Do Only Economists Rely on Statistical Significance?

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<u>**Experimental Instructions**</u>

<u>Instructions for 0.7 Condition</u>

Welcome to the experiment!

The experiment is divided into two parts, *Stage 1* and *Stage 2*. Your final winnings will be equal to the Stage 1 Payment, the Stage 2 Payment and a participation fee of 8 dollars. (All winnings will be rounded to the nearest 5 cents).

You are playing Stage 1 first. You can see two identical urns on the table, and a set of white and orange balls in a basket; you can also see a screen. The experimenter will shortly do the following:
(a) show you that the urns are empty;
(b) take <u>**seven white balls**</u> and <u>**three orange balls**</u>, and put them in one of the two urns; let us label this urn **Urn 1**;
(c) take <u>**three white balls**</u> and <u>**seven orange balls**</u>, and put them in the other urn; let us label this urn **Urn 2**;
(d) hide both urns behind the screen.

There are six *periods* in Stage 1. You have received an answer booklet with a sheet for each period.

At the start of each period, the experimenter announces the period number and writes it on the board. Then one of the two urns will be randomly chosen, by the flip of a coin, independently of what urns were chosen in previous periods. You will not be able to see whether this *chosen urn* is Urn 1 or Urn 2, but you will be asked to guess how likely you think it is that the chosen urn is Urn 1.

There are *sixteen draws* in each period. At the start of each draw the experimenter announces the draw number and writes it on the board. *In Draw* 0, which happens at the start of the period, your best probability guess that the chosen urn is Urn 1 would have to be 50%: this is because *at the start* of each period the chosen urn is picked randomly afresh. This Draw 0 probability guess has been printed into the answer booklet for you.

For Draws 1 through Draw 15 inclusive:

1. *first*, the experimenter draws a ball from the chosen urn and announces whether it is white or orange; *please write the ball colour on the answer sheet, in the line corresponding to the correct period and draw*; the experimenter then puts the ball back into the chosen urn;

2. *second*, you have to answer the following question: "how likely is it that the chosen urn is Urn 1? (Remember, Urn 1 is the urn with 7 white and 3

orange balls). Please choose a probability over the range 0% (definitely not) to 100% (definitely certain)"; *please put your guess in the line in the answer booklet corresponding to the correct period and draw*.

At the end of the period the experimenter hides the chosen urn again behind the screen. If you are in periods 1 through 5, you should move on to the answer sheet for the following period. If you are in period 6, please wait until the sheets are collected and the material for Stage 2 is distributed.

Stage 1 Payment. It is important that you try to make your best probability guesses, both because it is important for the value of the experiment, and because your final winnings depend on it. At the end of the experiment the experimenter will randomly choose a winning draw to reward your performance. The experimenter will roll a die to choose the period, and pick randomly from a third urn (with balls numbered between 1 through 15) to choose the winning draw. Your Stage 1 Payment will depend on your choice in the draw corresponding to the number on the ball which has been picked. In relation to this draw, the experimenter will take your choice and compare it with the true chosen urn for that draw. If in the winning draw the chosen urn was Urn 1, then the correct probability of the chosen urn being Urn 1 is 100%; if the chosen urn was Urn 2, then the correct probability of the chosen urn being Urn 1 is 0%. Your Stage 1 Payment will then be equal to

$$25 - 25 \times (guess - correct\ probability)^2$$

that is, to 25 dollars minus a penalty. The penalty will be equal to the square of the error, that is of difference between the guess and the correct probability, multiplied by 25. The Stage 1 Payment will be higher the more correct your guess is. The enclosed table provides Stage 1 Payment values corresponding to some possible error levels.

Please stay seated throughout the experiment. It is essential, for the scientific value of the experiment, that you (a) do **not** communicate in any way with other participants during the experiment; (b) do **not** change your guesses for previous draws. You are liable to be expelled from the experiment, and forfeit all winnings (including the participation fee), if you do not comply with these simple rules.

This is an individual choice experiment: your choices have no influence on the winnings of other participants, and similarly the choices of other participants have no influence on your winnings. If you have any question, please raise your hand until an experimenter comes close to you, and then ask with a low voice. This may be a good time to ask questions, but feel free to raise your hand to ask questions at any time.

Stage 1 Payment Table

$$\textbf{Payment} = \textbf{25} - \textbf{25} \times (\textit{guess} - \textit{correct probability})^2$$

Error	Stage 1 Payment	Error	Stage 1 Payment	Error	Stage 1 Payment
0%	25	34%	22.11	68%	13.44
1%	25	35%	21.94	69%	13.1
2%	24.99	36%	21.76	70%	12.75
3%	24.98	37%	21.58	71%	12.4
4%	24.96	38%	21.39	72%	12.04
5%	24.94	39%	21.2	73%	11.68
6%	24.91	40%	21	74%	11.31
7%	24.88	41%	20.8	75%	10.94
8%	24.84	42%	20.59	76%	10.56
9%	24.8	43%	20.38	77%	10.18
10%	24.75	44%	20.16	78%	9.79
11%	24.7	45%	19.94	79%	9.4
12%	24.64	46%	19.71	80%	9
13%	24.58	47%	19.48	81%	8.6
14%	24.51	48%	19.24	82%	8.19
15%	24.44	49%	19	83%	7.78
16%	24.36	50%	18.75	84%	7.36
17%	24.28	51%	18.5	85%	6.94
18%	24.19	52%	18.24	86%	6.51
19%	24.1	53%	17.98	87%	6.08
20%	24	54%	17.71	88%	5.64
21%	23.9	55%	17.44	89%	5.2
22%	23.79	56%	17.16	90%	4.75
23%	23.68	57%	16.88	91%	4.3
24%	23.56	58%	16.59	92%	3.84
25%	23.44	59%	16.3	93%	3.38
26%	23.31	60%	16	94%	2.91
27%	23.18	61%	15.7	95%	2.44
28%	23.04	62%	15.39	96%	1.96
29%	22.9	63%	15.08	97%	1.48
30%	22.75	64%	14.76	98%	0.99
31%	22.6	65%	14.44	99%	0.5
32%	22.44	66%	14.11	100%	0
33%	22.28	67%	13.78		

Answer Booklet: Content of the Sheet for Each Period

When the experimenter draws a ball, write down the colour of the drawn ball in the middle column (if you find it convenient, you can just write W for white and O for orange).

How likely is it that the chosen urn is Urn 1? (Remember, Urn 1 is the urn with 7 white and 3 orange balls). Please choose a probability over the range 0% (definitely not) to 100% (definitely certain). Write down your answer in the Probability Guess column.

Do **not** change probability guesses corresponding to previous draws. If you do, you are liable to to be expelled from the experiment, and forfeit all winnings (including the participation fee).

If you discover that you have put your guesses in the wrong place (say, the wrong page or wrong row), please raise your hand.

Draw	Drawn Ball Colour	Your Probability Guess
0		50%
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Instructions for 0.6 Condition

These were identical to those for the 0.7 condition, except that 'six balls' ('6 balls') were replaced for 'seven balls' ('7 balls'), and 'four balls' ('4 balls') for 'three place' ('3 balls').