University of Warsaw
Faculty of Economic Sciences

Working Papers
No. 3/2018 (262)

VERIFYING THE REPRESENTATIVENESS HEURISTIC: A FIELD EXPERIMENT WITH REAL-LIFE LOTTERY TICKETS

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Warsaw 2018

UNIVERSITY OF WARSAW
FACULTY OF ECONOMIC SCIENCES
WORKING PAPERS

Verifying the representativeness heuristic: A field experiment with real-life lottery tickets

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Abstract: Despite having the same probability of being drawn, certain number combinations are more popular than others among the lottery players. One explanation of such a preference is the representativeness heuristic (RH). Unlike previous hypothetical experiments, in the present experiment we used real-life lottery tickets, involving a high payout in case of winning to elicit true preferences. To verify if people prefer randomly-looking number combinations, participants were to choose a preferred ticket. To validate if it is likely to be caused by RH, we correlated preference for "random" sequences with the belief in dependence between subsequent coin tosses. We confirm that people strongly prefer random sequences and that a non-trivial fraction believes in dependence between coin tosses. However, there is no correlation between these two tendencies, questioning the RH explanation. By contrast, participants who have an (irrationally) strong preference for number combinations also tend to make (irrationally) specific predictions in the coin task. Unexpectedly, we find that females are considerably more likely to belong to this group than males.

Keywords: decision bias, gambler's fallacy, gender difference, hot hand fallacy, lottery choice, misperception of randomness, number preference in lotteries, representativeness heuristic

JEL codes: C93, D01, D81, D91

Acknowledgments: Authors gratefully acknowledge the support of the National Science Centre, grant 2016/21/B/HS4/00688.

http://doi.org.10.26405/WP/WNE/2018/262/003

1. Introduction

Numerous studies find that lottery players tend to prefer some combinations of numbers over others. Specifically, most of them seem to like "randomly looking" combinations, such as {12, 23, 24, 27, 31, 39} better than distinctive ones, such as {1, 2, 3, 4, 5, 6}. There could be various reasons for such a preference. One explanation, perhaps most forcefully put forward in the literature, is based on the representativeness heuristic (RH), under which, "subjective probability of an event, or a sample, is determined by the degree to which it: (i) is similar in essential characteristics to its parent population, and (ii) reflects the salient features of the process by which it is generated" (Kahneman and Tversky 1972). Now, {1, 2, 3, 4, 5, 6} is clearly less *representative* than {12, 23, 24, 27, 31, 39} of a uniform distribution on 1−49. For example, it has a much lower mean and variance. For this reason, it may be perceived as less likely to come up in a drawing.

Many popular, yet misleading Lotto "systems" reinforce the RH. For example, Dunkin (2014) claims that "the balls are naturally drawn by chance. You are not supposed to violate the natural randomness of things… endeavour to choose your number combinations to have a semblance of randomness. Avoid number groups patterns, because statistically, such patterns are drawn at a rather low probability." Gail Howard, one of the most-read lotto "experts" says on smartluck.com: "lottery numbers are randomly drawn. If you want to play lotto to win, it is important to select your lotto numbers and place them on your bet slips in patterns that are most similar to the way the lotto numbers are actually drawn. Randomly drawn lotto numbers tend to be more or less evenly distributed across the entire number field…". Similarly, McKnight (2014) purports that "it is a very rare occurrence that all numbers that are drawn are odd or all numbers are even... the most effective method of choosing numbers is, therefore to combine odd and even numbers."

In this project, we are trying to (1) establish if indeed most people prefer randomly-looking combinations over distinctive combinations, (2) measure the strength of this preference, and (3) verify if it is likely to be caused by the representativeness heuristic. To achieve the latter goal, we correlate two tendencies: the preference for "random" rather than distinctive number combinations and the belief in dependence between subsequent coin tosses. The RH proposes that even in a small sample, about half the tosses should bring heads (H), so that after a sequence of HHH, a tail (which we call *reversal*) is more likely than another head (*continuation*). We thus seek to verify if people who prefer "random" combinations of numbers on their ticket are the same people who rather expect a head after three tails and a tail after three heads. We believe that this kind of cross-task verifications represent a highly valuable stress test of important deviations from rationality in judgment and decision making, such as the RH.

We run an incentivized field experiment with 472 participants drawn from the general population. We confirm that people strongly prefer random sequences and that a non-trivial fraction expects a reversal in the coin task. However, there is no correlation between these two tendencies, questioning the RH explanation. By contrast, participants who have an (irrationally) strong preference for ("random" or distinctive) number combinations also tend to make (irrationally) specific predictions in the coin task, especially that of reversal. Somewhat unexpectedly, we find that females are considerably more likely to belong to this group than males.

2. Literature review

Two strands of literature on ticket number preference in lotteries are most directly related to the present project. First, there are studies using existing data. Some of them directly investigate players' choices of lottery numbers or combinations of numbers. As an alternative, if such data are not available, other studies try to infer these distributions from the number of winners (a large set of winners meaning that popular numbers have been drawn). The general finding is that not all numbers and combinations are equally attractive. For example, Riedwyl (1990) observed that 0.07% of the most popular combinations generate some 7% of sales. More specifically, several papers including (Wang et al. 2016) and (Lien and Yuan 2015) found that players tend to spread the numbers they select evenly—more so than would obtain if each selection was an independent draw from a uniform distribution over remaining numbers. Players typically avoid large numbers (Turner, 2010; Wang et al., 2016), favouring very low numbers, particularly number 7 (Ziemba et al. 1986; Joe 1987; Haigh 1997). It is not completely clear if the preference for low numbers is mostly due to association with specific calendar dates or other meaningful numbers often drawn to mind due to availability bias, or is it associated with a tendency to overuse small numbers when generating a "random" sequence (Loetscher and Brugger 2007).

Second, and most directly linked to our design, there are papers based on experiments with subjects ranking combinations of numbers from the most to the least preferred or from the most likely to the least likely. Generally, these studies used small, student samples and the ranking tasks were hypothetical (had no financial consequences). As Grether (1992) found, results from such hypothetical scenarios ought to be treated with caution, as lack of incentives increases the fraction of nonsense or incoherent responses.

In an early example of this strand of literature, Holtgraves and Skeel (1992) (experiments 1 and 2) asked a small sample of psychology students about their preference between different sequences. Subjects favoured numbers without repeating digits. Ladouceour et al. (1995) asked 40 subjects to rank pre-selected 6/49 lottery tickets. They liked pseudo-random tickets best, then patterns of numbers increasing by 5s and 10s, then non-equilibrated series (e.g. six numbers from 1−24 or 25−49), with sequences of six consecutive numbers being least preferred.

Similarly, Hardoon et al. (2001) asked 63 students to rank 16 lotto tickets, finding that random-looking sequences were generally most preferred. These authors elicited subjects' explanations, and the two most common categories pertained to perceived randomness of the sequence and significant numbers such as birthday and personal favourites. Preferences were interpreted by the authors as ranking from the most to least likely to win, although no single quotation from participants' cognitions they provided appears to substantiate this interpretation. Albeit the participants preferred their numbers to be more "random", i.e. spread out, unsystematic, it was not clear if that makes them believe they would be more likely the winning tickets. As lotto is a pari-mutuel game, it is actually better not to pick very "distinctive" combinations, a fact of which the authors seem to be unaware.

An experiment using bingo cards instead of lotto tickets was conducted by Chóliz (2010), who found that the subjects (156 adults, 22 to 40 years old) were much more likely to replace the given card when it was atypical, e.g. when all numbers were on the left-hand side of the card or when they were among the bottom half of numbers allowed.

Rogers and Webley (2001) focused on the link between lotto numbers preference and actual gambling behaviour. They presented train passengers with two combinations (out of 18 investigated in the entire experiment) and asked them which one was most likely to win. They found that regular lottery players were more biased by the representativeness of number combinations and were more susceptible to the law of small numbers.

In general, even if a preference for "random-looking" combinations is established, it is difficult to pin down the underlying psychological mechanism. For example, it may be related to availability bias (Rogers 1998). Any player knows that {1, 2, 3, 4, 5, 6} has never been drawn (so it is difficult to imagine that it will happen this time) whereas nobody knows for sure without time-consuming verification that {12, 23, 24, 27, 31, 39} has never been drawn. Moreover, “similar” combinations have been drawn numerous times, while {1, 2, 3, 4, 5, 6} is so specific that only a handful of combinations, possibly never drawn, seem “similar”. Still, RH remains a very plausible potential explanation, especially in view of the reports that it affects lottery players’ choices over time: numbers that have just been drawn become less popular (Clotfelter and Cook 1993; Suetens et al. 2016).

3. Design and procedures

The main task involved a choice between lottery tickets. For this purpose, a popular Multi Multi game from Totalizator Sportowy (a state-owned monopolist in the field of numbers games and lotteries in Poland) was selected. The game involves guessing up to ten from 1-80 numbers. Twenty numbers are subsequently randomly drawn (twice daily) and the number of hits determines the payoff.

The main advantage of using Multi Multi in our experiment is that it is an (almost) non-parimutuel game. Strictly speaking, there is a varying small bonus on top of the guaranteed prize to be shared among those who select ten numbers and get all of them right.[1] However, unlike in Lotto, its expected value is negligible (and most people may be even unaware of the bonus, let alone of its strategic consequences). This means that every combination of, say, 10 numbers represents nearly the same probability distribution over possible prizes, see Table 1. In other words, any combination is essentially as good as any other.

Table 1: Distribution of prizes

# of hits out of 10*	10	9	8	7	6	5	4
Prize in PLN**	250,000	10,000	520	140	12	4	2
Probability	1/8,911,711	1/163,381	1/7,384	1/621	1/87	1/19	1/8

* There is no prize for less than four hits. ** 1 PLN is ca .24 EUR.

Every choice involved one “Random” and one “Distinctive” ticket, each with ten numbers in an ascending order. In Random tickets the ten numbers were generated using the “quick pick”

[1] We could have thus avoided the issue by asking our subjects to choose between tickets with less than 10 numbers selected. However, betting on 10 numbers is the most popular way of playing and it gives a chance for the highest prize.

random generator. For Distinctive tickets, one of six very specific combination was always used, see Table 2.

Table 2: Types of "Distinctive" combinations

Level\Delta	**1**	**5**
Low	L1: {1,2,3,4,5,6,7,8,9,10}	L5: {5,10,15,20,25,30,35,40,45,50}
Medium	M1: {1,2,3,4,5,76,77,78,79,80}	M5: {5,10,15,20,25,60,65,70,75,80}
High	H1: {71,72,73,74,75,76,77,78,79,80}	H5: {35,40,45,50,55,60,65,70,75,80}

The experiment was run on several days of August−October 2017. The participants were approached at several locations in the city of Warsaw, including two metro stations, the central train station, a shopping centre, a farmer's market, outside of an office building, a sports centre, a central roundabout and a crossing of two streets nearby one of the lottery offices. They were greeted and told that the researcher was a representative of the University of Warsaw, conducting a very brief study.[2] Those who agreed to participate were presented with two Multi Multi tickets for the nearest drawing and asked to indicate which one they liked better (with an understanding that they would afterwards receive it for free). Once they stated their preference, they were asked the same question again, this time the experimenter offering either PLN.5 or PLN1 in cash as a bonus associated with the hitherto unwanted ticket (explaining that this was the last choice to be made). We registered if participants *stayed* with their initial choices or *switched*, lured by the bonus, with the understanding that this was their final choice of the ticket. They were then asked to justify their choices.

Subsequently, they were asked to answer a simple question aimed at identifying biases in perception of random sequences:

> "If we toss this coin (or any other) three times, and three times in a row we get heads/tails, then what is more likely to come up the fourth time?"

This task was not incentivized, as any attempt to do that, that we could think of, would lead to one of more severe problems (longer and more complicated interaction with the participant, sample selection, need for deception, spill-over from the first task). Finally, the participants

[2] See Appendix for the wording of a typical interaction.

reported their gambling habits and their age and then were free to go; the experimenter would additionally register place, approximate time, and sex of the participant.

The experiment used a 6x2x2x2 (six types of Distinctive tickets; Distinctive ticket displayed on the right vs. on the left; .5 vs. 1 offered as a bonus for the unwanted ticket; three heads vs. three tails in the coin tossing sequence) fully randomized between-subject design.

The initial 258 observations were collected by the same experimenter – a young woman. As a clear gender effect was observed, which will be explored shortly, additional observations were collected by a male to check if this effect was due to an interaction with the gender of the experiments rather than the gender of the participant per se.

4. Results

Table 3 shows the fraction of people choosing Random vs. Distinctive. Overall, there is a very clear preference for the former (p<.001). For either choice, majority stayed with their initial choice even if the inferior ticket was improved by a cash bonus. While the bonuses were small in absolute value, they amounted to 20% or 40% of the ticket price (and ca. 40% or 80% of the expected payoff from the ticket). Moreover, there was a somewhat stronger tendency to switch for the highest bonus.

Table 3: Participants' choices in the main task

Initial preference	**Random**		**Distinctive**	
	69.9% (330)		30.1% (142)	
Final preference:	**Stay**	**Switch**	**Stay**	**Switch**
bonus .50PLN	88.9% (136)	11.1% (17)	84.6% (66)	15.4% (12)
bonus 1.00PLN	81.4% (144)	18.6% (33)	78.1% (50)	21.9% (14)

What were the reasons for this clear preference for Random tickets? The justifications that the participants gave in response to our open-ended question were not always completely coherent. However, some clear (and not mutually exclusive) themes could be identified, see Table 4 (and Table B1 in Appendix B for typical justifications belonging to each category).

Among those who preferred the Distinctive ticket, justifications categorized as referring to a "nice sequence" were most commonly used. A fair share of participants also mentioned that some of their favourite numbers (often associated with dates) were involved. Those with strong preference (*stay*) were relatively likely to say they just picked intuitively, without much thinking. Participants with weak preference (the two *switch* columns) relatively often mentioned they were in fact indifferent.

Participants with a clear preference for Random very often said these numbers were indeed “More random”, some also saying they were “More spread”. However, only one in six explicitly said they yielded a higher chance of winning (and this was even less common in other groups).

Importantly, not a single person said they did not like a distinctive combination because they would have to share the bonus with more people if they get all the numbers right (in the instructions the participants were informed that the maximum prize is a guaranteed prize).

Table 4: Prevalence of justifications of the choice in the main task

Justification\ Choice	**Distinctive, stay n=116**	**Distinctive, switch n=26**	**Random, switch n=50**	**Random, stay n=280**	**Total n=472**
Nice sequence	32.8%	42.3%	6.0%	5.4%	14.2%
Favourite numbers	30.2%	11.5%	8.0%	13.2%	16.7%
Indifferent	12.1%	34.6%	42.0%	6.8%	13.3%
Intuition	25.9%	7.7%	2.0%	13.6%	15.0%
Aware (of the same prob.)	9.0%	3.8%	12.0%	1.8%	2.8%
Higher probability	6.0%	0.0%	10.0%	17.1%	12.7%
More spread	3.4%	3.8%	12.0%	8.9%	7.6%
More random numbers	0.9%	0.0%	28.0%	50.0%	32.8%

Perhaps the most striking pattern that can be seen in our data is the difference between the genders, see Table 5. Male participants were much more willing to switch when offered money to do so than females. This tendency was not affected by experimenter’s gender. However, there was an interaction affecting initial decisions: less responders chose random when genders matched. Tables B2 and B3 in Appendix B show that these effects are robust when we control for other variables (which make little difference overall, except that distinct tickets with delta equal to 5 generated less switches than those with consecutive numbers).

Table 5: Gender effects

Experimenter	**Female** 53.6% (253)		**Male** 46.4% (219)	
Participant	**Female** 55.7% (141)	**Male** 44.3% (112)	**Female** 48.9% (107)	**Male** 51.1% (112)
Initially random	68.1% (96)	77.7% (87)	71.0% (76)	63.4% (71)
Among initially random: switch...				
For .50 PLN	6.7% (5)	16.3% (8)	8.2% (4)	20.7% (12)
For 1.00 PLN	10.6% (7)	27.0% (17)	12.1% (7)	29.6% (16)

We now move on to behaviour in the second task, see Table 6. Overall, a very substantial fraction predicted reversal (head after three tails or vice versa). Prediction of continuation was less common. There was a clear participant's gender effect, with more males providing the normatively correct answer, i.e. 50/50, regardless of the gender of the experimenter.

Table 6: Behaviour in the coin task

Experimenter	**Female**		**Male**		**Total (472*)**
Participant	**Female**	**Male**	**Female**	**Male**	
50/50	37.2% (51)	58.3% (63)	35.8% (38)	56.8% (63)	45.6% (215)
Reversal	38.7% (53)	25.9% (28)	43.4% (46)	27.9% (31)	33.5% (158)
Continuation	24.1% (33)	15.7% (33)	20.8% (22)	15.3% (17)	18.9% (89)

*10 responses invalid

Looking across the tasks, the only clear link was that those willing to switch to another ticket were much more likely to say that the chances were 50/50 and much less likely to predict reversal in the coin task, see Table 7. Both of these effects were significant at .001 in two-sided tests of proportions, whereas the difference for prevalence of predictions of continuation was only significant at .08. These effects were equally strong in males and females and robust to controlling for other variables, see Appendix B. Importantly, we do not observe any link between initial preference in the ticket task and behaviour in the coin task.

Table 7: Behaviour across the two tasks

	Distinctive, stay (n=116)	**Distinctive, switch** (n=26)	**Random, switch** (n=50)	**Random, stay** (n=280)
50/50 (n=215)	36.2%	61.5%	80.0%	41.8%
Reversal (n=158)	37.1%	19.2%	10.0%	37.5%
Continuation (n=89)	25.9%	19.2%	8.0%	17.8%

5. Discussion and conclusion

In the present study, we tried to establish if people in fact prefer randomly-looking combinations over distinctive ones and verify if representativeness heuristic may be the cause of such preferences. We confirmed the clear preference for "random" sequences, even when switching would bring about an additional payoff. We also found behaviour consistent with RH in the coin task: by far not all participants gave the normatively correct 50/50 response. Of the remaining two, reversal was the considerably more common answer but continuation was also present and the two seemed to have similar determinants (see Table B6). This would appear to support the view that, paradoxically, both expectation of a reversal and of continuation in a series of actually independent trials may result from the RH, as proposed by Gilovich et al. (1985). Seemingly unjustified expectations of continuation are most frequently observed in skill-based trials, e.g. in sports (and then referred to as hot-hand fallacy). This made some authors, including Ayton and Fischer (2004), propose that they arise from natural fluctuations in human performance, while expectations of reversals (gambler's fallacy) from characteristics of sequences of natural events. Moreover, some recent studies question statistical validity of hot-hand fallacy findings at all (Miller and Sanjurjo 2004). In this sense, our observation that expectations of reversal and continuation co-exist in the same (not skill-based) task and that they have similar correlates yields some support to the RH interpretation against these alternative views.

However, importantly, we see no correlation between preferring the random sequence (either initially or strongly) in the ticket choice and choosing reversal (or continuation) in the coin task. It is therefore unlikely that the same representativeness heuristic drives both irrational behaviours.

Nevertheless, there is some link between the two tasks: there is a general tendency to either be rational in both of them, seemingly understanding both random processes correctly (switching and predicting 50/50) or to be irrational in both and stay with the initial preference and predict a specific coin toss outcome. Unexpectedly, we found that females are more likely to belong to the latter group than males: less women than men were willing to change the ticket to get the bonus and women more often than men predicted a particular outcome of a coin toss rather than say they were equally likely.

These are somewhat unexpected findings. One may try to link them to known gender differences in preferences and decision making. For example, Fehr-Duda et al. (2006) argued that men and women do process information on probabilities differently, which may have particularly affected behaviour in the coin task.

Much stronger evidence (e.g. Eckel and Grossman 2002, 2008) points at the gender difference in risk taking, with women being, on average, more risk averse than men. If our participants, intuitively, considered switching as the riskier move (even though it gave them a stochastically dominant option), the observed gender difference could follow.

One important aspect of the "riskiness" of switching involves anticipatory feelings. Although subjects never explicitly mentioned these in their explanations, they could have imagined their regret and disappointment associated with finding out that they have picked a losing ticket while a winning one was available. Because it is easier to imagine sticking to the default option (Kahneman and Miller 1986), negative consequences of a commission tend to be perceived as worse than equivalent consequences of an omission (Spranca et al., 1991). Sticking to the default (initial choice) could thus involve less anticipated regret and less perceived risk. In their two experiments Van de Ven and Zeelenberg (2011) found that regret may indeed be one of the causes of participants' irrational unwillingness to trade lottery tickets. If such emotional reactions are stronger in women (Eriksson and Simpson, 2010), regret aversion could partly explain the observed gender effect.

It is also possible that the "*stayers*" in our study simply hesitated to abandon the status quo. This consideration is unlikely to explain the gender effect though, given the findings that females are *less* prone to the bias (Burmeister and Schade 2007). Then again, the status quo bias is often explained in terms of loss aversion and some studies observed it to be stronger in females (Rieger et al. 2011; Rau 2014). Clearly, further research is needed. One modification of our design that could exclude status quo bias as a factor would involve asking participants right away if they preferred the *random* ticket or the *distinctive* one supplemented with the bonus.

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Appendix A: The protocol

<u>Verbal version:</u>

[INTRO] Hello, I'm conducting a scientific study, can I take 3 minutes of your time? In return, I have a lottery ticket for you, already paid for, for a Multi Multi game from Lotto.

[If YES, then:]

[MAIN] So, in the Multi Multi game, out of numbers from 1 to 80, 20 numbers are being drawn, and you can bet on up to 10 numbers − and so is in the present case. The prize depends only on how many numbers from the chosen ticket will be drawn (the less, the smaller the prize), whereas if all 10 numbers are drawn, there is a guaranteed prize of 250.000 PLN, regardless of the numbers that others chose.

I have two tickets here − they differ only in the betted numbers. Please have look at them and choose one of these two tickets, with the numbers you prefer.

1A) [If he/she is indifferent, they select one according to their own criteria and indicate which one.]

1B) [If they prefer one, they indicate which one.]

2) And what if to this other one [which they didn't select] I will add 50gr/1zł, which ticket will you choose?

[YES- they choose the other one and $]:

- Why did you initially choose this one?
- Why did you change your mind?

[NO- they stay with their first choice]

- Why did you choose this one?

I have just three more short questions:

1. If we toss this coin (or any other) three times, and three times in a row we get heads/tails, then what is more likely to come up the fourth time?

2. Do you sometimes play the lottery, Lotto or other games of chance?

And the last question:

3. How old are you?

That's all, thank you, have a nice day.

Appendix B: Additional tables

TABLE B1

CATEGORY	PARTICIPANT'S JUSTIFICATION OF THE CHOICE
Indifferent	Indifferent between the two tickets since they both have the same probability of being drawn
More random numbers	On the chosen ticket: • the numbers are more random
Favourite numbers	On the chosen ticket: • there are my favourite numbers • there are my lucky numbers • there are my numbers • there are numbers which are important to me
Nice sequence	On the chosen ticket: • there is a nice sequence • I like the sequence • the sequence looks nice • I like the numbers here more • I like smaller numbers • I like higher numbers
Higher Probability	There is a higher probability that these numbers will be drawn
Intuition	• I chose it automatically • I don't know why I chose this one • I chose this one because it was on the right/left • It was my intuition to choose this one • I had a feeling to choose this one • I chose it randomly
More spread	On the chosen ticket: • the numbers are more spread • the numbers are more scattered • there are numbers from the whole range • the numbers are not sequential
The following justifications were counted both as **More random numbers & More spread**	On the chosen ticket: • the numbers are more diversified • the numbers are less systematic • the numbers are more diversified

	• the numbers are not every 5
Aware (of the same probability)	This category was used when a participant, regardless of their choice, stated that they are aware that both tickets have/should have the same probability of being drawn

TABLE B2: determinants of initial choice of the random ticket (probit regressions)

	IR1	IR2	IR3	IR4
initially_random				
medium	-0.493**	-0.265	-0.322	-0.267
high	-0.272	-0.319	-0.396*	-0.402*
seq_5	-0.179	-0.188	-0.180	-0.173
nr_on_the_left	-0.113	-0.097	-0.100	-0.083
male		-0.002	-0.065	0.282
age		-0.001	-0.004	-0.003
gamb_inten		0.073	0.087	0.099
morning			0.346	0.399*
friday			0.135	0.001
monday			-0.171	-0.029
location dummies	NO	NO	YES	YES
male_experimenter				0.175
male_male_experimenter				-0.962**
_cons	0.937***	0.732**	0.855*	0.775*

TABLE B3: determinants of switching (only among those with ini==0; probit regressions)

	SW1	SW2	SW3	SW4
switch				
medium	0.017	0.120	0.119	0.083
high	0.291	0.269	0.268	0.230
seq_5	-0.479**	-0.611**	-0.615**	-0.643**
nr_on_the_left	0.128	0.069	0.082	0.093
male		0.639**	0.687**	0.519
age		-0.008	-0.005	-0.007
gamb_inten		-0.002	-0.004	0.006
price_difference		0.009*	0.009	0.009
morning			0.416	0.404
friday			0.312	0.309
monday			-0.081	-0.099
location dummies	NO	NO	YES	YES
male_experimenter				-0.372
male_male_experimenter				0.667
_cons	-1.006***	-1.747***	-1.849**	-1.767**

TABLE B4: Determinants of specific predictions in the coin task

```
. estout rev2 rev1 cont2 cont1, cells(b(star fmt(3)))
```

	REV1	REV2	CONT1	CONT2
main				
initially_random	0.030	0.071	-0.256	-0.248
switch	-0.681**	-0.667**	-0.296	-0.327
male	-0.286	-0.269	-0.199	-0.184
age	0.009*	0.007	0.008	0.009
gamb_inten	0.037	0.022	0.057	0.063
heads_three_times	-0.080	-0.138	-0.184	-0.120
morning		-0.364*		0.178
friday		0.017		-0.085
monday		-0.153		0.068
location dummies	NO	YES	NO	YES
_cons	-0.679**	-0.276	-0.841***	-1.607**

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