

Online Appendix to “Choice, Deferral and Consistency”

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Consistency Results without Noisiness/Singleton-Deferral Exclusions

Table 1: Proportions of subjects with zero WARP violations.

	Weak Axiom of Revealed Preference		
	Exp1	Exp2	Pooled
Forced Choice	54% (41/76)	59% (32/54)	56% (73/130)
Non-Forced Choice	71% (105/147)	74% (50/68)	72% (155/215)
<i>p</i> -value	0.012	0.121	0.003
<i>N</i>	223	122	345

Notes: (i) For Congruence/Strong Axiom of Revealed Preference the proportions are as for WARP except in the NFC treatment of Exp1 (71%; 104/147; $p = 0.017$) and of the NFC pooled data (72%; 154/215; $p = 0.005$); (ii) p -values from two-sided Fisher exact tests.

Table 2: Mean WARP and Congruence/SARP violations at the subject level.

	Weak Axiom of Revealed Preference			Strong Axiom of Revealed Preference/Congruence		
	Exp1	Exp2	Pooled	Exp1	Exp2	Pooled
Forced Choice	3.64 (4)	4.83 (7)	4.14 (7)	16.24 (7)	22.44 (15)	18.82 (8)
Non-Forced Choice	1.95 (1)	3.16 (1.5)	2.33 (1)	4.71 (1)	20.76 (1.5)	9.79 (1)
<i>p</i> -value	0.011	0.086	0.002	0.010	0.074	0.002
<i>N</i>	223	122	345	223	122	345

Notes: (i) all medians are zero; (ii) 3rd quartiles in parenthesis; (iii) p -values from two-sided Mann-Whitney U tests.

Table 3: Mean Houtman-Maks and Swaps scores on active choices.

	Houtman-Maks			Swaps		
	Exp1	Exp2	Pooled	Exp1	Exp2	Pooled
Forced Choice	0.89 (76)	1.13 (54)	0.99 (130)	0.99	1.24	1.09
Non-Forced Choice	0.52 (147)	0.75 (64)	0.59 (211)	0.56	0.86	0.65
<i>p</i> -value	0.013	0.148	0.004	0.016	0.145	0.004
<i>N</i>	223	118	341	223	118	341

Notes: (i) number of subjects in parenthesis; (ii) p -values from two-sided Mann-Whitney U tests.

Experiment 3: Choice under Risk

Introduction

The grand choice set in in Experiment 3 comprised six 3-outcome money lotteries, which are displayed in Table 4. They were constructed so as to have the same expected value of €20 -this was not communicated to subjects- but be pairwise-unranked by second-order stochastic dominance (SOSD). This was expected to generate trade-offs involving, for example, the maximum amount (higher in lottery x than in y) and the most likely or smallest amount (higher in lottery y than in x). A total of 100 FC and 150 NFC subjects took part in this Experiment. No additional information about the available lotteries was given to NFC subjects at the end of the experiment.

Table 4: The six lotteries used in Experiment 3.

$$\begin{aligned}
 A &= \left(\frac{25}{100} \circ \text{€}2; \frac{35}{100} \circ \text{€}18; \frac{40}{100} \circ \text{€}33 \right) \\
 B &= \left(\frac{25}{100} \circ \text{€}2; \frac{67}{100} \circ \text{€}25; \frac{8}{100} \circ \text{€}34 \right) \\
 C &= \left(\frac{20}{100} \circ \text{€}2; \frac{60}{100} \circ \text{€}16; \frac{20}{100} \circ \text{€}50 \right) \\
 D &= \left(\frac{20}{100} \circ \text{€}3; \frac{50}{100} \circ \text{€}13; \frac{30}{100} \circ \text{€}43 \right) \\
 E &= \left(\frac{30}{100} \circ \text{€}4; \frac{40}{100} \circ \text{€}20; \frac{30}{100} \circ \text{€}36 \right) \\
 F &= \left(\frac{10}{100} \circ \text{€}1; \frac{70}{100} \circ \text{€}19; \frac{20}{100} \circ \text{€}33 \right)
 \end{aligned}$$

The Effect of (Self-)Forced Choice on Consistency

The first part of Table 5 shows the proportions of subjects in the FC and NFC treatments that exhibit binary choice cycles (the only possible violations of Congruence/SARP in this environment), while the second and third parts, respectively, present these proportions for subjects *within* the NFC treatment who did and did not defer, and for FC subjects and deferring NFC ones. Although the inconsistent subjects are indeed relatively more frequent in the FC treatment, this difference is not significant. Interestingly, however, unique to this experiment is the finding of a large and highly significant difference in the proportion of Congruence/SARP violators between deferring and non-deferring NFC subjects. Similarly, there are significantly more inconsistent subjects in the FC treatment than in the subset of NFC subjects who did make use of deferral at least once.

Table 5: Proportions of subjects with zero binary cycles in Experiment 3.

Forced Choice	Non-Forced Choice	p -value
21% (21/100)	26.67% (40/150)	0.368
Non-Forced Choice: non-deferring	Non-Forced Choice: deferring	
20% (19/95)	38.18% (21/55)	0.021
Forced Choice	Non-Forced Choice: deferring	
21% (21/100)	38.18% (21/55)	0.025

Note: p -values from 2-tailed Fisher exact tests.

Although a direct forced-choice treatment effect is not found in this data, focusing on the com-

parison between FC subjects and those NFC ones who deferred does reveal a significant difference in binary-choice consistency, both in terms of the proportions of inconsistent subjects and also in terms of the distribution of binary cycles. We emphasize, however, that this should not be interpreted as evidence of a treatment effect because deferring NFC subjects are a selected subsample. Nevertheless, this finding is relevant because it suggests that, in our data, subjects who are forced to choose are expected to be significantly less consistent than subjects who are not, *conditional* on actually choosing to defer at least once.

Experiment 1 – Non-Forced Choice Treatment Instructions

General procedure

This experiment aims to study people’s choice behaviour. The choice objects will be 5 *headphone sets* (HSs).

At the start of the experiment you will be allocated £7. You will then be presented with a sequence of 31 *menus* of HSs (a menu is simply a collection of HSs). Each menu may have 1 to 5 HSs. When a menu appears on your screen you will have the opportunity to look at the image of each HS in that menu and also to read a short description of its main features. You will then be able to choose one of the available HSs, or to select the option “*I’m not choosing now*”.

You may spend as much time as you want at each menu before deciding what to do. You will see each menu once, and when you proceed to the next menu you will not be able to go back.

After you have seen all 31 menus, *one of them will be picked at random* (each menu has a 1/31 chance of being selected). *You will be reminded of your original decision in this menu* (henceforth menu *R*).

You will then get to examine the actual HSs contained in menu *R* and to try them while listening to a song. Lastly, you will be asked to make a *final choice from R* (not choosing a HS is not possible at this stage). One in every four participants will be randomly selected to win the HS of **their final choice** from their randomly selected menu *R*.

Payment rules (Please also look at examples in separate sheet)

If you have not been selected to win a HS, you will be paid the £7 initially allocated to you.

If you have been selected to win a HS, the following rules apply regarding your payment:

A) Suppose that when you first saw menu *R* *you had chosen some HS* from it. *If you chose the same the second time*, you will receive the £7 initially allocated to you.

B) Suppose that when you first saw menu *R* *you had chosen some HS* from it. *If you chose a different one the second time*, you will receive **£3** of the £7 initially allocated to you.

C) Suppose that when you first saw menu *R* *you had chosen “I’m not choosing now”*. Then, independent of what you chose from that menu the second time, *you will receive £6* of the £7 initially allocated to you.

Special remarks about menus with two HSs (Please also look at examples in separate sheet)

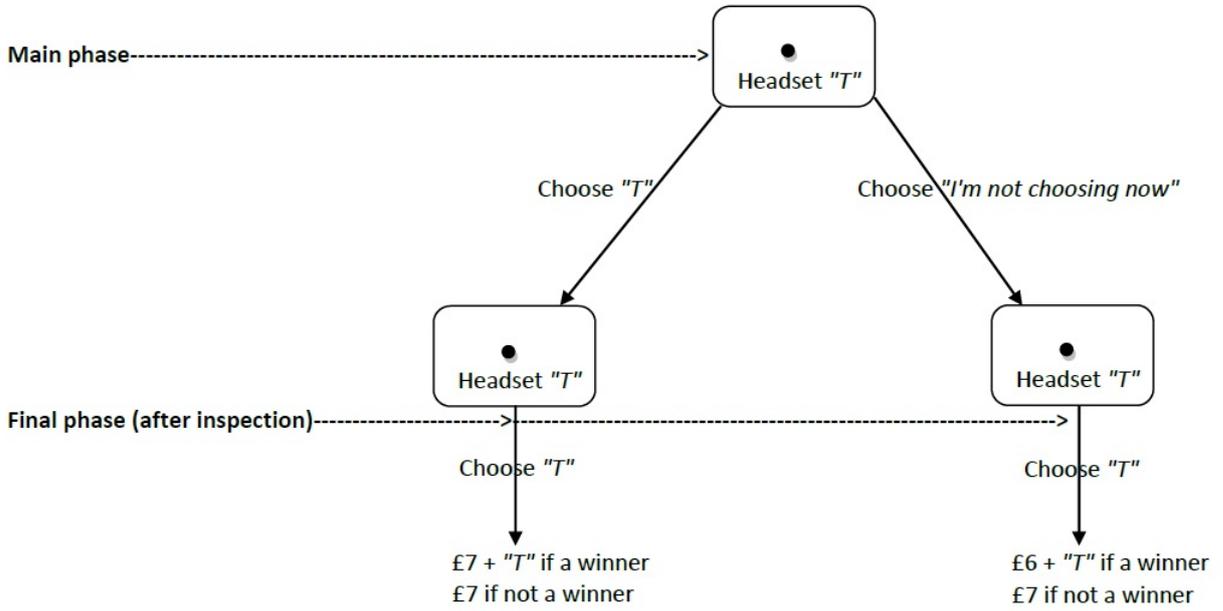
During the phase when you are presented with the 31 menus, whenever *a menu of exactly two HSs* comes up *and you have chosen one of them*, a short follow-up question will ask you to state if you *preferred* the chosen HS over the non-chosen one, or if the non-chosen one was *equally good* to the one you chose (and therefore you chose randomly between them). *If you have chosen “I’m not choosing now”* in such a menu, the question will ask you if this was because both HSs were *equally good* or because you *could not decide which one you preferred*, or due to some *other reason*.

If your randomly selected menu R contains two HSs and you had previously stated that both were equally good, then:

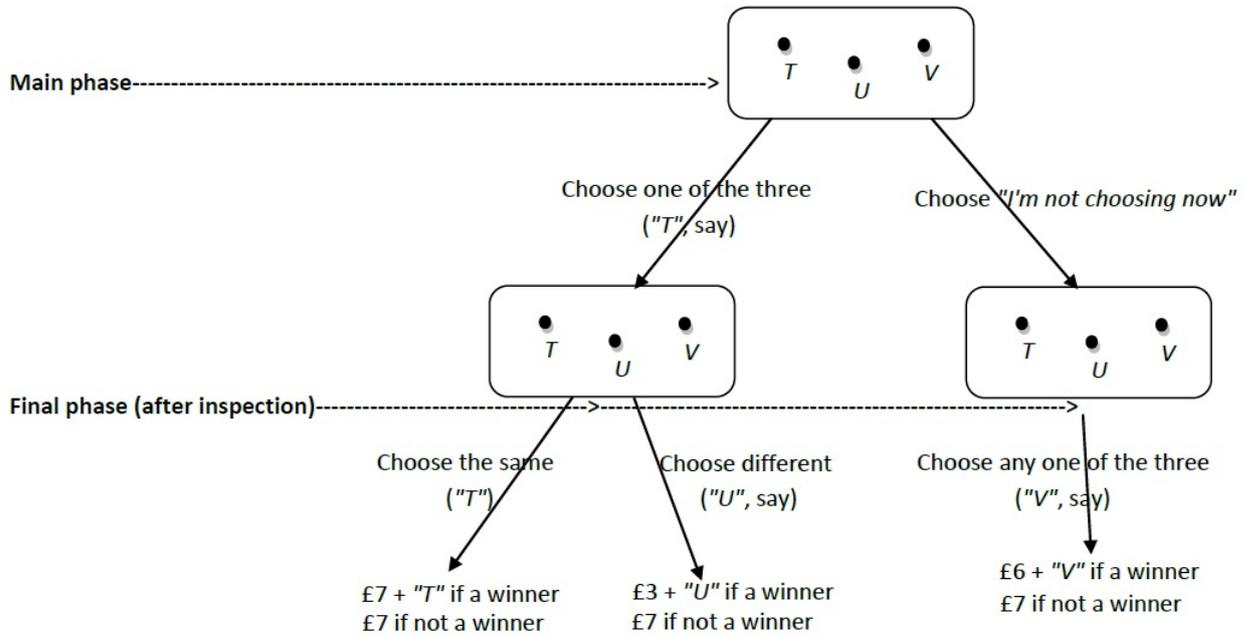
1) *If you had chosen a headset from R initially*, you will *not be able to change your decision at this stage*. *One of the two HS will be randomly selected* and you will win this HS if you are picked as a winner.

2) *If you had chosen “I’m not choosing now” at R initially*, then *one of the two HSs will be randomly selected* and you will win this HS if you are picked as a winner.

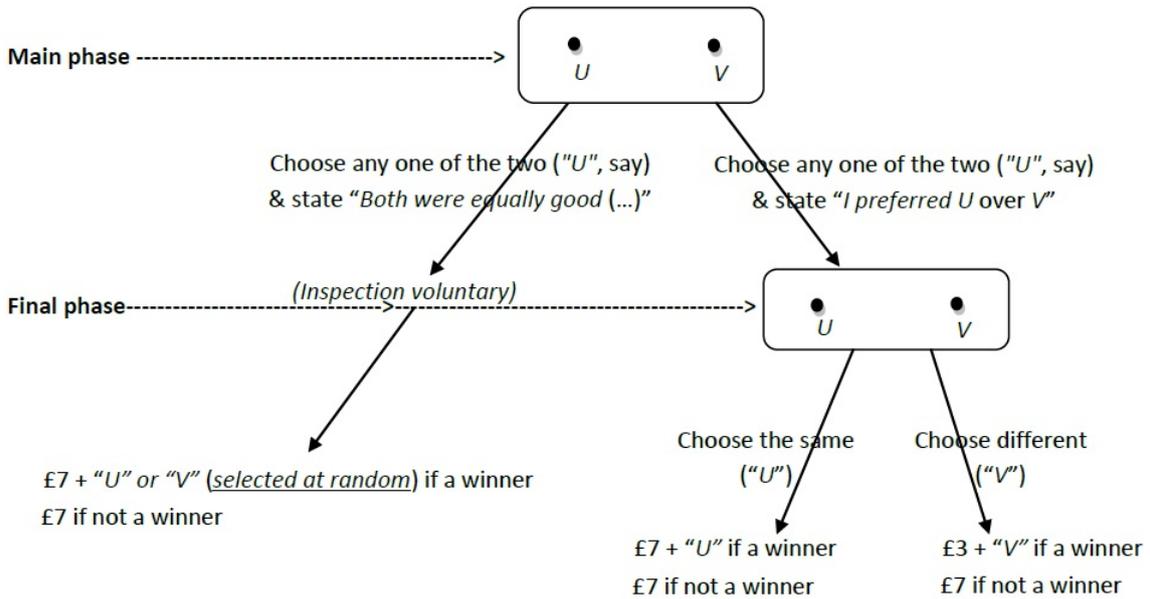
Example 1:
Randomly selected menu with only one headset



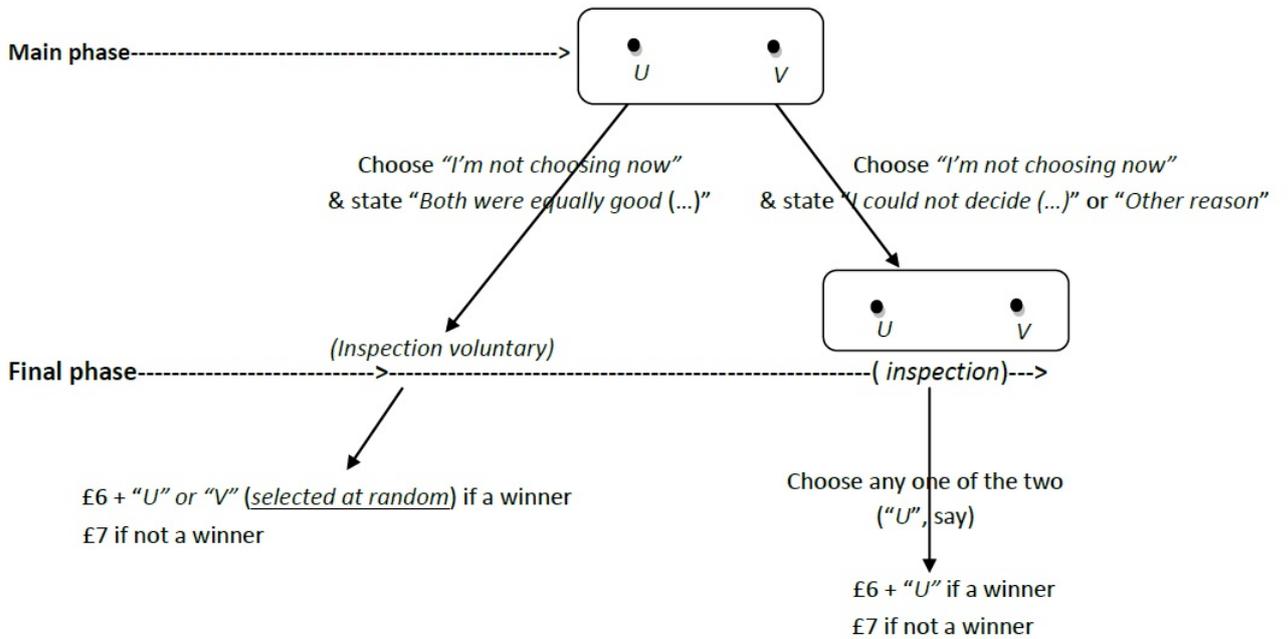
Example 2:
Randomly selected menu with three headsets



Example 3:
Two-headset randomly selected menu where a choice had been made initially



Example 4:
Two-headset randomly selected menu where a choice had not been made initially



Experiment 1 – Forced Choice Treatment Instructions

General procedure

This experiment aims to study people's choice behaviour. The choice objects will be 5 *headphone sets* (HSs).

At the start of the experiment you will be allocated £7. You will then be presented with a sequence of 31 *menus* of HSs (a menu is simply a collection of HSs). Each menu may have 1 to 5 HSs. When a menu appears on your screen you will have the opportunity to look at the image of each HS in that menu and also to read a short description of its main features. You will then be asked to choose one of the available HSs.

You may spend as much time as you want at each menu before deciding what to do. You will see each menu once, and when you proceed to the next menu you will not be able to go back.

After you have seen all 31 menus, *one of them will be picked at random* (each menu has a 1/31 chance of being selected). *You will be reminded of your original decision in this menu* (henceforth menu *R*).

You will then get to examine the actual HSs contained in menu *R* and to try them while listening to a song. Lastly, you will be asked to make a *final choice from R*. One in every four participants will be randomly selected to win the HS of their final choice from their randomly selected menu *R*.

Payment rules (Please also look at examples in separate sheet)

If you have not been selected to win a HS, you will be paid the £7 initially allocated to you.

If you have been selected to win a HS, the following rules apply regarding your payment:

A) Suppose that when you first saw menu *R* you had chosen some *HS* from it. *If you chose the same HS the second time*, you will receive the £7 initially allocated to you.

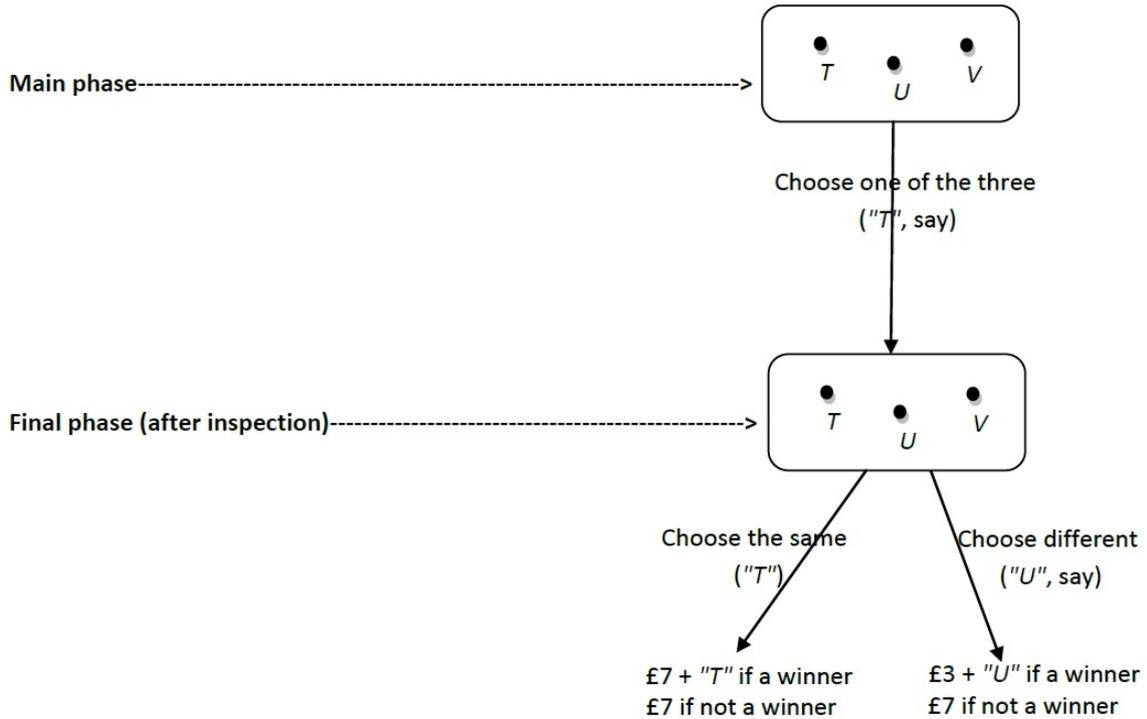
B) Suppose that when you first saw menu *R* you had chosen some *HS* from it. *If you chose a different one the second time, you will receive £3 of the £7* initially allocated to you.

Special remarks about menus with two HSs (Please also look at example in separate sheet)

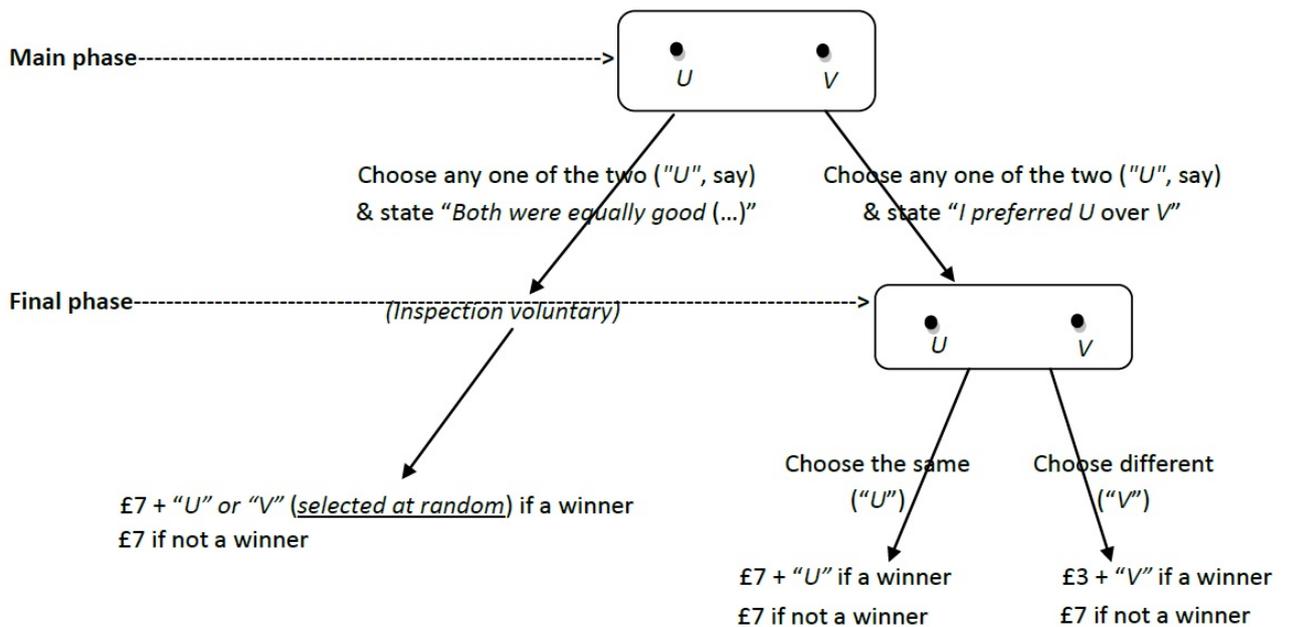
During the phase when you are presented with the 31 menus, whenever *a menu of exactly two HSs* comes up and you have chosen one of them, a short follow-up question will ask you to state if you preferred the chosen HS over the non-chosen one, or if the non-chosen one was equally good to the one you chose (and therefore you chose randomly between them).

If your randomly selected menu *R* contains two HSs and you had previously stated that both were equally good, then you will not be able to change your decision at this stage. One of the two HS will be randomly selected and you will win this HS if you are picked as a winner.

**Example 1:
Randomly selected menu with three headsets**



**Example 2:
Randomly selected menu with two headsets**



Experiment 2: Non-Forced Choice Treatment Instructions

General procedure

This experiment aims to study people's choice behaviour.

At the start of the experiment you will be allocated £6. An additional £2 will be added to this amount if you answer correctly a few questions in a computer quiz before the experiment begins. The aim of this quiz is to help you understand the experiment's instructions. You must answer all questions correctly by the third attempt in order to receive the additional £2.

The choice objects will be 5 *headphone sets* (HSs).

Once the experiment begins, you will be presented with a sequence of 26 menus of HSs (a menu is simply a collection of HSs). Each menu may have 2 to 5 HSs.

When a menu appears on your screen you will have the opportunity to look at the image of each HS in that menu and read a short description of its main features. You will then be able to choose one of the available HSs, or to select the option "*I'm not choosing now*".

You may spend as much time as you want at each menu before deciding what to do. You will see each menu once, and when you proceed to the next menu you will not be able to go back.

After you have seen all 26 menus, *one of them will be picked at random* (each menu has a $1/26$ chance of being selected). *You will be reminded of your original decision in this menu* (henceforth menu R). You will then be asked to make a *final choice from R* (not choosing a HS is not possible at this stage).

One in every four participants will be randomly selected to win the HS of **their final choice** from their randomly selected menu R .

Payment rules (please also look at the example in a separate sheet)

If you have not been selected to win a HS, you will be paid the $£6 + £2 = £8$ initially allocated to you.

If you have been selected to win a HS, the following rules apply regarding your payment:

A) Suppose that when you first saw menu R you had chosen some HS from it. If you chose the same HS the second time, *you will receive the $£8$ initially allocated to you.*

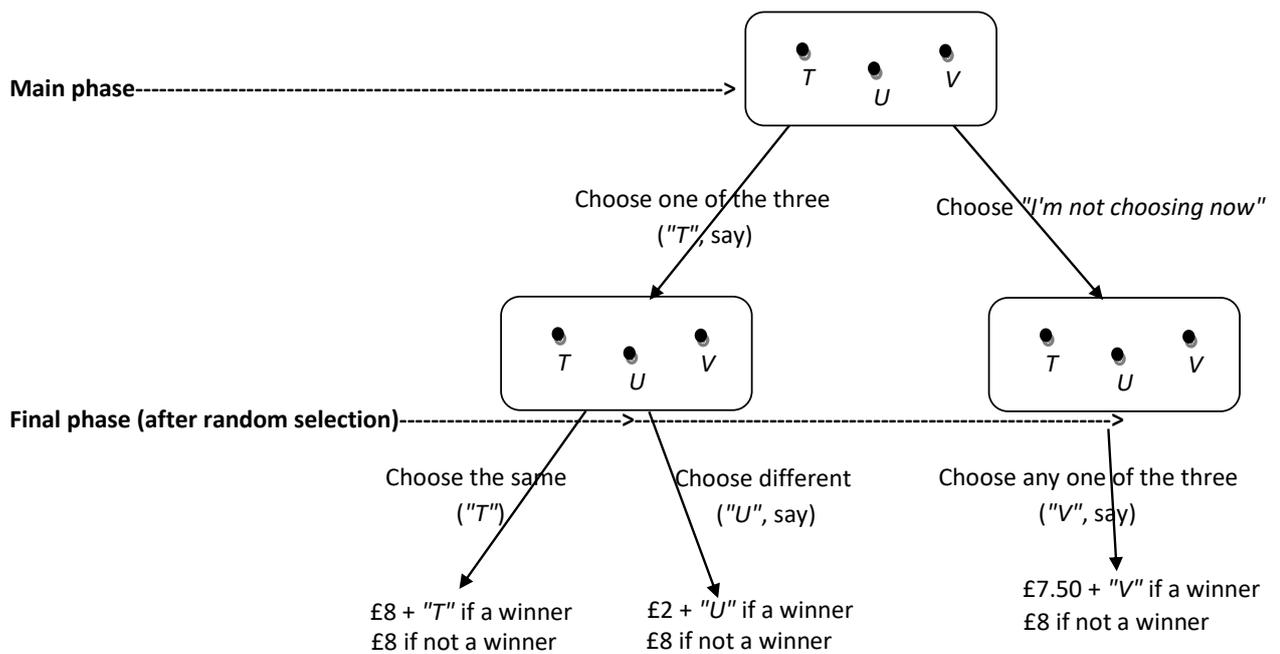
B) Suppose that when you first saw menu R you had chosen some HS from it. If you chose a different HS the second time, *you will receive $£2$ of the $£8$ initially allocated to you.*

C) Suppose that when you first saw menu R you had chosen "*I'm not choosing now*". Then, independently of which HS you chose from that menu the second time, *you will receive $£7.50$ of the $£8$ initially allocated to you.*

Example:

Randomly selected menu with three headsets

(the stated amounts assume that all quiz questions were answered correctly by the 3rd attempt)



Experiment 2: Forced Choice Treatment Instructions

General procedure

This experiment aims to study people's choice behaviour.

At the start of the experiment you will be allocated £6. An additional £2 will be added to this amount if you answer correctly a few questions in a computer quiz before the experiment begins. The aim of this quiz is to help you understand the experiment's instructions. You must answer all questions correctly by the third attempt in order to receive the additional £2.

The choice objects will be 5 *headphone sets* (HSs).

Once the experiment begins, you will be presented with a sequence of 26 menus of HSs (a menu is simply a collection of HSs). Each menu may have 2 to 5 HSs.

When a menu appears on your screen you will have the opportunity to look at the image of each HS in that menu and read a short description of its main features. You will then be asked to choose one of the available HSs.

You may spend as much time as you want at each menu before deciding what to do. You will see each menu once, and when you proceed to the next menu you will not be able to go back.

After you have seen all 26 menus, *one of them will be picked at random* (each menu has a $1/26$ chance of being selected). *You will be reminded of your original decision in this menu* (henceforth menu R). You will then be asked to make a *final choice from R* .

One in every four participants will be randomly selected to win the HS of their final choice from their randomly selected menu R .

Payment rules (please also look at the example in a separate sheet)

If you have not been selected to win a HS, you will be paid the $£6 + £2 = £8$ initially allocated to you.

If you have been selected to win a HS, the following rules apply regarding your payment:

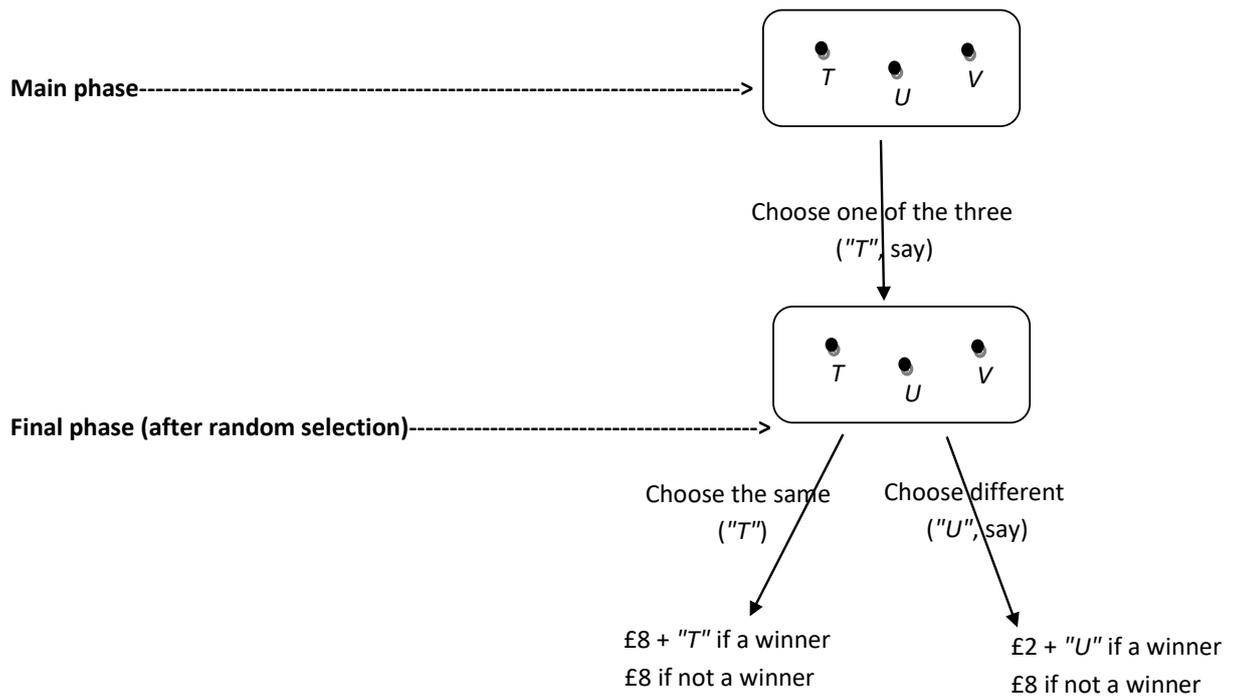
A) Suppose that when you first saw menu R you had chosen some HS from it. If you chose the same HS the second time, *you will receive the $£8$ initially allocated to you.*

B) Suppose that when you first saw menu R you had chosen some HS from it. If you chose a different HS the second time, *you will receive $£2$ of the $£8$ initially allocated to you.*

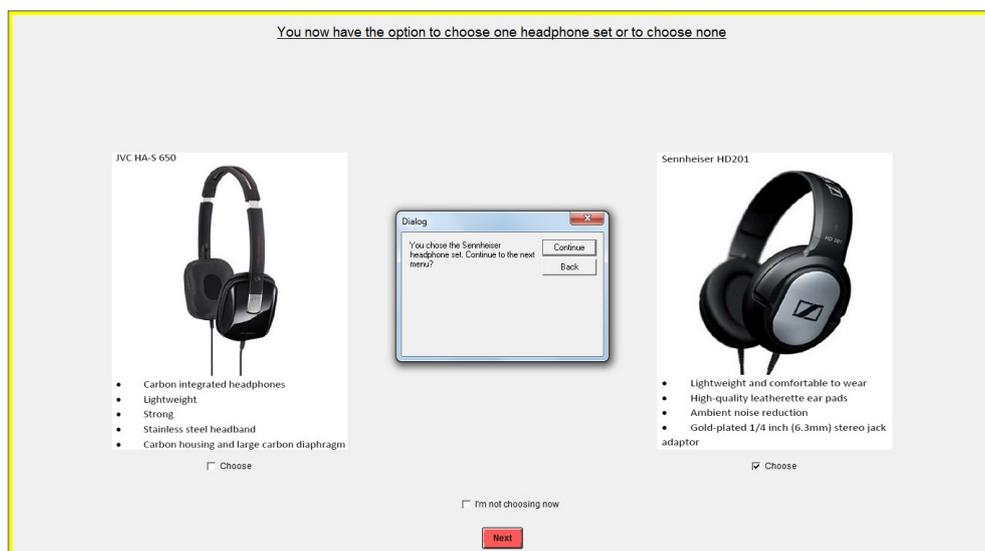
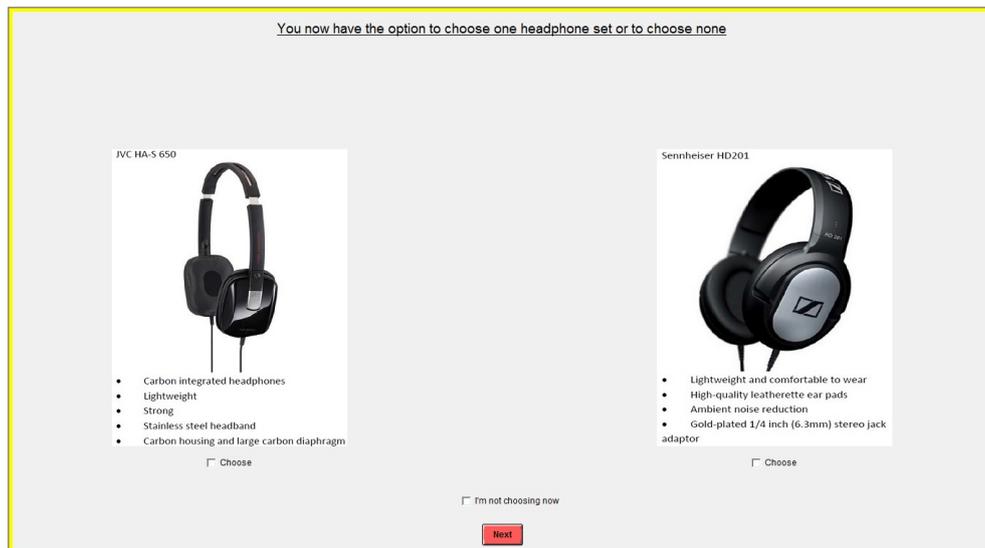
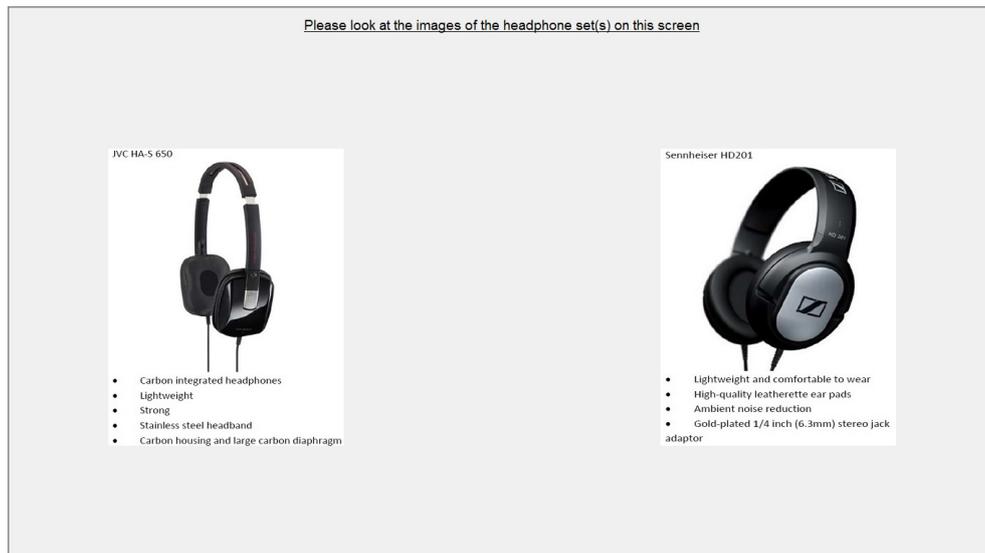
Example:

Randomly selected menu with three headsets

(the stated amounts assume that all quiz questions were answered correctly by the 3rd attempt)



Experiments 1 & 2 – Sample Screenshots



Experiment 3: Non-Forced Choice Treatment Instructions (backward-translated)

General procedure

This experiment's objective is to study people's decision making. The objects on which decisions will be taken will be 6 lotteries. A lottery is a collection of payments with different probabilities associated to each payment. You can find two examples of lotteries overleaf.

At the beginning of the experiment you will be assigned €5.50. After this, you will be presented with a sequence of 15 lotteries menus. Each menu is simply a pair of lotteries. When a menu appears on your screen you will have the opportunity to see images of the two lotteries in that menu. You will then have the opportunity to choose one of the two lotteries, or to choose the option "I'm not choosing now".

You may take all the time you wish in each menu before deciding what to do. You will see each menu once, and when you move to the next menu you will not be able to go back.

After having seen the 15 menus, one of them will be selected randomly (each menu has one chance in 15 of being selected). You will be reminded of your original decision on that menu (call this menu R).

Finally, you will have to make a final decision at menu R (not choosing a lottery will not be possible at this time). One in four participants will be randomly selected to win the lottery chosen in her final decision at menu R . The examples overleaf explain what "winning a lottery" means.

Payment rules (please, look also at the examples on the separate sheet)

If you have not been selected to win a lottery you will be paid the €5,50 initially allocated to you.

If you have been selected to win a lottery, you will be paid according to the following rules:

- A) Suppose that when you saw menu R for the first time you picked a lottery from it. **If you choose the same lottery the second time, you will receive the €5,50** initially allocated to you.
- B) Suppose that when you saw menu R for the first time you chose a lottery from it. **If you choose a different lottery the second time, you will receive €1,50 of the €5,50** initially allocated to you.
- C) Suppose that when you saw menu R for the first time you selected "I'm not choosing now". Then, independently of what you choose from this menu the second time, you will receive €5 of the €5,50 initially allocated to you.

Questions between "menu and menu" (translation note: awkward in English but works in Spanish)

During the phase in which the 15 menus are presented to you, you will be asked a brief question between menu and menu.

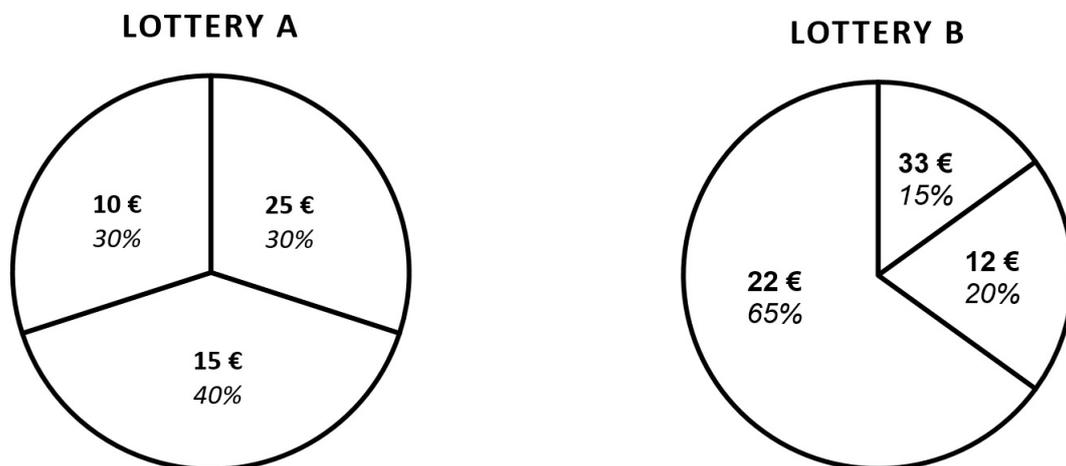
If you have chosen one of the lotteries in a menu, we will ask you to select one of the three following reasons:

- a) I prefer the lottery I have chosen over the other lottery;
- b) I have chosen purely at random because I find both lotteries exactly equally good;
- c) Other reason.

If you have selected the option "I'm not choosing now", we will ask you to select one of the three following reasons:

- a) I could not decide which one I prefer;
- b) I have chosen purely at random because I find both lotteries exactly equally good;
- c) Other reason.

Important: if you choose “I have chosen purely at random” in a menu and this menu is selected for the final decision, we will choose one of the two lotteries randomly for you and you will not have the opportunity to make any final decision. Therefore, you should only select this option if you really find both lotteries exactly equally good.



These are two lottery examples.

Lottery A pays €10 with a probability of 30%, €15 with a probability of 40% and €25 with a probability of 30%.

Lottery B pays €12 with a probability of 20%, €22 with a probability of 65% and €33 with a probability of 15%.

What does “winning a lottery” mean?

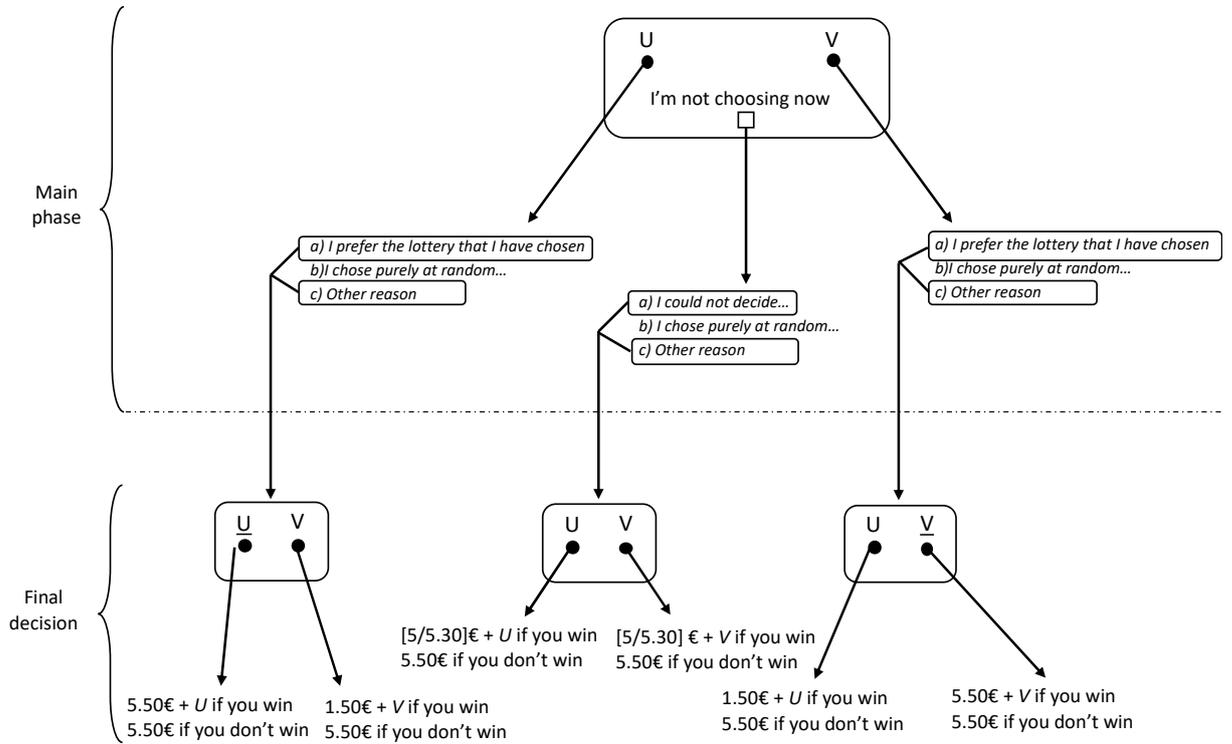
If you win a lottery, you will receive one of the payments detailed in the lottery randomly, according to the probabilities stated in the lottery.

For this, we will ask you to draw a ball at random from a dark bag that will contain 100 balls enumerated from 1 to 100. For example:

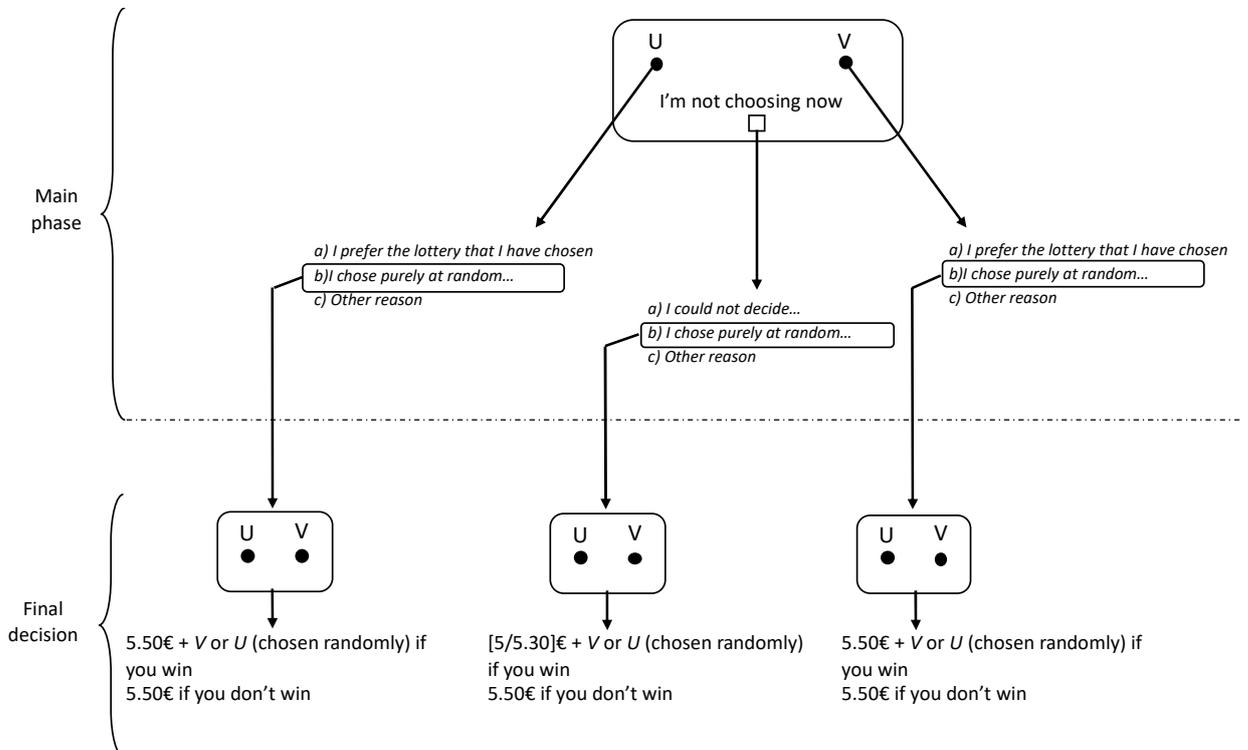
Imagine you have won lottery A: if the number of the ball you draw is between 1 and 30, you will obtain €10; if it is between 31 and 70, you will obtain €15; if it is between 71 and 100, you will obtain €25.

Imagine you have won lottery B: if the number of the ball you draw is between 1 and 20, you will obtain €12; if it is between 21 and 85, you will obtain €22; if it is between 86 and 100, you will obtain €33.

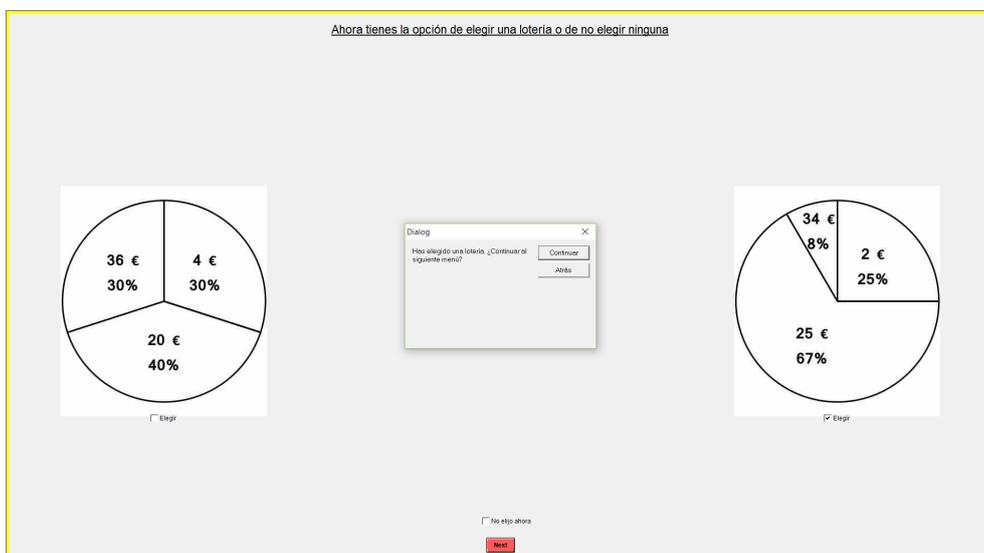
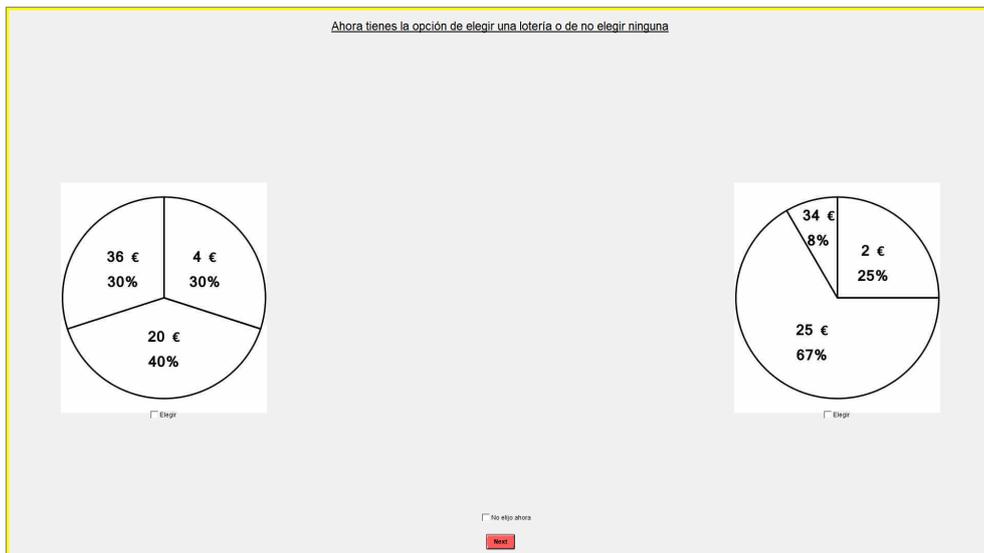
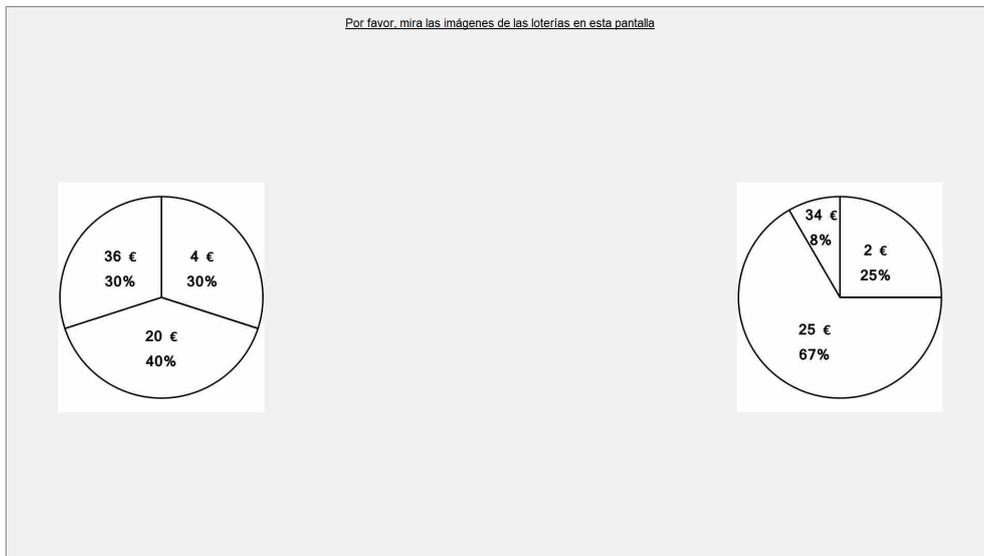
Example 1: If you do NOT select "I chose purely at random"



Example 2: If you select "I chose purely at random"



Sample Screenshots



Experiment 3: Forced Choice Treatment Instructions (backward-translated)

General procedure

This experiment's objective is to study people's decision making. The objects on which decisions will be taken will be 6 lotteries. A lottery is a collection of payments with different probabilities associated to each payment. You can find two examples of lotteries overleaf.

At the beginning of the experiment you will be assigned €5.50. After this, you will be presented with a sequence of 15 lotteries menus. Each menu is simply a pair of lotteries. When a menu appears on your screen you will have the opportunity to see images of the two lotteries in that menu. You will then be asked to choose one of the two lotteries.

You may take all the time you wish in each menu before deciding what to do. You will see each menu once, and when you move to the next menu you will not be able to go back.

After having seen the 15 menus, one of them will be selected randomly (each menu has one chance in 15 of being selected). You will be reminded of your original decision on that menu (call this menu R).

Finally, you will have to make a final decision at menu R . One in four participants will be randomly selected to win the lottery chosen in her final decision at menu R . The examples overleaf explain what "winning a lottery" means.

Payment rules (please, look also at the examples on the separate sheet)

If you have not been selected to win a lottery you will be paid the €5,50 initially allocated to you.

If you have been selected to win a lottery, you will be paid according to the following rules:

- A) Suppose that when you saw menu R for the first time you picked a lottery from it. ***If you choose the same lottery the second time, you will receive the €5,50*** initially allocated to you.
- B) Suppose that when you saw menu R for the first time you chose a lottery from it. ***If you choose a different lottery the second time, you will receive €1,50 of the €5,50*** initially allocated to you.

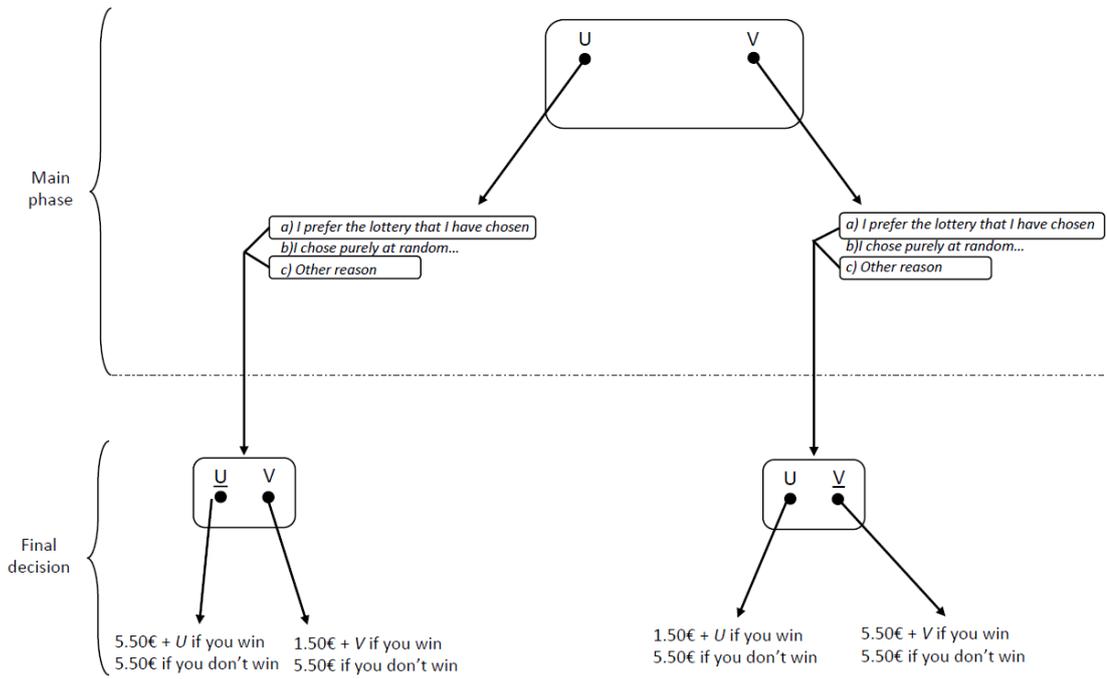
Questions between "menu and menu" (translation note: awkward in English but works in Spanish)

During the phase in which the 15 menus are presented to you, you will be asked a brief question between menu and menu. Specifically, after your choice, you will be asked to select one of the following three reasons:

- a) I clearly prefer the lottery I have chosen over the other lottery;
- b) I slightly prefer the lottery I have chosen over the other lottery;
- c) I have chosen purely at random because I find both lotteries exactly equally good.

Important: if you choose "I have chosen purely at random" in a menu and this menu is selected for the final decision, we will choose one of the two lotteries randomly for you and you will not have the opportunity to make any final decision. Therefore, you should only select this option if you really find both lotteries exactly equally good.

Example 1: If you do NOT select "I chose purely at random"



Example 2: If you select "I chose purely at random"

