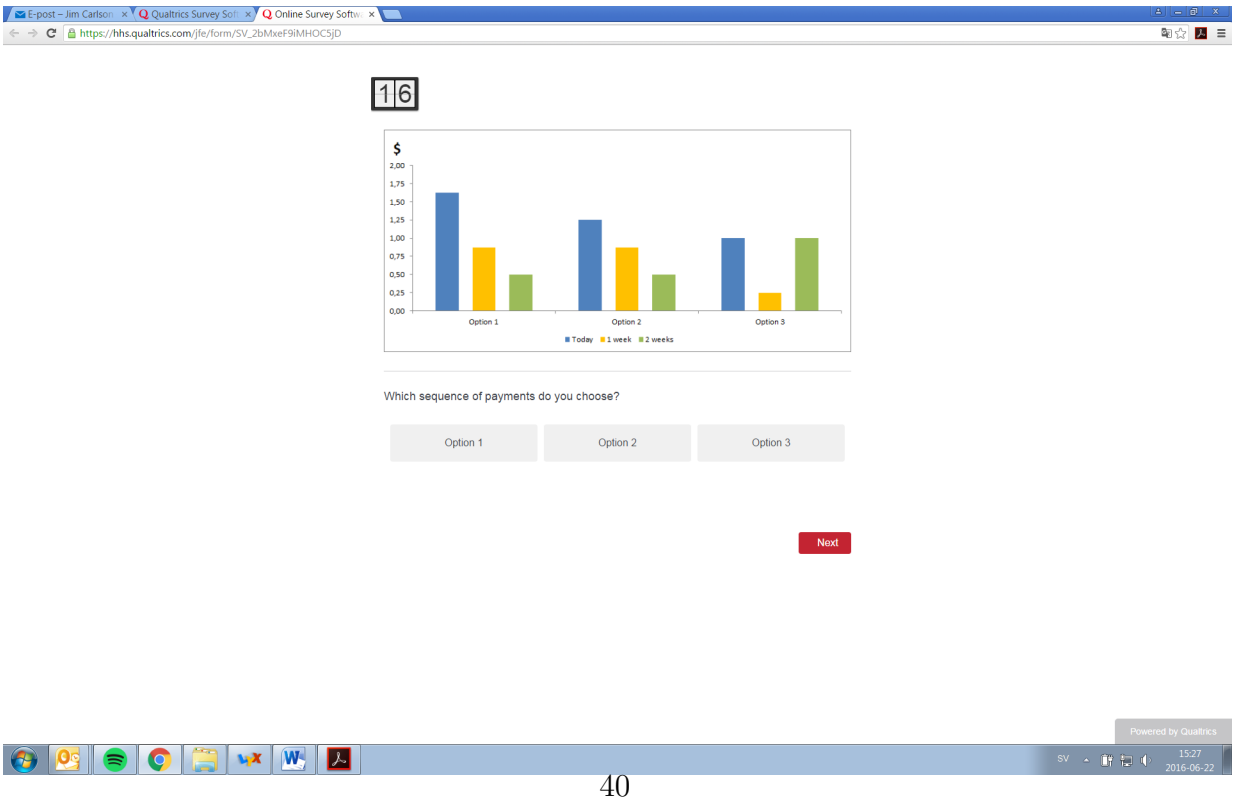


Figure 12: Control question 2 - Treatment 2



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

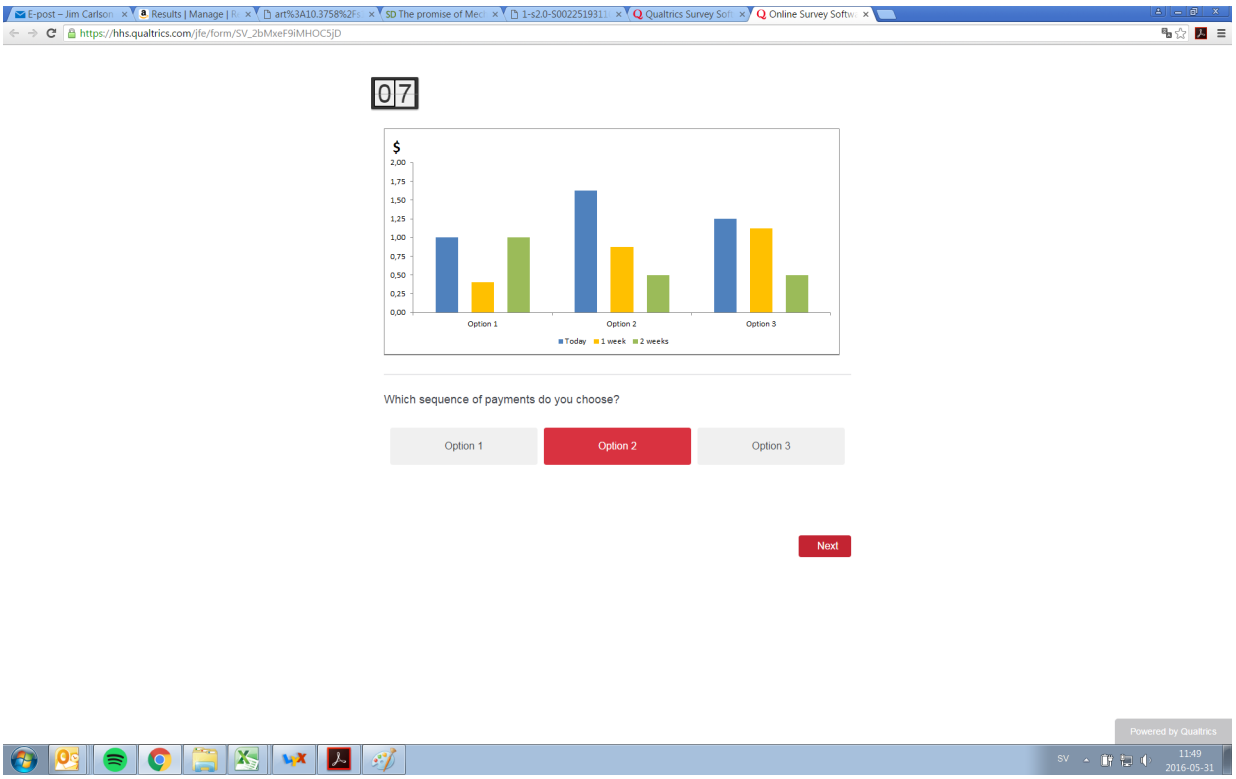
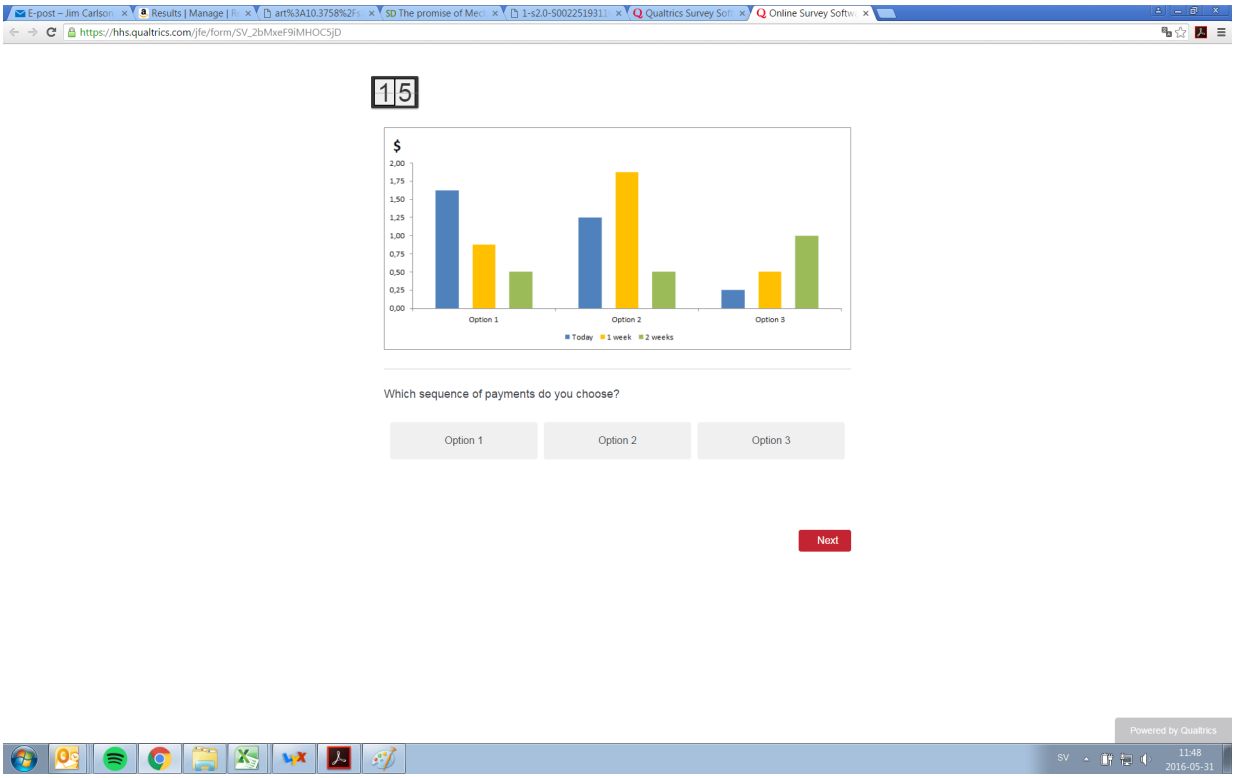


Figure 14: Example 2



A.5 Cognitive Reflection Test

The Cognitive Reflection Test consisted of answering four questions proposed byToplak 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

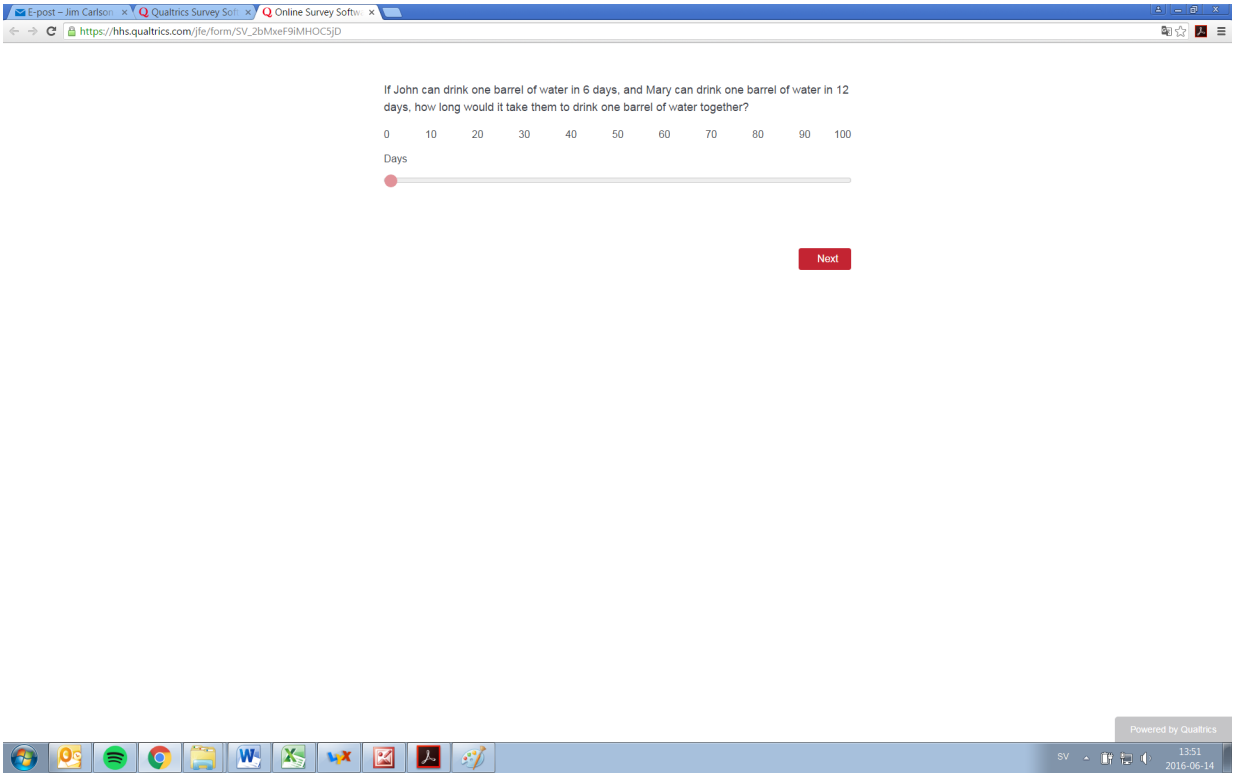


Figure 16: CRT question 2

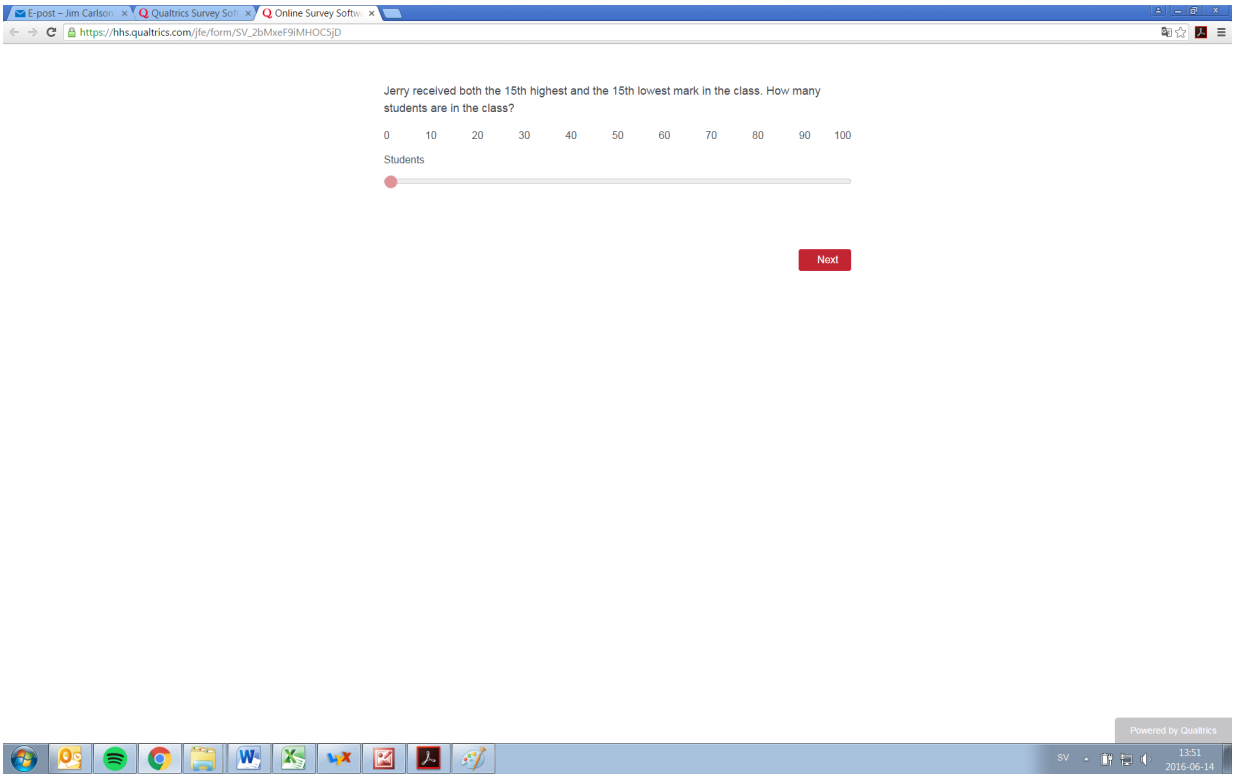


Figure 17: CRT question 3

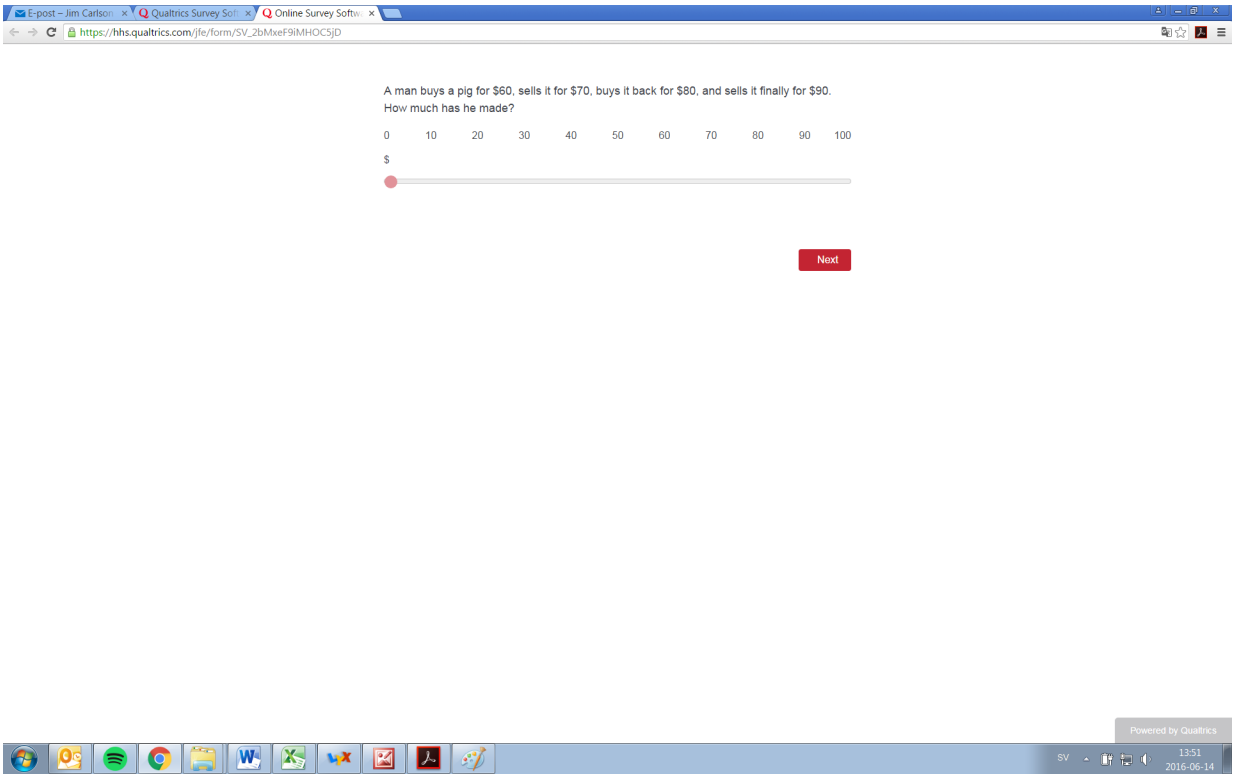
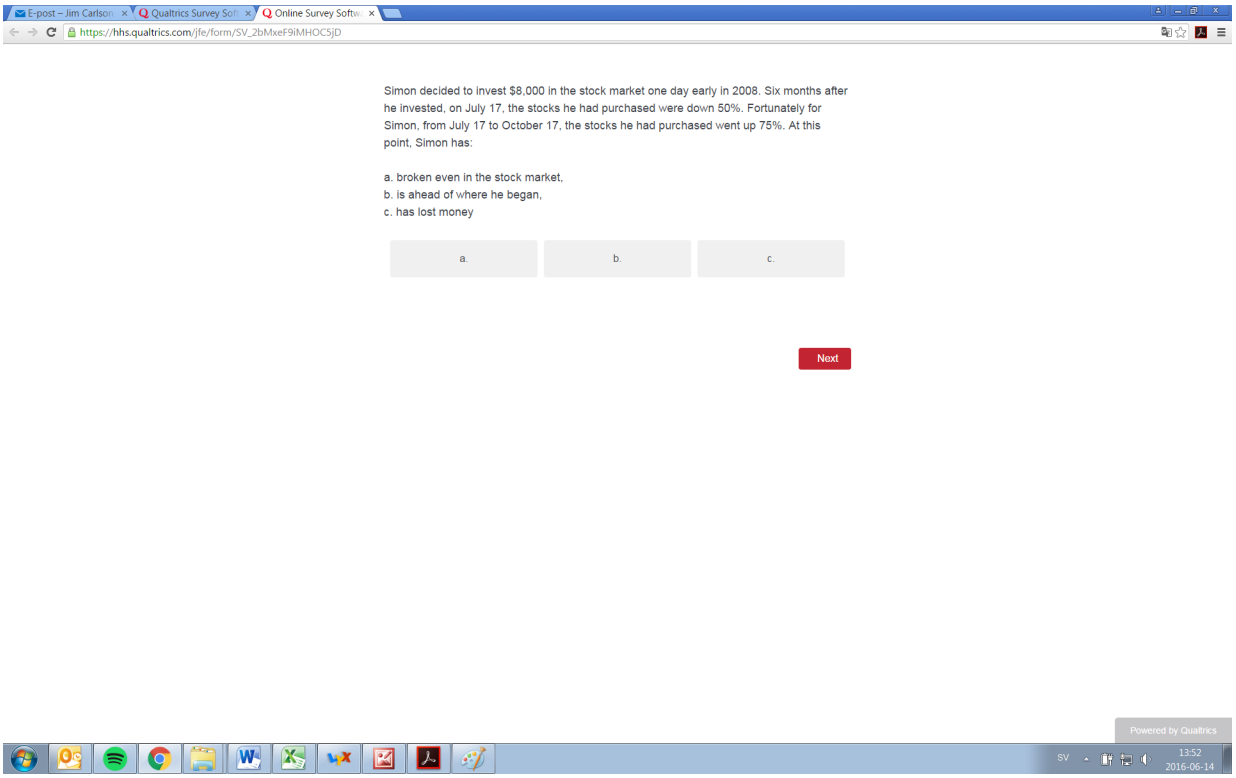


Figure 18: CRT question 4

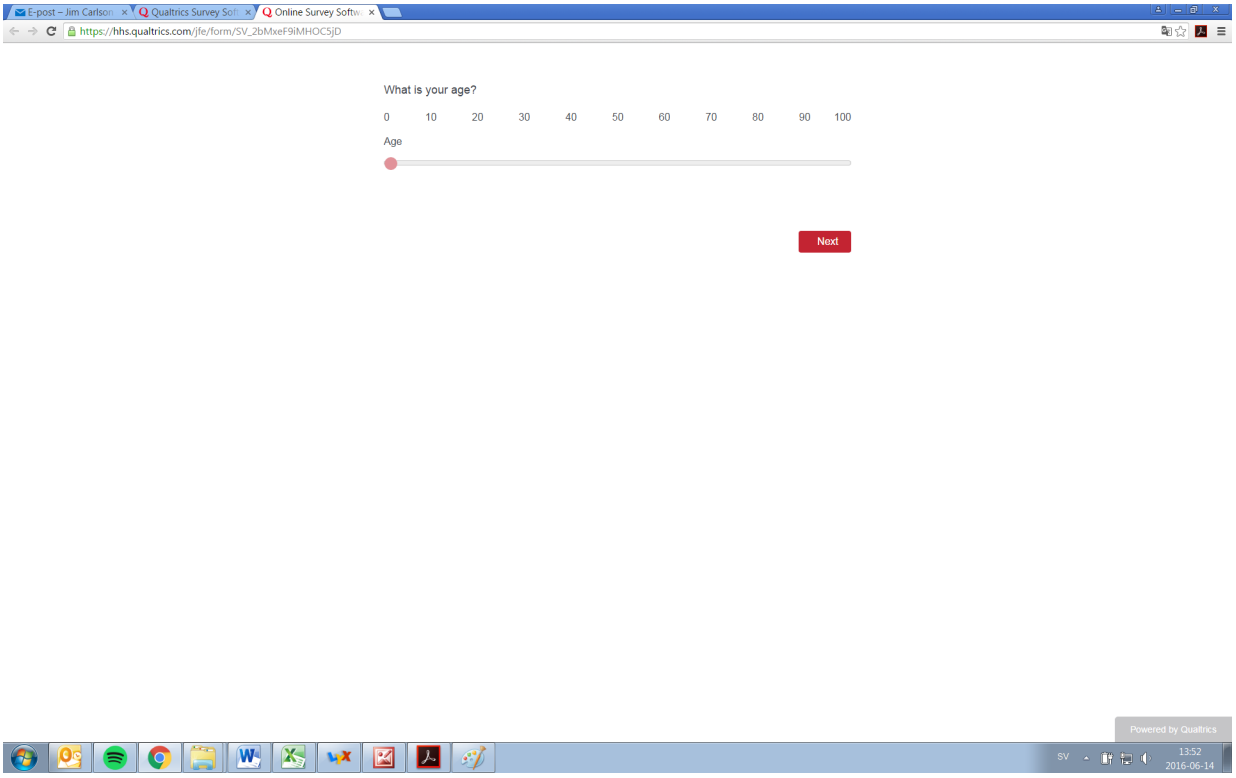


A.6 Socioeconomics

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

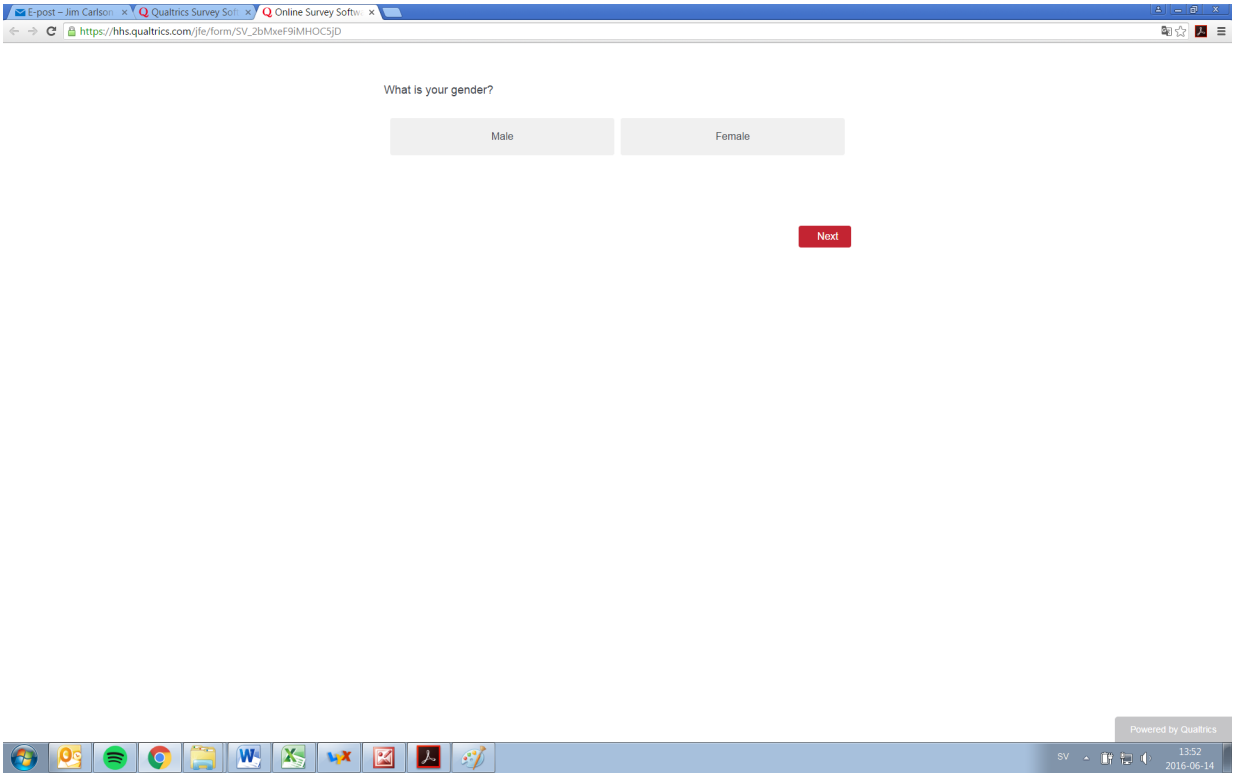
A.6.1 Age

Figure 19: Age



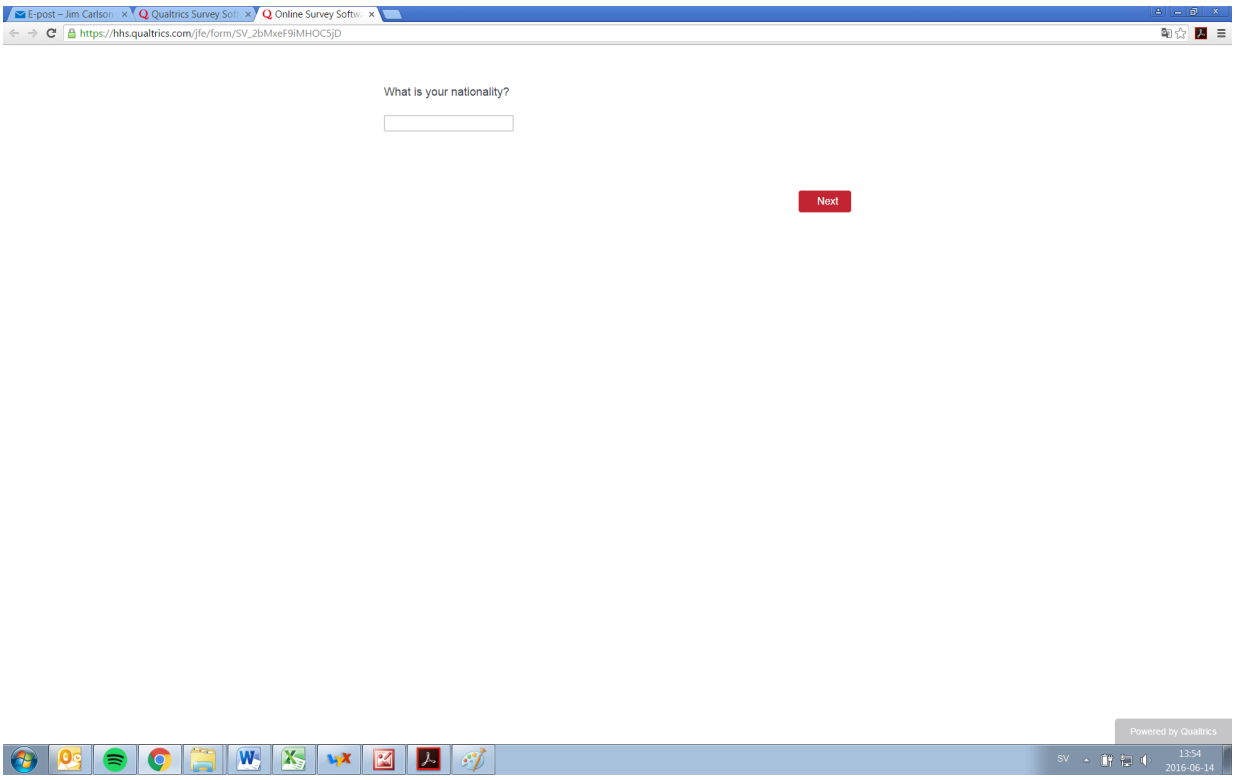
A.6.2 Gender

Figure 20: Gender



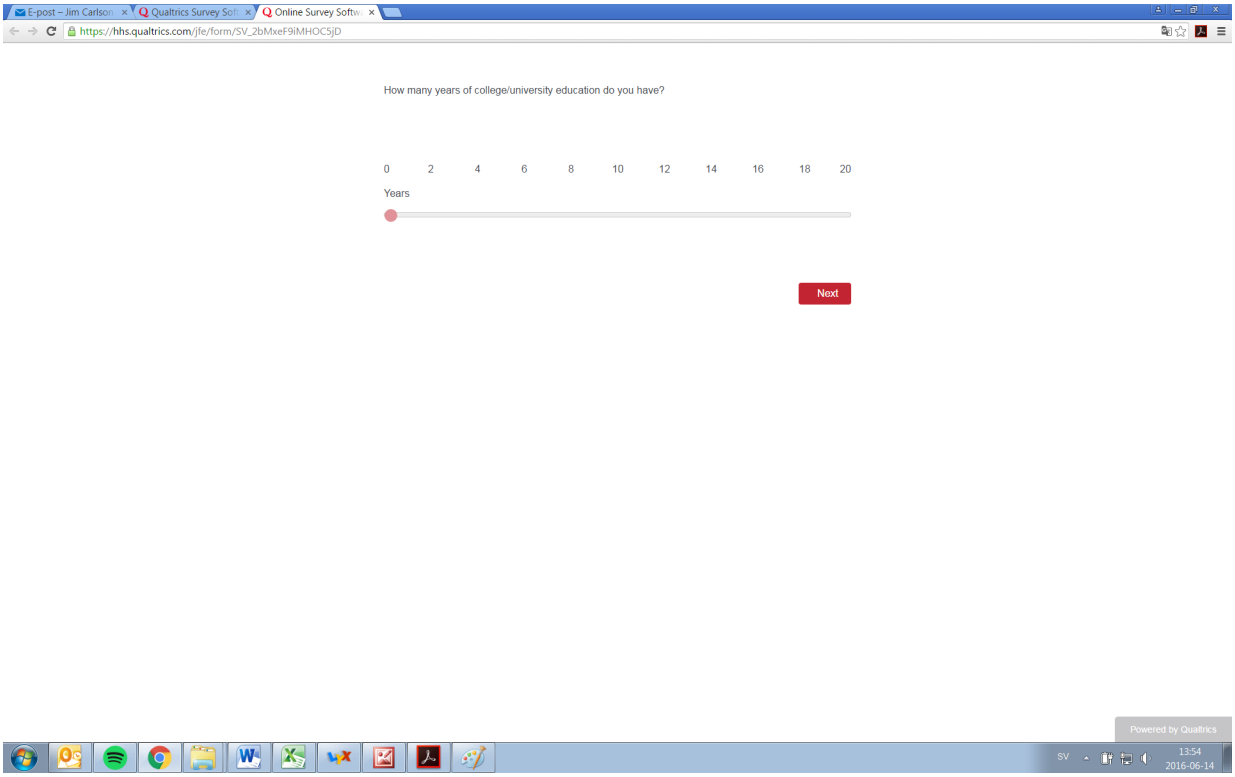
A.6.3 Nationality

Figure 21: Nationality



A.6.4 Years of college/university education

Figure 22: Years of college/university education



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 byNenkov 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 were 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

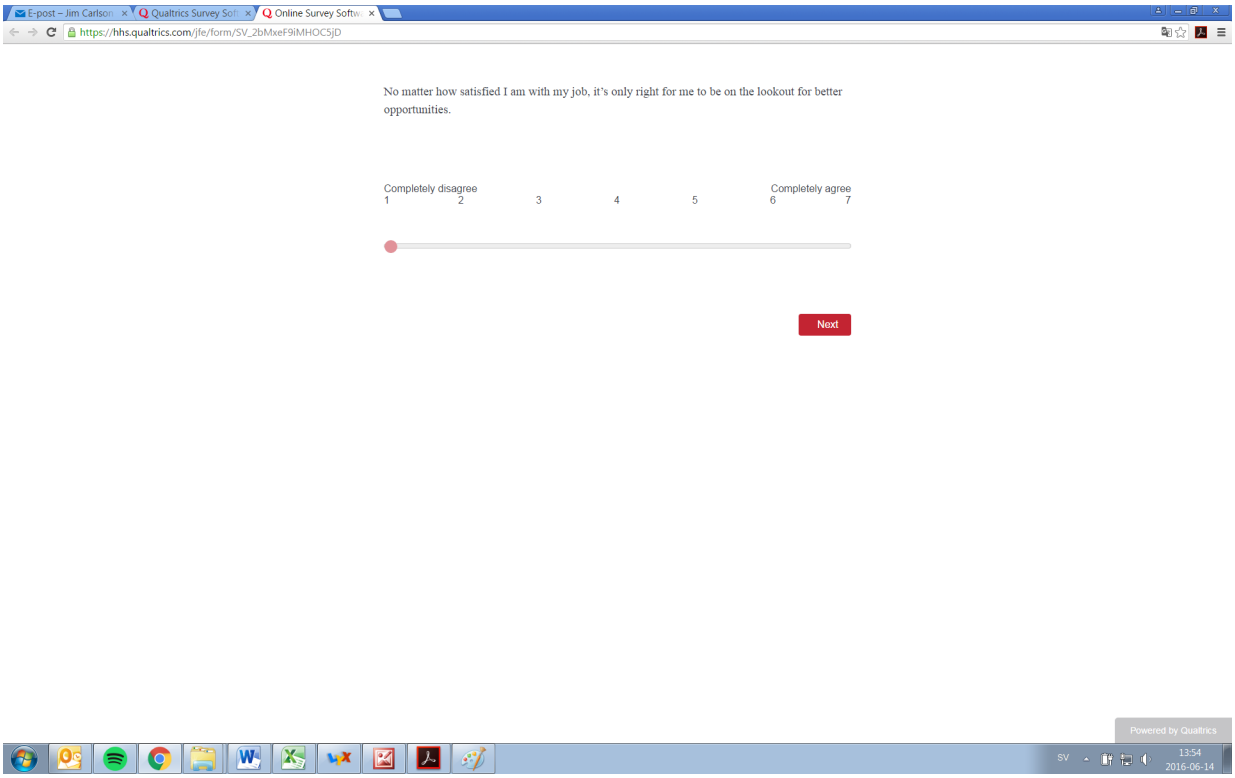
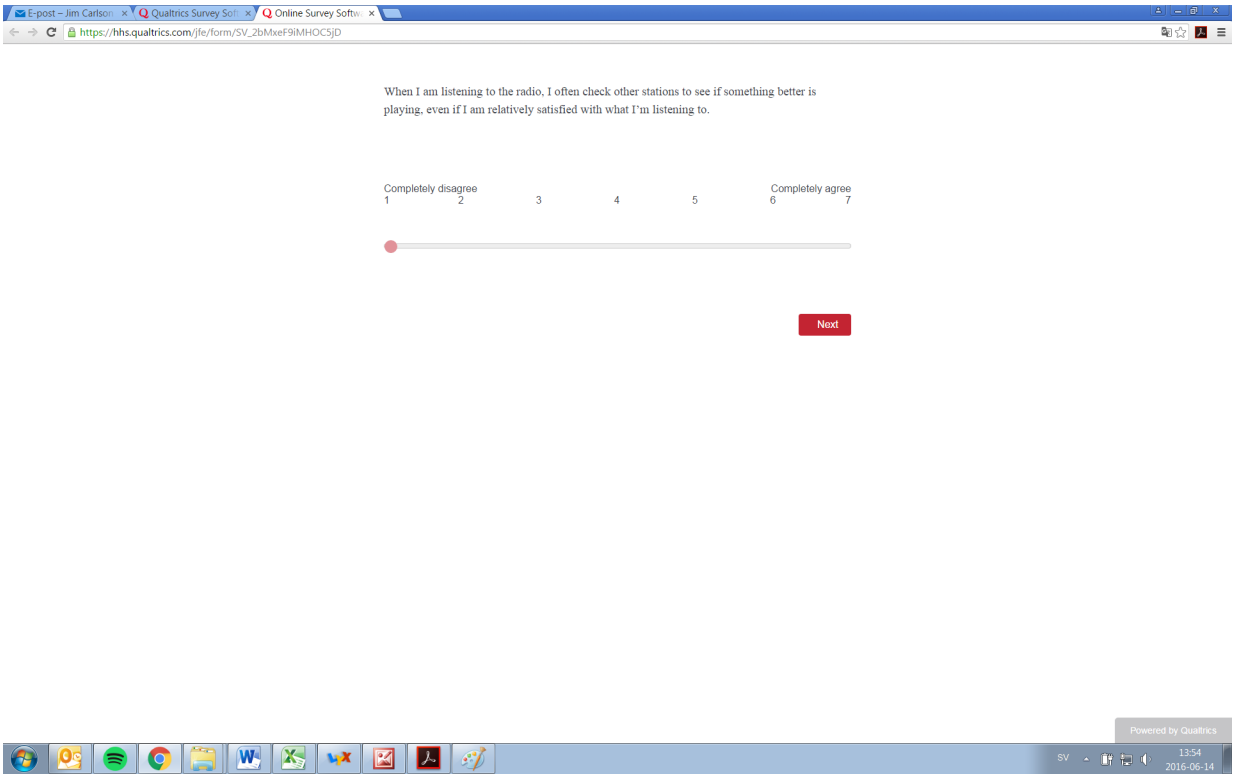


Figure 24: Alternative search - Question 2



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

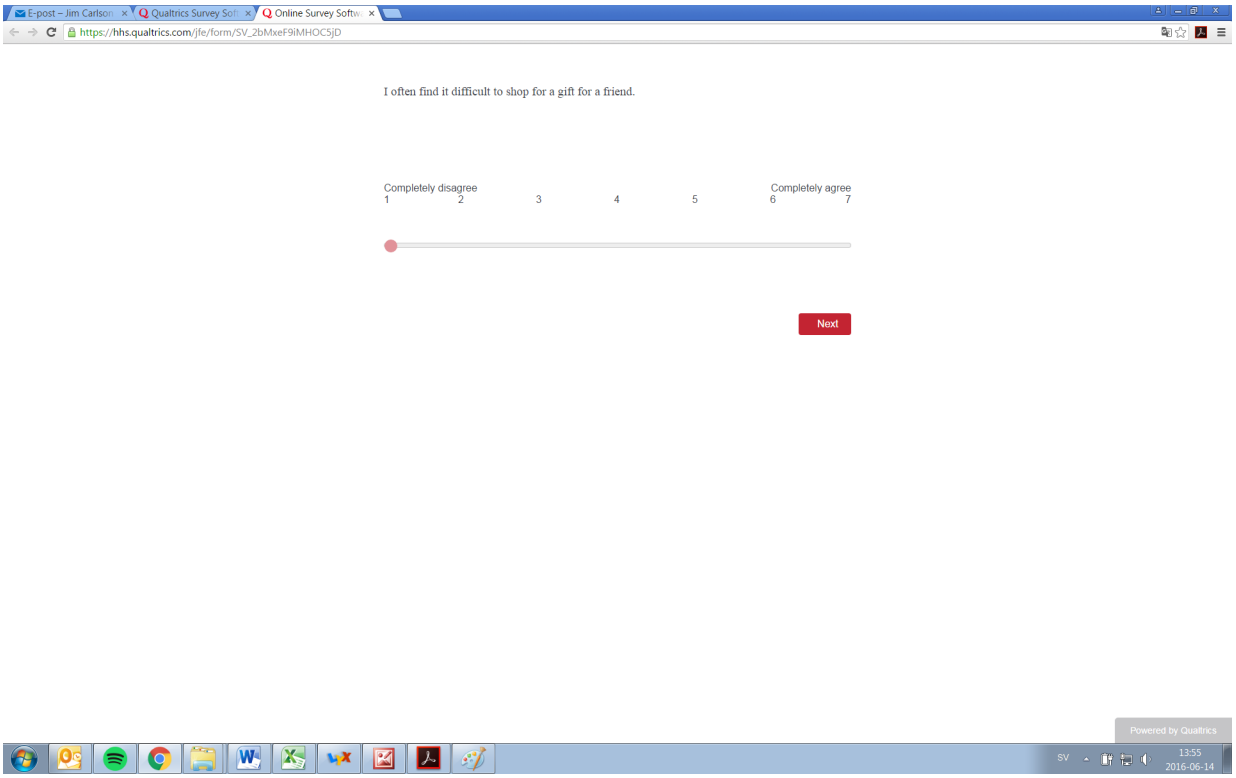
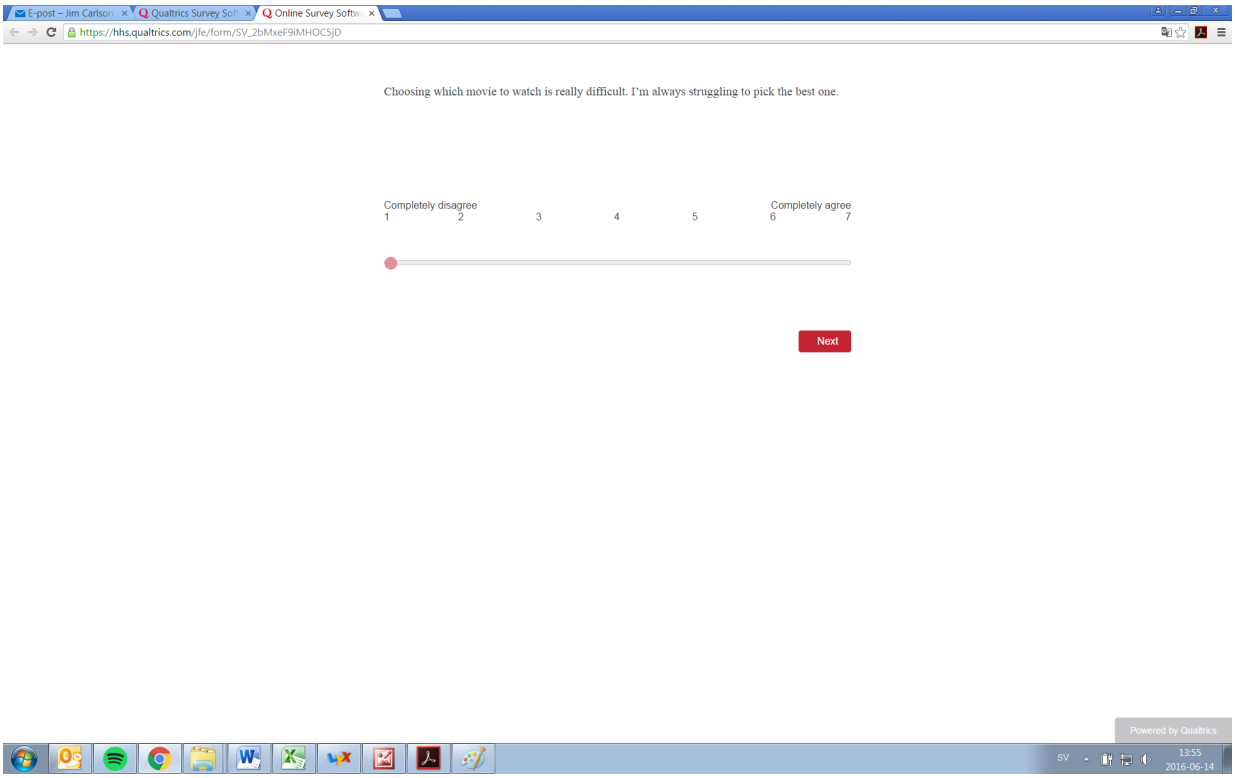


Figure 26: Decision difficulty - Question 2



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

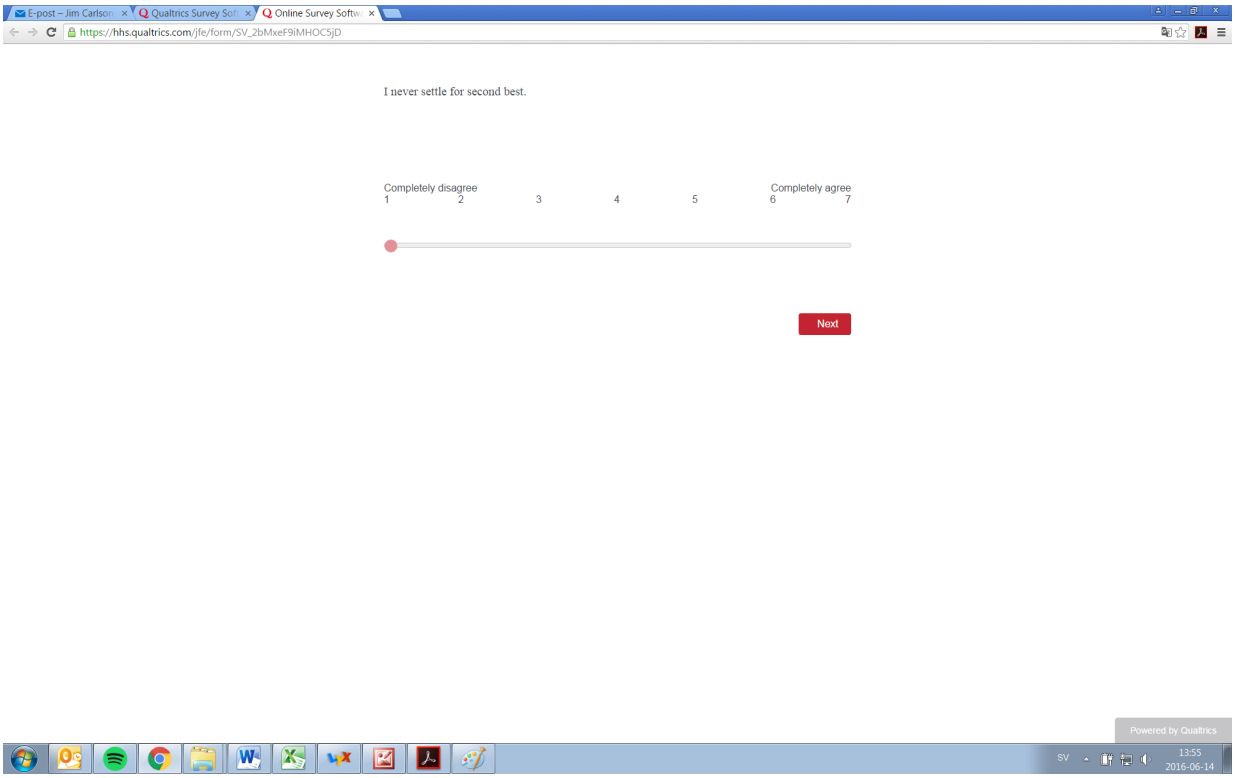
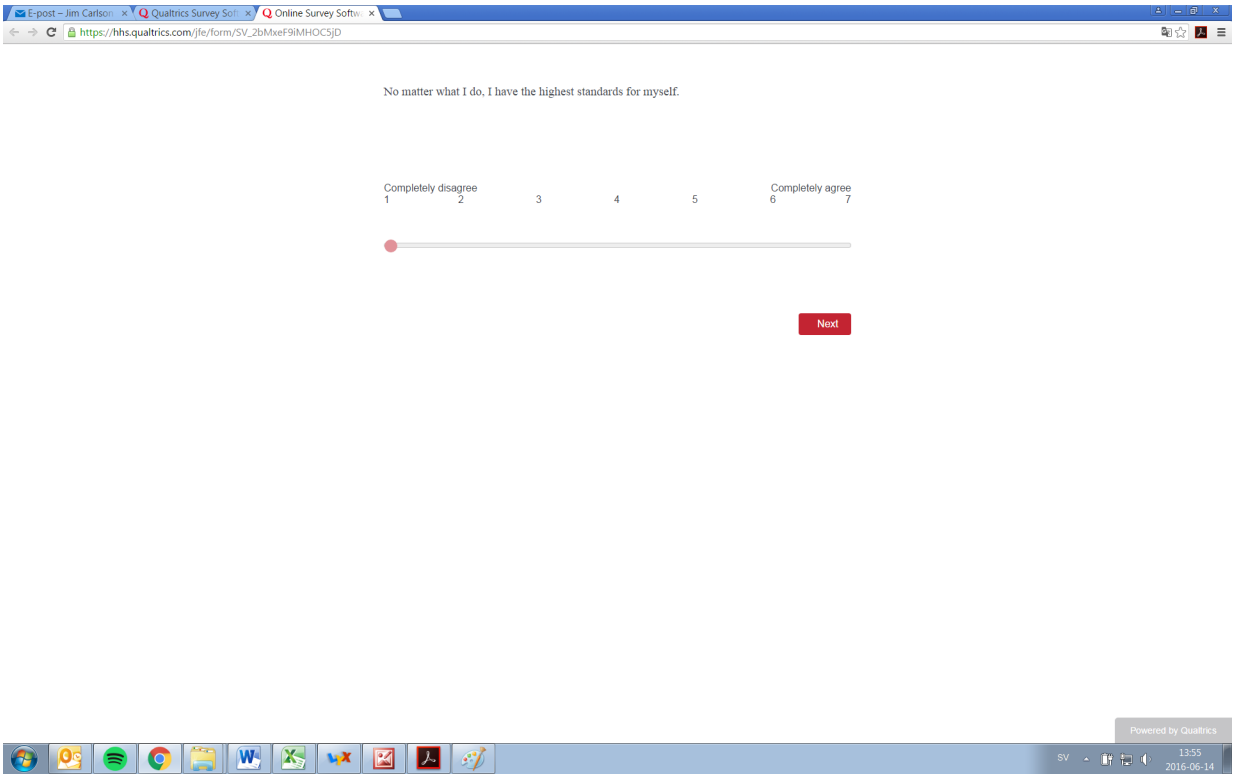


Figure 28: High standards - Question 2

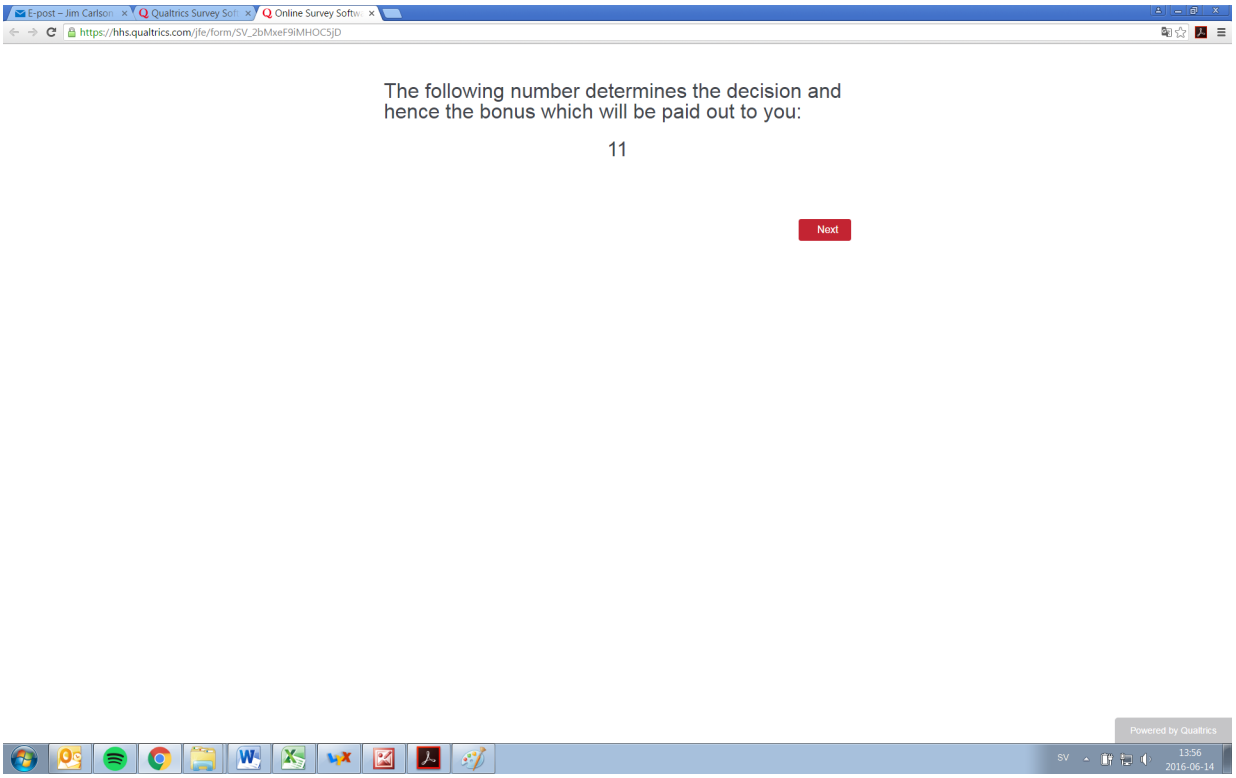


A.8 Concluding screens

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.

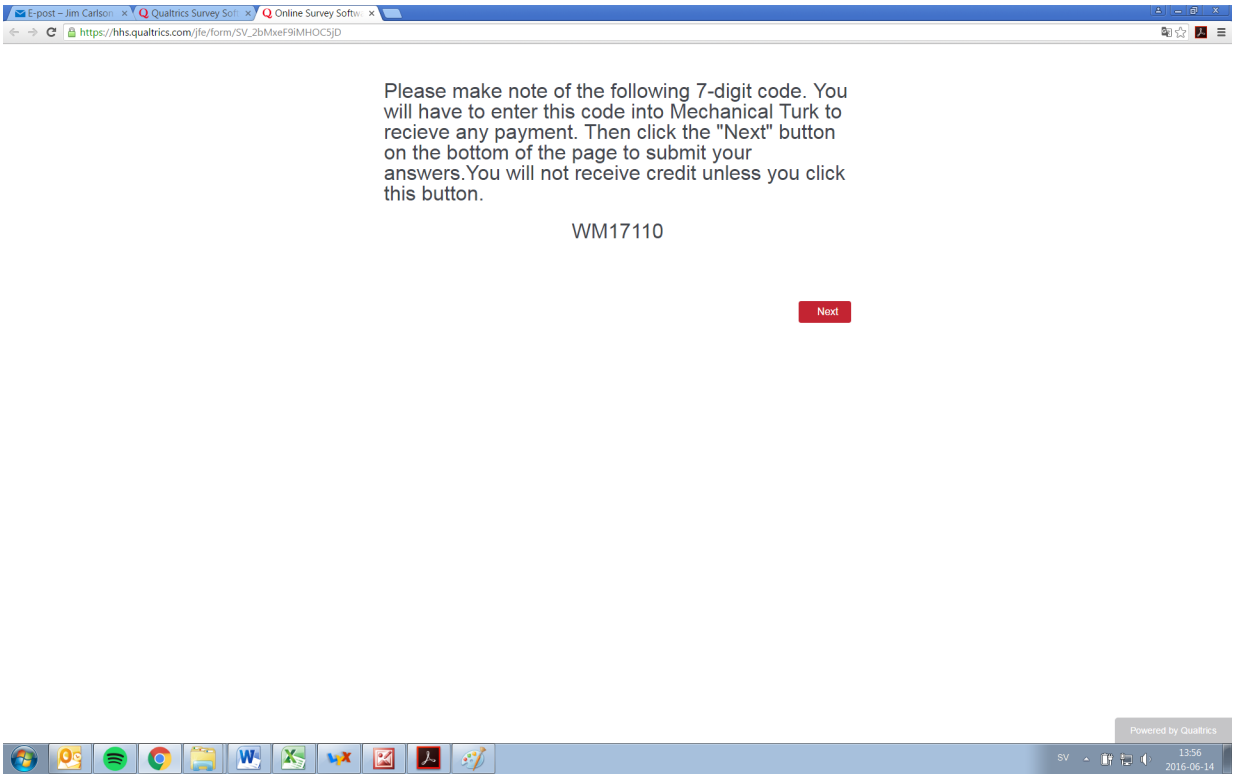
Figure 29: Random draw deciding payment



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.

The focus and decoy effects some time differ in magnitude and the way in which they are generated between Treatment 1 and 2. However, the predictions are always the same in both treatments and are as discussed in Table 2. Therefore, these variations can be seen as a robustness of the results discussed in Section 3. The differences between the two treatments are the following:

Decision task 9 and 10 (Focus effects): Only the maximal difference in one attribute is increased in order to generate the desired effect in Treatment 2. The maximal differences of both the today and 1 week attribute are increased in Treatment 1. However, the maximal difference in the attribute where we want the biggest effect always has the biggest increase in absolute terms. Moreover, the change in maximal difference in this attribute between a manipulated and control task is larger in Treatment 1 than in treatment 2.

Decision task 11 and 12 (Focus and decoy effects): In both treatments, the maximal difference of one attribute is altered in order to generate the effects. The maximal difference is increased in Treatment 1 whereas it is decreased in Treatment 2.

B.1 Treatment 1

B.1.1 Stage 1

Table 9: Payments in Stage 1 - Treatment 1

	c				c'		
Decision task	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

	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	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

	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	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

	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	1.125	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

	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	1.25	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

	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	1.75	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

	c			c'			c''		
Decision Task	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

	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	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

	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	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

	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	1.125	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

	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	1.25	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

	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	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

	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	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

	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		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

	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	1.75	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 were 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

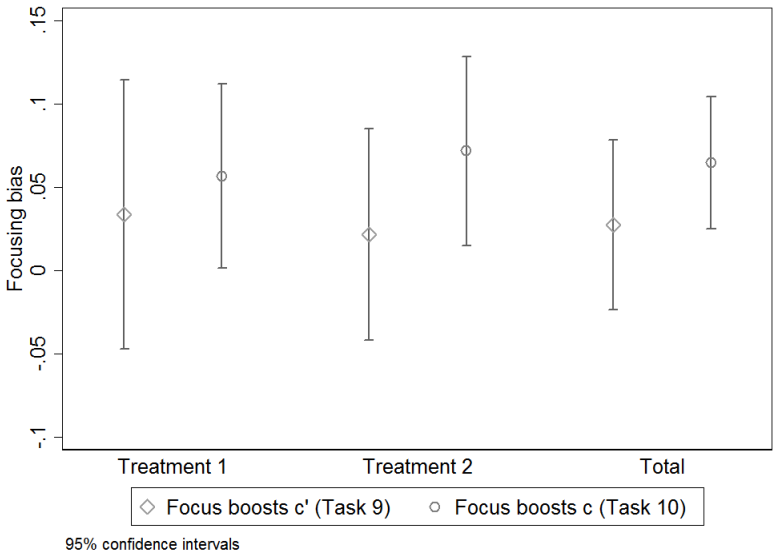


Table 28: Focus: Two-sided p-values from Wilcoxon matched-pairs signed-ranks test

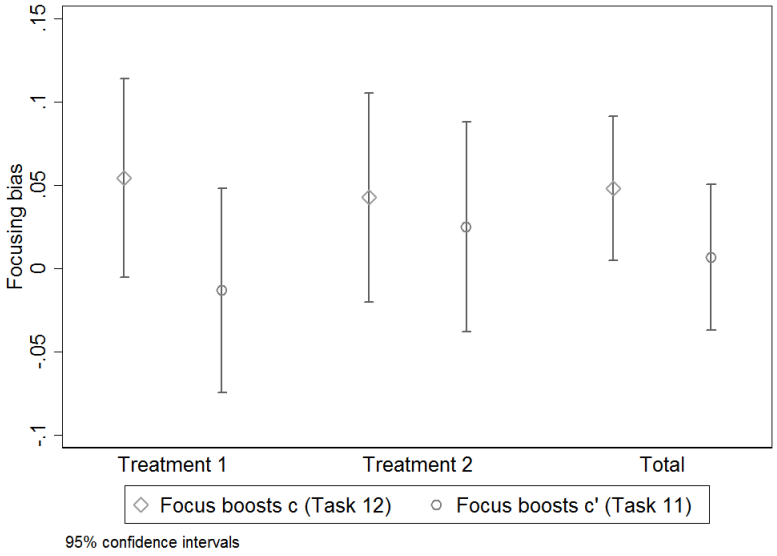
	Average	c	c'
TOTAL	0.008	0.001	0.462
Treatment 1	0.046	0.024	0.824
Treatment 2	0.095	0.013	0.493

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

Figure 32: Focusing vs. decoy by experiment



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.

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

	Model 1	Model 2	Model 3	Model 4	Model 5
Focus boosts c	0.156***	0.159***	0.159***	0.161***	0.164***
	[0.0514]	[0.0514]	[0.0516]	[0.0522]	[0.0523]
Focus boosts c'	0.0805	0.0765	0.0758	0.0744	0.0757
	[0.0650]	[0.0661]	[0.0663]	[0.0660]	[0.0666]
c consistent	-0.512***	-0.505***	-0.507***	-0.505***	-0.511***
	[0.0866]	[0.0877]	[0.0879]	[0.0880]	[0.0884]
CRT			-0.0495***	-0.0488***	-0.0469**
			[0.0173]	[0.0179]	[0.0194]
Decision time			0.00157	0.00278	0.00298
			[0.00653]	[0.00663]	[0.00661]
Switch point				-0.0274**	-0.0303**
				[0.0120]	[0.0118]
Multiple switch				0.108**	0.110**
				[0.0526]	[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	-0.0313	-0.0274	-0.0314
		[0.0450]	[0.0449]	[0.0444]	[0.0447]
Constant	0.0514	0.0620	0.137*	0.176*	0.255
	[0.0457]	[0.0502]	[0.0711]	[0.0905]	[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 inconsistent 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

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 inconsistent choice as dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5
Focus boosts c	0.0587**	0.0598**	0.0605**	0.0605**	0.0623**
	[0.0246]	[0.0246]	[0.0247]	[0.0247]	[0.0248]
Focus boosts c'	0.0140	0.0122	0.0117	0.0119	0.0130
	[0.0294]	[0.0297]	[0.0297]	[0.0297]	[0.0299]
c consistent	-0.115***	-0.112***	-0.113***	-0.112***	-0.115***
	[0.0382]	[0.0385]	[0.0385]	[0.0385]	[0.0386]
CRT			-0.0141*	-0.0171**	-0.0177**
			[0.00770]	[0.00801]	[0.00878]
Decision time			0.00220	0.00172	0.00198
			[0.00288]	[0.00290]	[0.00288]
Switch point				-0.00825	-0.00976*
				[0.00518]	[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	-0.0118	-0.00904	-0.0160
		[0.0209]	[0.0210]	[0.0210]	[0.0210]
Constant	0.469***	0.474***	0.485***	0.520***	0.657***
	[0.0213]	[0.0235]	[0.0338]	[0.0405]	[0.0751]
Observations	2,000	2,000	2,000	2,000	1,994
R^2	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 inconsistent choice as dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5
Focus boosts c	0.0305	0.0358	0.0348	0.0371	0.0374
	[0.0250]	[0.0250]	[0.0249]	[0.0249]	[0.0250]
Focus boosts c'	-0.0155	-0.0109	-0.0128	-0.0138	-0.0153
	[0.0260]	[0.0258]	[0.0260]	[0.0260]	[0.0261]
CRT			0.00245	-0.00852	-0.000476
			[0.0144]	[0.0146]	[0.0154]
Decision time			0.00392	0.00242	0.00274
			[0.00419]	[0.00407]	[0.00406]
Switch point				-0.0298***	-0.0309***
				[0.0109]	[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	-0.0486	-0.0376	-0.0355
		[0.0397]	[0.0399]	[0.0395]	[0.0396]
Constant	0.469***	0.489***	0.456***	0.583***	0.427***
	[0.0213]	[0.0281]	[0.0508]	[0.0623]	[0.144]
Observations	1,465	1,465	1,465	1,465	1,461
R^2	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 inconsistent choice as dependent variable all subjects

	Model 1	Model 2	Model 3	Model 4	Model 5
Focus boosts c	0.0558***	0.0568***	0.0558***	0.0560***	0.0572***
	[0.0201]	[0.0200]	[0.0201]	[0.0202]	[0.0202]
Focus boosts c'	0.0296	0.0281	0.0277	0.0275	0.0281
	[0.0236]	[0.0240]	[0.0240]	[0.0240]	[0.0241]
c consistent	-0.203***	-0.201***	-0.200***	-0.200***	-0.202***
	[0.0324]	[0.0328]	[0.0328]	[0.0328]	[0.0329]
CRT			-0.0196***	-0.0192***	-0.0186**
			[0.00649]	[0.00672]	[0.00733]
Decision time			6.89e-06	0.000285	0.000463
			[0.00228]	[0.00228]	[0.00226]
Switch point				-0.0115**	-0.0126***
				[0.00463]	[0.00454]
Multiple switch				0.0417**	0.0420**
				[0.0197]	[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	-0.0125	-0.0108	-0.0123
		[0.0173]	[0.0171]	[0.0168]	[0.0169]
Constant	0.523***	0.527***	0.561***	0.580***	0.601***
	[0.0181]	[0.0198]	[0.0270]	[0.0342]	[0.0608]
Observations	2,920	2,920	2,919	2,919	2,913
R^2	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 inconsistent choice as dependent variable all subjects

	Model 1	Model 2	Model 3	Model 4	Model 5
Focus boosts c	0.0564***	0.0603***	0.0601***	0.0607***	0.0618***
	[0.0214]	[0.0213]	[0.0213]	[0.0213]	[0.0213]
Focus boosts c'	-0.0231	-0.0191	-0.0196	-0.0215	-0.0220
	[0.0222]	[0.0221]	[0.0222]	[0.0222]	[0.0223]
CRT			-0.00883	-0.00725	-0.00288
			[0.0121]	[0.0121]	[0.0126]
Decision time			0.00102	0.00186	0.00151
			[0.00346]	[0.00321]	[0.00319]
Switch point				-0.0369***	-0.0385***
				[0.00998]	[0.00988]
Multiple switch				0.141***	0.131***
				[0.0359]	[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	-0.0404	-0.0343	-0.0307
		[0.0329]	[0.0330]	[0.0315]	[0.0312]
Constant	0.523***	0.539***	0.547***	0.604***	0.391***
	[0.0181]	[0.0236]	[0.0398]	[0.0537]	[0.115]
Observations	2,138	2,138	2,138	2,138	2,134
R^2	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.

D Salience theory

In this section, we apply salience theory, proposed by Bordalo et al. (2013)[20], to our decision tasks, and investigate whether salience theory can contribute to explaining our results. In salience theory consumers evaluate $N > 1$ options in a choice set $\boldsymbol{C}_{choice} \equiv \{\boldsymbol{q}_k\}_{k=1,\ldots,N}$. Dropping the price dimension, each option k is a vector $\mathbf{q}_k = (q_{1k}, \ldots, q_{Mk}) \in \mathbb{R}^m$ of $M > 1$ quality attributes. q_{ik} measures the utility that attribute i generates to the individual. An individual who is not affected by salience distortions chooses $\mathbf{q}_k$ as to maximize: $u(\mathbf{q}_k) = \sum_{i=1}^{m} \theta_i q_{ik}$, where θ_i is the weight attached to attribute i and thus captures the importance of the attribute to the individual. Kőszegi and Szeidl (2013) assume that attributes with large differences among options attract attention. In contrast, Bordalo et al. (2013) propose the idea that an attribute of a certain option is more salient the more it departs from the average of this attribute among all options. Given $\boldsymbol{C}_{choice}$, let $\bar{\mathbf{q}} = \{\bar{q}_1, \ldots, \bar{q}_m\}$ be the reference option, where the reference level of attribute i is $\bar{q}_i = \frac{1}{N}\sum_{k=1}^{N} q_{ik}$. Let $\sigma(\cdot,\cdot)$ be a salience function. The salience of attribute i for option k is given by $\sigma(q_{ik}, \bar{q}_i)$. The salience function $\sigma(\cdot,\cdot)$ is assumed to be symmetric, continuous and to satisfy the following two conditions:

1. Ordering: Let $\mu = sgn(q_{ik} - \bar{q}_i)$. Then for any $\epsilon, \epsilon' \geq 0$ with $\epsilon + \epsilon' > 0$, we have: $\sigma(q_{ik} + \mu\epsilon, \bar{q}_i - \mu\epsilon') > \sigma(q_{ik}, \bar{q}_i)$.

2. Diminishing sensitivity: For any $q_{ik}, \bar{q}_i \geq 0$ and all $\epsilon > 0$, we have: $\sigma(q_{ik} + \epsilon, \bar{q}_i + \epsilon) < \sigma(q_{ik}, \bar{q}_i)$.

Ordering captures the idea that an attribute is more salient the more it departs from the reference level of the attribute. Diminishing sensitivity says that the salience of an attribute decreases if this attribute is uniformly increased across all options. The assumption of diminishing sensitivity is absent in the model of Kőszegi and Szeidl (2013). An attribute i is more salient than attribute j for option $\mathbf{q}_k$ if and only if $\sigma(q_{ik}, \bar{q}_i) > \sigma(q_{jk}, \bar{q}_j)$. Let r_{ik} be the salience ranking of attribute i for option $\mathbf{q}_k$, where the most salient attribute has rank

[20]The extension to goods with multiple quality attributes is found in the online appendix of their paper.

1. An individual who is affected by salience distortions evaluates option $\mathbf{q}_k$ by transforming the weights θ_i for each $i \in \{1, \ldots, m\}$ in the following way: $\hat{\theta}_i^k = \theta_i \times \frac{\delta^{r_{ik}}}{\sum_{j=1}^m \theta_j \delta^{r_{jk}}}$, where $\delta \in (0, 1]$. Thus, as $\delta \to 1$, attributes are weighted without salience distortions, whereas the individual only considers the most salient attribute when $\delta \to 0$. Finally, the salient thinker chooses option $\mathbf{q}_k$ as to maximize $u^S(\mathbf{q}_k) = \sum_{i=1}^m \hat{\theta}_i q_{ik}$.

In order to assess whether salience theory can explain the results found in Section 3 we use the following salience function: $\sigma(q_{ik}, \bar{q}_i) = \frac{|q_{ik} - \bar{q}_i|}{q_{ik} + \bar{q}_i}$ for $q_{ik}, \bar{q}_i \neq 0$ and $\sigma(0, 0) = 0$. This salience function is used in Bordalo et al. (2012b, 2013).

In addition to the differences discussed above, salience and focusing theory differ in two additional aspects. First, in salience theory each attribute of each option has a (possibly) unique salience.[21] Second, the salience distortions are not affected continuously by changes in salience in the attributes. Instead, the salience ranking of the attributes is what matters. We start by investigating the predictions of salience theory with salience rankings. Then we are going to relax this assumption and allow for continuous changes in the salience weights.

D.1 Salience rankings

For a given switch point and any decision task in Stage 2 we employ the following strategy:

1. Calculate the salience ranking of the attributes for c and c' of the decision task in Stage 2.

2. Calculate the salience ranking of the attributes for c and c' of the decision task in Stage 1 using the same c and c' as the decision task in point 1.[22]

3. Calculate the change in salience ranking of the attributes today and 1 week between the task in Stage 2 and the decision task in Stage 1 for c and c' respectively.

[21] This stands in contrast to the model of Kőszegi and Szeidl (2013) where the focus weight of an attribute is equal across options.

[22] Either the decision task prior to the switch point or the switch point.

4. For each option, calculate the difference in change in salience ranking between the attribute in which the option has the highest payment and the attribute in which the option has the second highest payment.

5. The option with the largest increase[23] in the change in salience ranking calculated in point 4. has an increased likelihood of being chosen.

The calculations from point 4. and 5. are shown in Table 37-40. The calculations in point 4. are given by Δc and $\Delta c'$. Δc is the difference in change in salience ranking between attribute today and 1 week for option c. Whereas $\Delta c'$ is the difference in change in salience ranking between attribute 1 week and today for c'. So, Δc and $\Delta c'$ are natural numbers between -4 and 4. As an example, if for option c the attribute today and 1 week have salience rank 1 and 2 respectively in the decision task in Stage 1 but rank 3 and 1 in the corresponding decision task in Stage 2, then $\Delta c = (1-3)-(2-1) = -3$. And if $\Delta c' > \Delta c$, then c' has an increased likelihood of being chosen in the decision task in Stage 2. The results are shown for each switch point and decision task in Stage 2. The option which has an increased likelihood of being chosen, according to salience theory, is reported in the columns with header ST. The corresponding option, according to focus theory, is shown in the rightmost column. The results are summarized in Table 36, which shows how often the predictions of salience and focus theory coincides. The results are reported by decision task in Stage 2. For each decision task, both the number of switch points and percentages for which the two theories coincide are reported. When calculating the percentages, the number of switch points is weighted by the share of subjects who elicited this switch point in Stage 1. Salience and focus theory coincide in 72.9 % of the decision tasks shown to subjects in Stage 2. The main differences are found in the manipulated tasks 9-12. In Section 3, we reported a systematic difference between the focusing on c and c', with focusing being stronger when boosting option c. It is relevant to check if salience theory is better at explaining this finding, but from Table 36, it is possible to conclude that this is

[23]In case both are decreasing, the option with the smallest decrease in its best attribute is predicted to be chosen. And in case of ties, the option which was predicted to be chosen in the decision task in Stage 1 is predicted to be chosen in the decision task in Stage 2 as well.

not the case. Recalling that we found a focus effect for decision task 10 but not for decision task 9, salience theory does not help in explaining this difference. The two theories coincide for the control tasks (decision task 13-16) in general. When contrasting focus theory with the decoy effect, a focus effect for decision task 12 but not 11 was found. These results cannot be explained by salience theory, which if anything predicts the opposite.

Table 36: Coinciding predictions of salience theory and focus theory

DT	# - Treatment 1	# - Treatment 2	% - Treatment 1	% -Treatment 2	% - Average
9	3	2	71%	51%	61%
10	6	3	49%	71%	60%
11	6	6	69.2%	52.8%	61%
12	1	3	20%	71%	45.5%
13	4	8	81.8%	100%	90.9%
14	6	7	52.8%	76.2%	64.5%
15	8	8	100%	100%	100%
16	8	8	100%	100%	100%

Table 37: Changes in salience ranking by switch point 1 - 4: Treatment 1

SP		1			2			3			4		
DT	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Focus
9	-2	3	c'	-2	3	c'	2	3	c'	2	1	c	c'
10	1	2	c'	3	3	c'	3	1	c	3	1	c	c
11	-2	2	c'	2	2	c'	2	0	c	2	0	c	c'
12	0	0	c'	2	2	c'	2	0	c	0	0	c'	c
13	0	0	c	0	0	c	2	2	c	2	0	c	c
14	0	0	c'	2	0	c	2	0	c	0	0	c'	c'
15	0	0	c'	2	2	c'	0	0	c'	0	1	c'	c'
16	0	0	c'	2	2	c'	0	0	c'	0	0	c'	c'

Table 38: Changes in salience ranking by switch point 5 - 8: Treatment 1

SP	5			6			7			8			
DT	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Focus
9	3	1	c	3	1	c	3	1	c	3	1	c	c'
10	3	1	c	3	1	c	3	1	c	3	1	c	c
11	0	0	c'	0	0	c'	0	0	c'	0	0	c'	c'
12	0	0	c'	0	0	c'	0	0	c'	0	0	c'	c
13	0	1	c'	0	1	c'	-1	1	c'	-1	1	c'	c
14	0	0	c'	0	0	c'	0	1	c'	0	1	c'	c'
15	0	1	c'	0	1	c'	-1	1	c'	-1	1	c'	c'
16	0	0	c'	0	1	c'	-1	1	c'	-1	1	c'	c'

Table 39: Changes in salience ranking by switch point 1 - 4: Treatment 2

SP	1			2			3			4			
DT	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Focus
9	-2	1	c'	-2	1	c'	0	0	c	0	0	c	c'
10	1	0	c	1	0	c	1	0	c	0	0	c'	c
11	-2	0	c'	0	-1	c	0	-1	c	-1	-1	c'	c'
12	0	-2	c	0	-1	c	0	-1	c	-3	-1	c'	c
13	0	0	c	0	0	c	0	0	c	1	0	c	c
14	0	1	c'	0	0	c	0	-1	c	0	0	c	c
15	0	0	c'	0	0	c'	0	0	c'	0	0	c'	c'
16	0	1	c'	0	0	c'	0	0	c'	-1	0	c'	c'

Table 40: Changes in salience ranking by switch point 5 - 8: Treatment 2

SP	5			6			7			8			
DT	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Focus
9	0	0	c	0	0	c	0	0	c	-1	0	c	c'
10	0	0	c'	0	0	c'	0	0	c'	-2	0	c'	c
11	-3	-1	c'	-3	-1	c'	-3	-1	c'	-3	2	c'	c'
12	-3	-1	c'	-3	-1	c'	-3	-1	c'	-3	2	c'	c
13	0	0	c	0	0	c	0	0	c	-1	0	c	c
14	0	0	c	0	0	c	0	0	c	-1	0	c	c
15	0	0	c'	0	0	c'	0	0	c'	-2	0	c'	c'
16	0	0	c'	0	0	c'	0	0	c'	-2	0	c'	c'

D.2 Continuous salience distortions

In this section we assume that changes in salience in an attribute has a continuous impact on the weighting of the attributes[24]. For a given switch point and any decision task in Stage 2 we employ the following strategy:

1. Calculate the salience of the attributes today and 1 week for c and c' of the decision task in Stage 2.

2. Calculate the salience of the attributes today and 1 week for c and c' of the decision task in Stage 1 using the same c and c' as the decision task in point 1.[25]

3. Calculate the change in salience of the attributes today and 1 week between the task in Stage 2 and the decision task in Stage 1 for c and c' respectively .

4. For each option, calculate the difference in change in salience between the attribute in which the option has the highest payment and the attribute in which the option has the second highest payment.

5. The option with the largest increase[26] in the change in salience calculated in point 4. is has an increased likelihood of being chosen.

The calculations from point 4. and 5. are shown in Table 42-45. The calculations in point 4. are given by Δc and $\Delta c'$. Δc is the difference in change in salience between attribute today and 1 week for option c. Whereas $\Delta c'$ is the difference in change in salience between attribute 1 week and today. The option which has an increased likelihood of being chosen, according to salience theory, is reported in the columns with header ST. The corresponding option, according to focus theory, is shown in the rightmost column. As can be seen in Table 41, with continuous salience distortions, the two theories coincide to a large extent

[24] A discussion of continuous salience distortions can be found in the online appendix of Bordalo et al. (2013)..

[25] Either the decision task prior to the switch point or the switch point.

[26] In case both are decreasing, the option with the smallest decrease in its best attribute is predicted to be chosen. And in case of ties, the option which was predicted to be chosen in the decision task in Stage 1 is predicted to be chosen in the decision task in Stage 2 as well.

in decision tasks 9-10 and 13-16. These correspond to the manipulated tasks where only a focus (salience) effect was added and the control tasks. Hence, the results presented regarding focus effects in Section 3.2 could be attributed to salience theory with continuous salience distortions. Specifically, the theory can explain the asymmetry between option c and c' in decision tasks 9 and 10. The average salience across all decision tasks and all attributes is calculated to be 0.11. Moreover, the average difference in salience between the highest and second highest attribute is 0.04 for c and 0.11 for c'. Hence, many of the salience manipulations in decision tasks 9 and 10 are sizeable.

However, salience theory with continuous salience distortions does not explain the asymmetry between option c and c' found in decision tasks 11-12 . In many cases, there is no difference between Δc and $\Delta c'$, indicating that the individual ought to make a choice consistent with the choice in Stage 1. In Section 3.3 we found a focus effect of Decision task 12 but not 11. This cannot be explained by salience theory with continuous salience distortions.

Table 41: Coinciding predictions of salience theory and focus theory

DT	# - Treatment 1	# - Treatment 2	% - Treatment 1	% -Treatment 2	% - Average
9	5	7	86.6%	92.4%	89.5%
10	8	8	100%	100%	100%
11	7	8	80%	100%	90%
12	5	2	29%	51%	40%
13	8	7	100%	76.2%	88.1%
14	8	6	100%	68.6%	84.3%
15	8	7	100%	92.4%	96.2%
16	8	8	100%	100%	100%

Table 42: Changes in salience by switch point 1 - 4: Treatment 1

SP	1			2			3			4			
DT	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Focus
9	-0.07	0.21	2	-0.07	0.21	2	0.01	0.23	2	0.08	0.24	2	2
10	0.17	0.04	1	0.22	0.04	1	0.28	0.05	1	0.28	0.05	1	1
11	-0.04	0.06	2	0.02	0.07	2	0.08	0.07	1	0.08	0.08	2	2
12	0.03	0.03	2	0.03	0.03	2	0.04	0.04	2	0.05	0.02	1	1
13	0.01	0.01	1	0.02	0.02	1	0.03	0.03	1	0.04	0.04	1	1
14	0.02	0.02	2	0.01	0.01	2	0.02	0.02	2	0.03	0.03	2	2
15	0.01	0.01	2	0.02	0.02	2	0.03	0.03	2	0.04	0.04	2	2
16	0.02	0.02	2	0.02	0.02	2	0.03	0.03	2	0.03	0.03	2	2

Table 43: Changes in salience by switch point 5 - 8: Treatment 1

SP	5			6			7			8			
DT	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Focus
9	0.16	0.23	2	0.23	0.21	1	0.29	0.19	1	0.32	0.17	1	2
10	0.29	0.06	1	0.29	0.06	1	0.29	0.07	1	0.30	0.06	1	1
11	0.08	0.08	2	0.09	0.09	2	0.09	0.09	2	0.09	0.09	2	2
12	0.06	-0.01	1	0.07	-0.03	1	0.09	-0.05	1	0.10	-0.08	1	1
13	0.05	0.05	1	0.06	0.06	1	0.06	0.06	1	0.07	0.07	1	1
14	0.04	0.04	2	0.04	0.04	2	0.05	0.05	2	0.06	0.06	2	2
15	0.05	0.05	2	0.05	0.05	2	0.06	0.06	2	0.06	0.06	2	2
16	0.04	0.04	2	0.05	0.05	2	0.06	0.06	2	0.06	0.06	2	2

Table 44: Changes in salience by switch point 1 - 4: Treatment 2

SP	1			2			3			4			
DT	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Focus
9	-0.09	0.09	2	-0.09	0.09	2	-0.09	0.08	2	-0.08	0.08	2	2
10	0.14	-0.08	1	0.13	-0.10	1	0.11	-0.12	1	0.09	-0.10	1	1
11	-0.06	-0.06	2	-0.07	-0.07	2	-0.09	-0.09	2	-0.11	-0.07	2	2
12	0.00	-0.10	1	-0.06	-0.11	1	-0.13	-0.12	2	-0.14	-0.14	2	1
13	-0.02	0.02	2	0.02	0.02	1	0.02	0.02	1	0.02	-0.02	1	1
14	-0.04	0.04	2	0.02	-0.02	1	0.02	-0.02	1	-0.02	-0.02	1	1
15	-0.02	0.02	2	-0.02	0.02	2	-0.02	0.02	2	0.02	0.02	2	2
16	-0.04	0.04	2	-0.02	-0.02	2	-0.02	-0.02	2	-0.02	0.02	2	2

Table 45: Changes in salience by switch point 5 - 8: Treatment 2

SP	5			6			7			8			
DT	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Δc	$\Delta c'$	ST	Focus
9	-0.03	0.07	2	0.02	0.07	2	0.06	0.07	2	0.07	0.06	1	2
10	0.08	-0.08	1	0.06	-0.06	1	0.04	-0.04	1	0.03	-0.03	1	1
11	-0.12	-0.06	2	-0.14	-0.04	2	-0.16	-0.02	2	-0.18	0.00	2	2
12	-0.15	-0.15	2	-0.16	-0.15	2	-0.16	-0.16	2	-0.17	-0.17	2	1
13	0.02	-0.02	1	0.02	-0.02	1	0.03	-0.03	1	0.02	-0.02	1	1
14	-0.02	-0.02	1	-0.02	-0.02	1	-0.02	-0.02	1	-0.02	-0.01	2	1
15	0.02	0.02	2	0.02	0.02	2	0.02	0.02	2	0.02	0.01	1	2
16	-0.02	0.02	2	-0.02	0.02	2	-0.02	0.02	2	-0.02	0.02	2	2