ONLINE APPENDIX

A Understanding of Instructions

Subjects answered comprehension questions for tasks in Part 1 and 3. After submitting the answer, they would get feedback regarding whether their answer was correct or not and a brief explanation. If their answer was incorrect, they were required to try again until they got the correct answer. Table A.1 presents the correct answer rates in each question. Overall, 93% subjects in the *NewSignal* treatment and 92% subjects in the *noNewSignal* treatment answered all the questions correctly within 2 attempts.

Table A.1: Comprehension question performance by treatment

	NewSignal treatment		*noNewSignal* treatment	
Question	Pass on first attempt (%)	Missing (%)	Pass on first attempt (%)	Missing (%)
P1Q1	92.0	0.0	92.8	0.0
P1Q2	85.9	0.0	85.9	0.0
P3Q1	94.6	2.8	93.8	2.3
P3Q2	74.2	1.2	81.5	0.5
P3Q3	91.6	1.9	91.9	2.8
Overall	56.9	4.4	59.8	4.8

Notes: "P1Q1" means the first comprehension question in Part 1. Due to a technical slip in the experiment software, subjects could skip the comprehension questions. The proportion of skip for each comprehension question is reported in the columns "Missing (%)". The last row shows the percentage of subjects who answered all the questions correctly on their first attempt.

In order to check whether subjects fully understand our instructions in each treatment, we asked them to answer the following "prediction " question before preference elicitation in Part 3:

This is not an understanding question; we are simply interested in your thoughts before we proceed:

> *Do you think your guesses in Part 4 will or should be different from your guesses in Part 1? (Please select* ***all*** *that apply.)*

Table A.2: Distribution of Responses in the Prediction Question

Response	*NewSignal*(%)	*noNewSignal*(%)
No, I won't see a new ball	4.9	41.1
No, info doesn't matter	8.0	9.5
Yes, I will see a new ball	70.3	13.4
Yes, mistake in Part 1 or change my mind	50.1	59.1

Notes: Subjects can choose multiple options in the prediction questions. This table reports the number of specific choices out of all the subjects within a treatment. Incorrect responses are enclosed in frames.

Table B.1: Example of Updating Tasks

Part 1					
	Prior	Signals	Reported Posterior		
Base	50%	*brbrr*	p_0		
Posterior-as-prior	p_0%	*r*	p_1		
Combined-signals	50%	*brbrrr*	p_2		
Bayesian-posterior-as-prior	60%	*r*	p_3		
Bayesian Prediction*: $p_1 = p_2 = p_3$					
Posterior Sufficiency Prediction: $p_1 = p_2$					
Part 2					
	Prior	Signals	Guess from Part 1	New Signal	Reported Posterior
Update-from-posterior			p_0%	*r*	p_1'
Update-from-previous-signals	50%	*brbrr*		*r*	p_2'
Bayesian Prediction*: $p_1' = p_2'$					
Posterior Sufficiency Prediction: $p_1' = p_2'$					

Notes: *The Bayesian prediction is conditional on a subject reporting the Bayesian posterior of p_0 in the base question.

B Part 1 Tasks

Types of Tasks. We construct the updating tasks as follows. Each subject sees five "base" questions which are standard updating problems; we describe the parameters below. Then, for each of the five base problems, we construct three connected problems. First, the "posterior-as-prior" question takes the subject's reported posterior from the base question and presents this to the subject as the prior in a new question, along with one new signal.[19] Second, the "combined-signals" question is exactly the same as the base question but adds one new signal, the same new signal as in the posterior-as-prior question. Third, the "Bayesian-posterior-as-prior" question takes the Bayesian posterior from the base question and presents this to subjects as the prior in a new question, along with the same new signal.

Table B.1 shows an example. Here, the base question presents the subject with a prior of 50% and five signals: blue, red, blue, red, red. Assume for the example that the subject reports a posterior of 70% in this base question (p_0). Then, in the posterior-as-prior question, we present the subject exogenously with a prior of 70% and one signal (in this example, red), and then elicit their posterior belief (p_1). In the combined-signals question, we present the subject with the original 50% prior and the original five signals plus the new red signal, and then elicit their posterior belief (p_2). Finally, in the Bayesian-posterior-as-prior question, we present the subject with a prior equal to the Bayesian posterior from the base question (60%) and the new

[19] Technically, this diminishes incentive compatibility of the base questions. Since subjects' reported posteriors in the base question determine their "exogenously-given" prior in future questions, they could report an extreme prior in the base question to guarantee payment from future questions. Subjects did not know that their posteriors were being used as future priors—and we do not see any extreme reported posteriors—so we don't view this as a practical issue, but we acknowledge that it is not ideal. We could have asked subjects many questions and matched posteriors only ex post as in Sarnoff (2025); however, we used our simpler procedure to keep the length of the experiment manageable.

red signal, and then elicit their posterior belief (p_3).

If individuals are Bayesian, then the reported posteriors will coincide in all three questions. However, even if subjects are non-Bayesian, posterior sufficiency implies that p_1 will equal p_2.

Subjects see all 20 questions in random order, given the constraint that the base questions need to come before the corresponding posterior-as-prior questions with at least one question between the two. F

Parameters. We select five priors: 10%, 35%, 50%, 65%, and 90%. The five base questions use each of these priors exactly once. The signal precision is fixed at 60% since the bag composition remains fixed throughout the experiment. For each base question, the sample size is either "small" or "large." Small samples contain either 2, 3, 4, or 5 signals and large samples contain 12, 13, 14, or 15. The assignment of sample size to priors was partially balanced: Among the two low and two high priors, we randomly pair one with a small sample size and the other a large sample, and we associate the symmetric prior with either a small or a large sample size. For each subject, we draw the sample size values randomly and without replacement.

C Additional Results

C.1 Conditional Preferences

We investigated whether preferences for revisiting previous signals depend on complexity-related factors. To this end, we exploit the conditional elicitation and examine whether subjects switch between weakly preferring previous signals and the complementary alternative. McNemar tests reveal no significant difference in weak preferences for revisiting previous signals within each treatment when subjects expect questions with fewer signals versus more signals in Part 4 ($p > 0.900$). This pattern also holds for strict preferences for revisiting previous signals ($p > 0.200$). We obtain similar results when comparing settings in which subjects expect to receive 2 questions in Part 4 with those in which they expect to receive 10 questions ($p > 0.120$).

Figure C.1: Distribution of Information Preferences Conditional on Sample Size

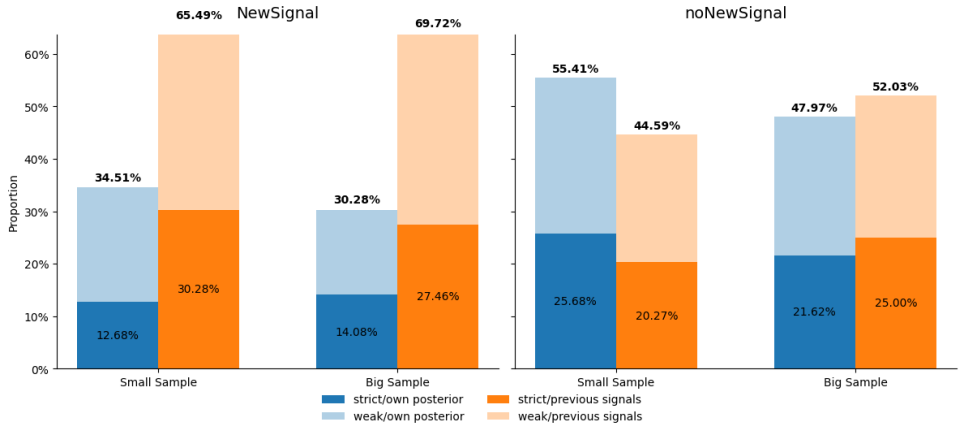
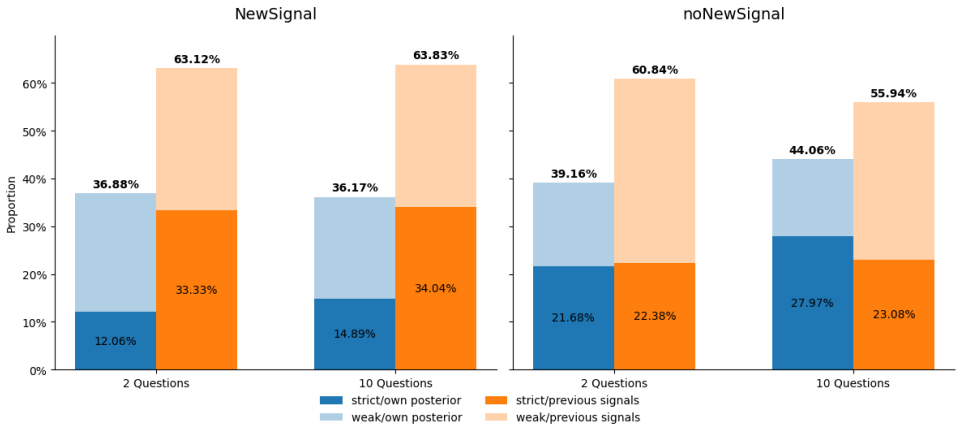


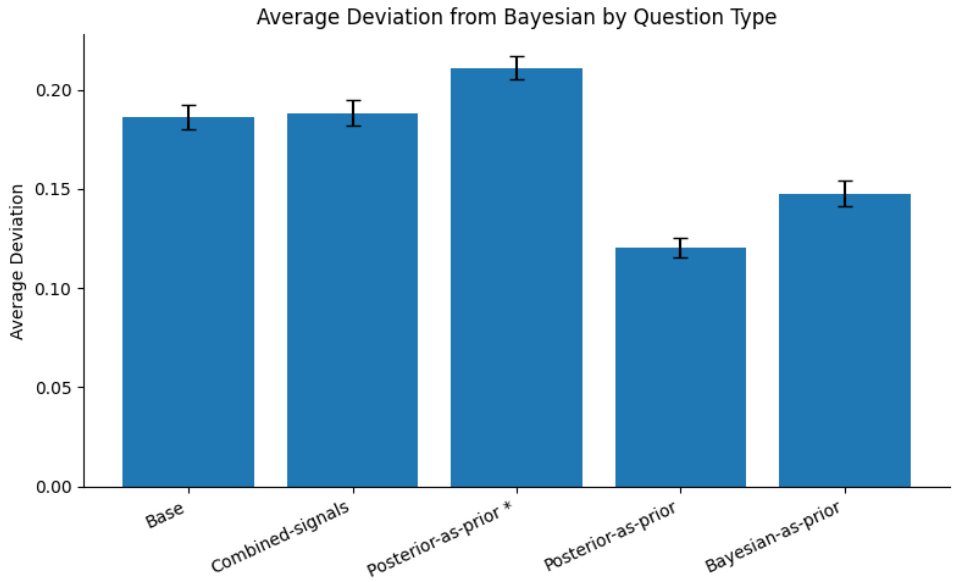
Figure C.2: Distribution of Information Preferences Conditional on the Number of Questions in Part 4



C.2 Accuracy of Part 1 Questions

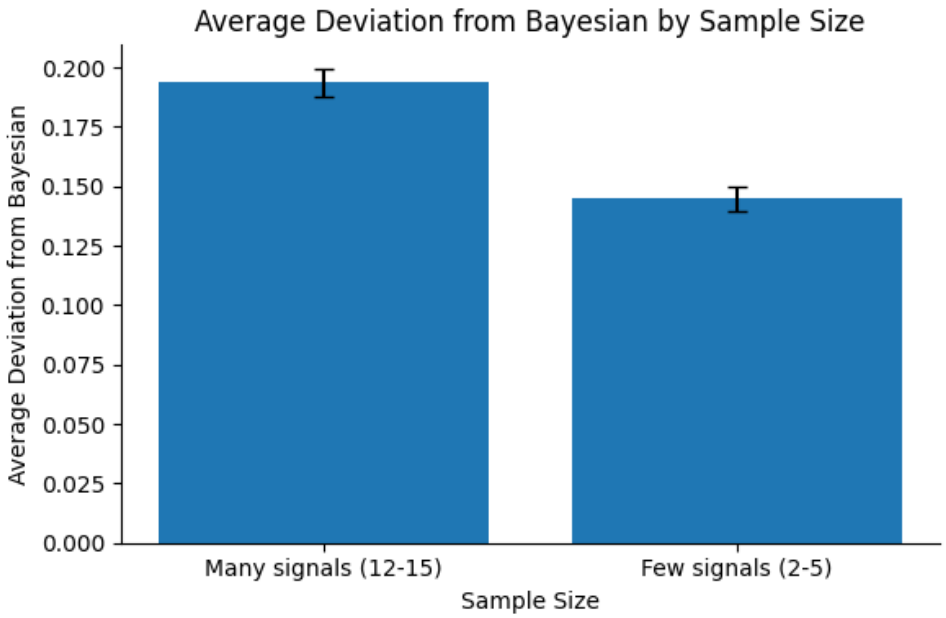
The figure below shows the average deviation from the Bayesian benchmark for different questions in Part 1. For the "posterior-as-prior" questions, we present the accuracy separately using its own Bayesian posterior as benchmark ("Posterior-as-prior" bar) and the Bayesian from "Combined-signals" as benchmark. We highlight several findings from the figure. First, when using the same benchmark, the deviation in the "Posterior-as-prior" questions are significantly higher than "Combined-signals" (paired t-test, $p < 0.001$) . This indicates a violation of as-if posterior sufficiency. Second, subjects on average made better predictions in questions with a single signal (i.e., the "Posterior-as-prior" and "Bayesian-as-prior" questions) than in questions with many signals. This finding is further supported by Figure C.4, which focuses on Part 1 questions with multiple signals and compares performance across different sample sizes (t test, $p < 0.001$). However, as shown in C.1, the differential performance in using few vs. many signals were not taken into account when subjects made information choices. Third, subjects on average made better predictions when they updated from the Bayesian posterior, compared with when they updated from their own posterior, or using the initial prior and signals (paired t test, $p < 0.001$). This pattern also holds when comparing the update-from-Bayesian questions with those in Part 2: subjects make more accurate updates when relying on the expert benchmark than when relying on any other information format (average deviation in "Update-from-posterior" questions: 0.193; average deviation in "Update-from-previous-signals" questions: 0.176).

Figure C.3: Accuracy of Part 1 Questions



Notes: "Posterior-as-prior*" uses the same Bayesian benchmark as the "Combined-signals" questions while "Posterior-as-prior" uses the Bayesian computed by its presented prior and signal as benchmark. The sample includes all subjects.

Figure C.4: Accuracy by Number of Signals

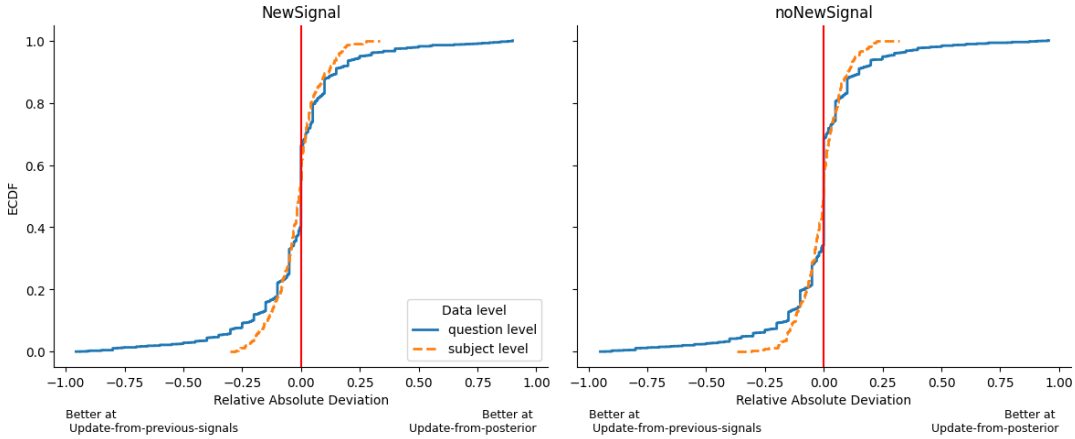


Notes: We only include "Base" and "Combined-signals" questions in this figure. The sample is all subjects.

C.3 Relative accuracy of Part 2 Questions

Figure C.5 plots the empirical CDF of relative absolute deviation between "Update-from-posterior" and "Update-from-previous-signals" questions. We plot the distribution of average relative accuracy at subject level in a solid blue line and the distribution of relative accuracy at paired-question level in a dashed orange line. Negative values in relative absolute deviation indicate closer to Bayesian in "Update-from-previous-signals" questions. A zero in relative absolute deviation means that the subject is equally good or bad at both questions types. We find only 8.21% of subjects in the *NewSignal* treatment and 4.71% of subjects in the *noNewSignal* treatment equally good or bad at the two question types. The remaining subjects in the *NewSignal* treatment are roughly equally split into better at "update-from-previous-signals" (50%) and better at "update-from-posterior" (41.79%, two-sided proportion test, $p = 0.080$). In contrast, more subjects (54.93% compared with 40.36%) in the *noNewSignal* treatment made better predictions in "Update-from-previous-signals" question (two-sided proportion test, $p = 0.001$).

Figure C.5: ECDF of Relative Accuracy in Part 2



Notes: We compute the relative absolute deviation by subtracting the absolute deviation in "Update-from-posterior" questions from the absolute deviation in the paired "Update-from-previous-signals" questions. The empirical CDF of the difference for each paired question is plotted as a dashed orange line, and the empirical CDF of the average difference across subjects is plotted as a solid blue line.

C.4 Correlation between Accuracy and Confidence

Table C.1: Regressions of Confidence on Accuracy

Variable	(1) Part 1 Questions	(2) *Update-from-previous-signals*	(3) *Update-from-posterior*
Accuracy	-0.201***	-0.049	-0.008
	(0.060)	(0.112)	(0.099)
$\frac{d}{n}$	0.152***	0.494***	
	(0.034)	(0.095)	
n	0.019***	0.016***	
	(0.003)	(0.005)	
$\mathbb{P}(A)$	-1.729***	-1.573***	
	(0.158)	(0.331)	
$\mathbb{P}(A)^2$	2.124***	1.945***	
	(0.150)	(0.314)	
New signal is confirmatory		-0.044	0.205***
		(0.125)	(0.069)
New signal is disconfirmatory		-0.264*	-0.311***
		(0.121)	(0.069)
Part 1 guess			-0.859**
			(0.332)
Part 1 guess squared			1.420***
			(0.319)
Constant	0.09***	0.212	-0.101
	(0.046)	(0.148)	(0.101)
Controls	✓	✓	✓
Treatment	Both treatments	*NewSignal* treatment	*NewSignal* treatment
Observations	12360	2050	2050
Adj. R^2	0.046	0.065	0.110

Notes: Subject-clustered standard errors in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

The dependent variable is the confidence rating z-scored at the subject level in the corresponding sample. We exclude *posterior-as-prior* questions in regression (1). n is the total number of signals. $\frac{d}{n}$ is the net count of balls divided by the total in a task. $\mathbb{P}(A)$ and $\mathbb{P}(A)^2$ are the prior of Bag A being selected and its squared term respectively. "New signal is confirmatory" is a binary indicator equal to one if the new signal is consistent with the direction of belief that Bag A is more likely than Bag B (i.e., the signal favors the currently more likely state). In regression (2), this is defined relative to the Bayesian posterior based on prior signals; in regression (3), it is defined relative to the subject's own posterior belief in Part 1. "New signal is disconfirmatory" is defined similarly. Control variables include a binary indicator for Bachelor's and above, a binary indicator for STEM major, the interaction between the two, and a categorical variable for the level of Bayesian knowledge.

D Analysis of Free Response Questions

In the end-of-experiment survey, we asked the subjects to explain how they made the decisions in the unconditional binary choice menu and in the trinary choice menu. We manually categorized their answers in these questions as follows.

D.1 Binary Choice Menu

For those who preferred to revisit previous signals in the *NewSignal* treatment, the reasons include:

1. **Mistake/Reasess:** distrust own guess/felt own guess was inaccurate/would like a chance to reassess
   Example: `I chose to repeat Original Chances and Balls Drawn because I felt having the raw information would give me a more accurate basis for making my guess in Part 4. I wanted to rely on the actual probabilities and the sequence of balls drawn rather than just my previous guess, in case I had made a mistake or wasn't fully confident in my earlier answer.`

2. **Comfortable with Previous Signals** felt more comfortable/confident with previous signals because it was objective/more informative/was the original information where own guess came from/used to this format/more helpful to form a guess
   Example: `I made my guess based on the original chance information so I figured it would be better to have the entirety of the info on the balls drawn to work with.`
   Example: `My choice to use "Original Chances and Balls Drawn" over "Your Guess" in Part 3 was a strategic decision to maximize the accuracy of the final probabilistic model in Part 4 by eliminating the risk of compounding rounding errors from the intermediate guess.`

3. **Like Visual Representation:** felt it easier to form a guess with visual representation
   Example: `I think I can make my best guess with the visual evidence that is given in balls drawn. The other information is hard for me to follow`

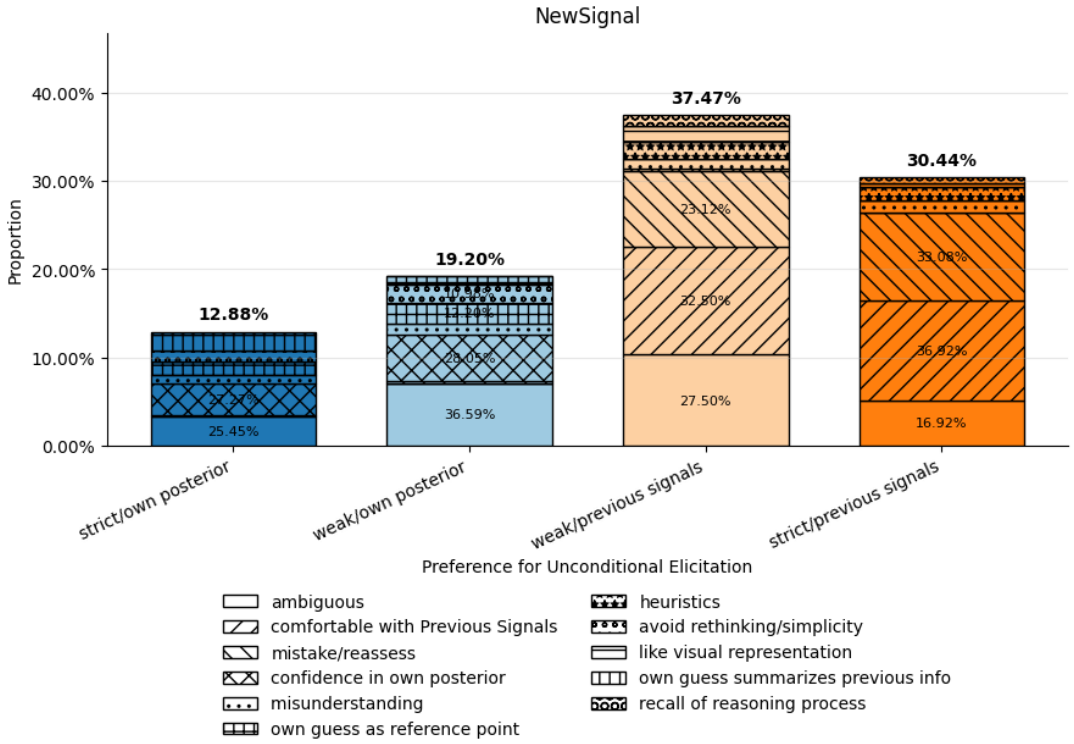
4. **Misunderstanding:** mistook posterior with prior (and other misunderstanding)
   Example: `You told me the chances for each bag. I fail to see that any amount of balls drawn would change what you told me.`

5. **Heuristics:** update using statistics from prior and signals
   Example: `I wanted to see the color of the balls rather than my previous guesses because it shows me that there is more of a chance of getting that color ball.`

6. **Recall of Reasoning Process:**
   Example: `I needed a refresher of my choices and how I came to that conclusion.`

For those who preferred to revisit own guess in the *NewSignal* treatment, the reasons include:

Figure D.1: Reasons Conditional on Information Preferences for the Binary Menu



Notes: While some of the stated reasons might involve different listed categories, we classify each statement into a single category for simplicity. Unclear or inconsistent statements were classified as "ambiguous".

1. **Own Guess as Reference Point:** make new update by refining original guess
   Example: `I chose "Your Guess" so I could remember my guess and make changes from there after seeing new information`

2. **Avoid Rethinking/Simplicity:**
   Example: `I already did the mental work and didn't want to do it again.`

3. **Own Posterior Summarizes All Previous Info**
   Example: `I know my guess was already based on what the original chances were so I felt that I did not need that information.`

4. **Confidence in Own Posterior:**
   Example: `I chose to go with My guess in this part because I was trusting my gut choices from the earlier round and hoping that my guess was close. If I went with the other option, I might have picked totally different numbers and gone further off from the correct answer.`

Figure D.1 presents the distribution of different stated reasons conditional on information preference for the unconditional binary menu. The two primary reasons for preferring to revisit previous signals are that subjects were unsure of their guess in Part 1 and wanted to re-evaluate their guess, and they felt more comfortable (or confident) with this information because it is unbiased, more informative, or helpful. This is consistent with our finding that relative

confidence and uncertainty in their own posterior drives the preferences for revisiting previous signals in our conditional preference elicitation and regression analysis. About 10% of subjects who prefer to revisit their own posterior claimed that they made this decision to avoid doing all the mental work again. This suggests complexity does affect information preferences; the two findings collectively suggests that the uncertainty in own posterior outweighs the effects of complexity on information preferences.

D.2 Trinary Menu

The following lists the reasons for choosing to revisit the *Statistical Guess* in *NewSignal* treatment: [20]

1. **Accuracy:** felt that the *Statistical Guess* more accurate than own posterior
   Example: `I chose Statistical Guess because it represents the most accurate starting point for the next calculation in Part 4.`

2. **Confidence/Reliability:** felt confident with *Statistical Guess* or find it more reliable
   Example: `Because the "Statistical Guess" allows me to judge with another source as I make my guess. This gives me more confidence in what I am choosing.`

3. **Diversify:** wanted to explore with other information option
   Example: `I just would preferred to try something different from previous part`

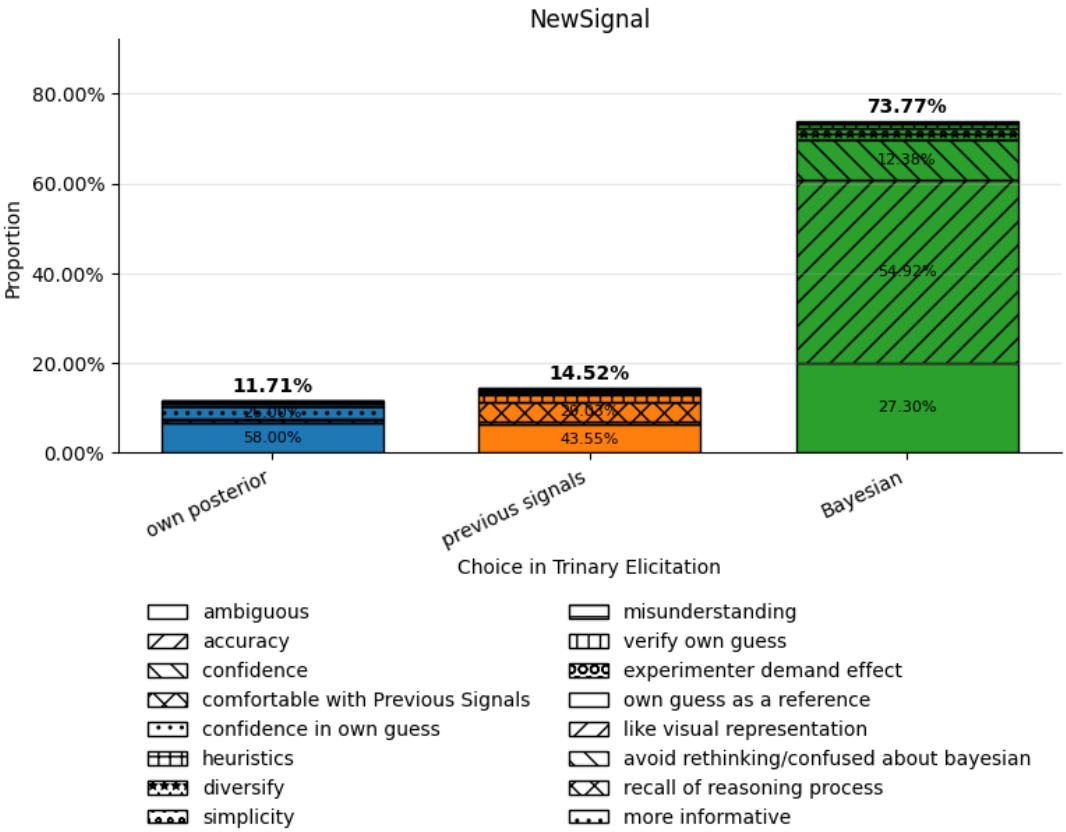
4. **Simplicity:** felt that the *Statistical Guess* give straightforward information about which bag was drawn
   Example: `It seemed like a more logical choice and a direct answer to the evaluation process rather than relying on "parts" evaluating from an overall perspective, just seemed more feasible.`
   Example: `I thought the statistical guess would carry more weight because behind the scenes the computer figured out the highest likelihood. This is something my own brain couldn't do easily.`

5. **Informative:**
   Example: `Statistical Guess provides more evidences and data than my own guess.`

6. **Verify Own Posterior:**
   Example: `I felt like if the computer simulated a number that was close to what I chose, then I'd be on the right track.`

[20] Two subjects indicated that they chose the Bayesian posterior because of experimenter demand effect: `For the purpose of this exercise, I believe that the authors of this survey would stick to solid, verifiable statistical options. Also, I didn't use the method shown in the statistical guess, and determined it may be a better option.`
`Statistical Guess was the only piece of information I hadn't seen yet so I figured that could give me some more information to help me make the correct guess.`

Figure D.2: Reasons Conditional on Information Preferences for the Trinary Menu



Notes: While some of the stated reasons might involve different listed categories, we classify each statement into a single category for simplicity. Unclear or inconsistent statements were classified as "ambiguous".

Figure D.2 shows the distribution of different reasons for information choices in the trinary choice menu. 55% of subjects prefer to see Bayesian posterior because they thought it would be more accurate than forming their own posterior from past signals. For those who chose to revisit their own posterior, the primary reason is that they felt confident in their own guess; similarly, the majority of those who chose to revisit previous signals claimed that they did so because they felt comfortable(confident) with this option.

E Robustness

E.1 Information Preferences

We present our main results on the sample who passed all the comprehension questions in 2 attempts and did not select any of the incorrect options in the "prediction" question.

Figure E.1: Distribution of Information Preferences in Unconditional Questions Among Subjects with Good Comprehension

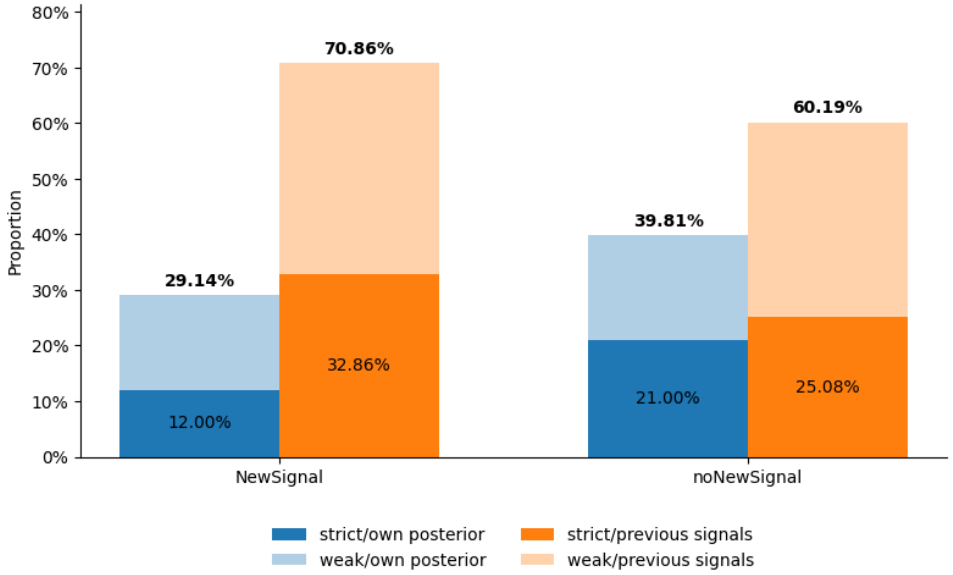
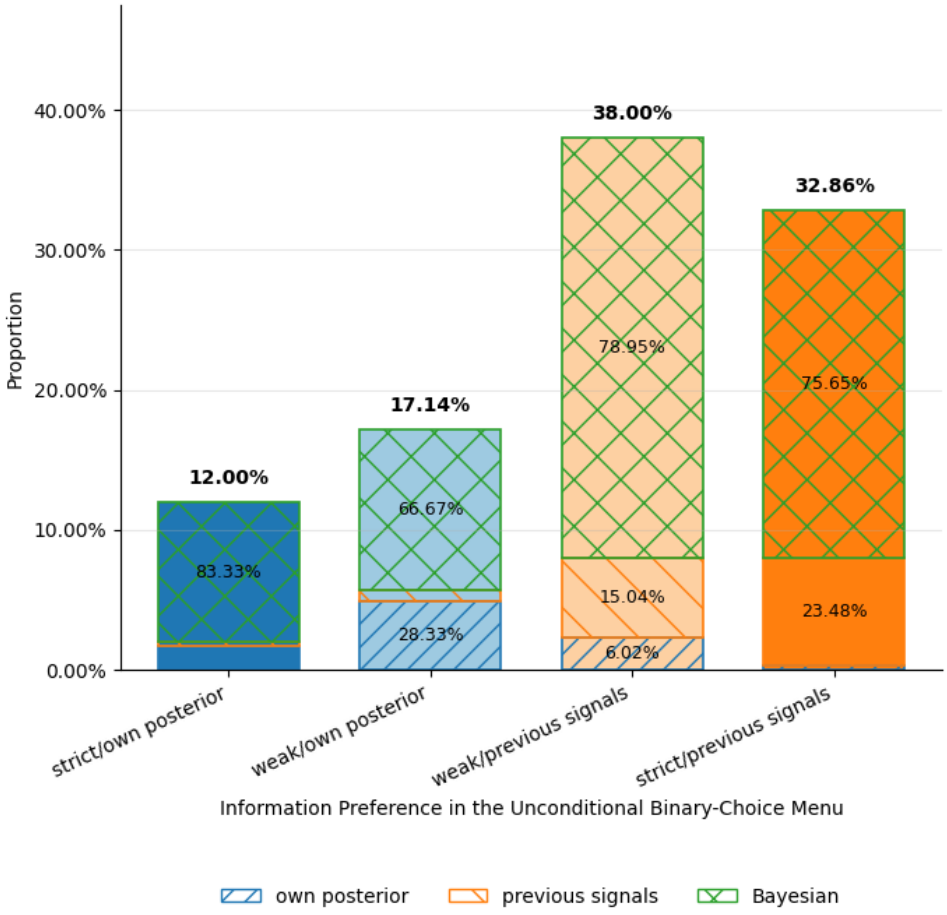


Figure E.2: Distribution of Preferences in the Trinary-Choice Menu Conditional on the Preferences in the Unconditional Binary-Choice Menu Among Subjects with Good Comprehension



E.2 Sophistication

We run three alternative models for robustness of our finding that subjects are not well calibrated in their information preferences.

In the first regression of Table E.1, we include performance measures for Part 1 to account for potential heterogeneity in preferences between subjects who are more or less Bayesian. We construct two such measures: the "Error" variable in Column (1) captures how close a subject is to the Bayesian by computing the average absolute deviation from the Bayesian benchmark, and the "Prop. of updates in the wrong direction" variable computes the proportion of questions in Part 1 where subjects updated in a wrong direction.[21] We also include average confidence in Part 1 and the interaction between average error and average confidence in Part 1.

In regression (2) of Table E.1, we run an analogous exercise as in the first column, using alternative measures for performance and confidence. We construct these measures as follows. To measure updating performance in Part 1, we first group questions—excluding the *posterior-as-prior* ones—into ten bins based on their Bayesian posterior. For each question, we determine whether the subject performs below the median within the corresponding bin. We then compute,

[21] We exclude the posterior-as-prior questions in these two measures to avoid an endogeneity problem.

for each subject, the proportion of questions for which this underperformance occurs. This gives a subject-level measure of performance that mitigates that potential performance differences driven by parameters. To measure relative performance in Part 2, we score each pair of question based on whether the subject made predictions closer to the Bayesian in *update-from-posterior* (score = 1) or in *update-from-previous-signals* (score = -1), then average this score across the five pairs for a subject. A score of 5 (-5) indicates that the subject consistently performs better in *update-from-posterior* (*update-from-previous-signals*).

Regression (3) of Table E.1 uses the same specification as in Column (1) but replaces the dependent variable with an ordered preference to distinguish between weak and strict preferences for previous signals and own posterior.

Table E.1: Regressions of Preferring Previous Signals in Unconditional Elicitation

	(2)	(2)	(3)
Dep. Var.	ℙ(Chose Previous Signals)	ℙ(Chose Previous Signals)	Ordered Preference
Part 1			
Error	11.774*	2.900	2.937
	(7.153)	(2.592)	(2.084)
Error × Avg. confidence	-0.232**	-0.060*	-0.055**
	(0.101)	(0.035)	(0.028)
Prop. of updates	0.942	0.915	0.748
in the wrong direction	(0.848)	(0.827)	(0.695)
Avg. confidence	0.039**	0.028	0.026
	(0.018)	(0.020)	(0.016)
Part 2			
Relative confidence	0.369**	0.143***	0.111***
	(0.183)	(0.049)	(0.040)
Relative performance	-1.441	0.024	0.015
	(1.149)	(0.057)	(0.046)
Constant	-1.416	-0.739	—
	(1.274)	(1.478)	
Controls	✓	✓	✓
Treatment	*NewSignal*	*NewSignal*	*NewSignal*
Observations	410	427	427
Pseudo R^2	0.045	0.044	0.016

Notes: Subject-clustered standard errors in parenthesis. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.
10 subjects are dropped in regression (1) when normalizing confidence in Part 2. Regression (1) and (2) are estimated using Logit. Regression (2) is estimated using ordered Logit, where the dependent variable is an ordered preference with strictly preferring own posterior = 1, weakly but not strictly preferring own posterior = 2, weakly but not strictly preferring previous signals = 3, and strictly preferring previous signals = 4. Control variables include an indicator for Bachelor's degree and above, an indicator for STEM major, the interaction term between the two, and a categorical variable for the level of Bayesian knowledge.

F Task Interface

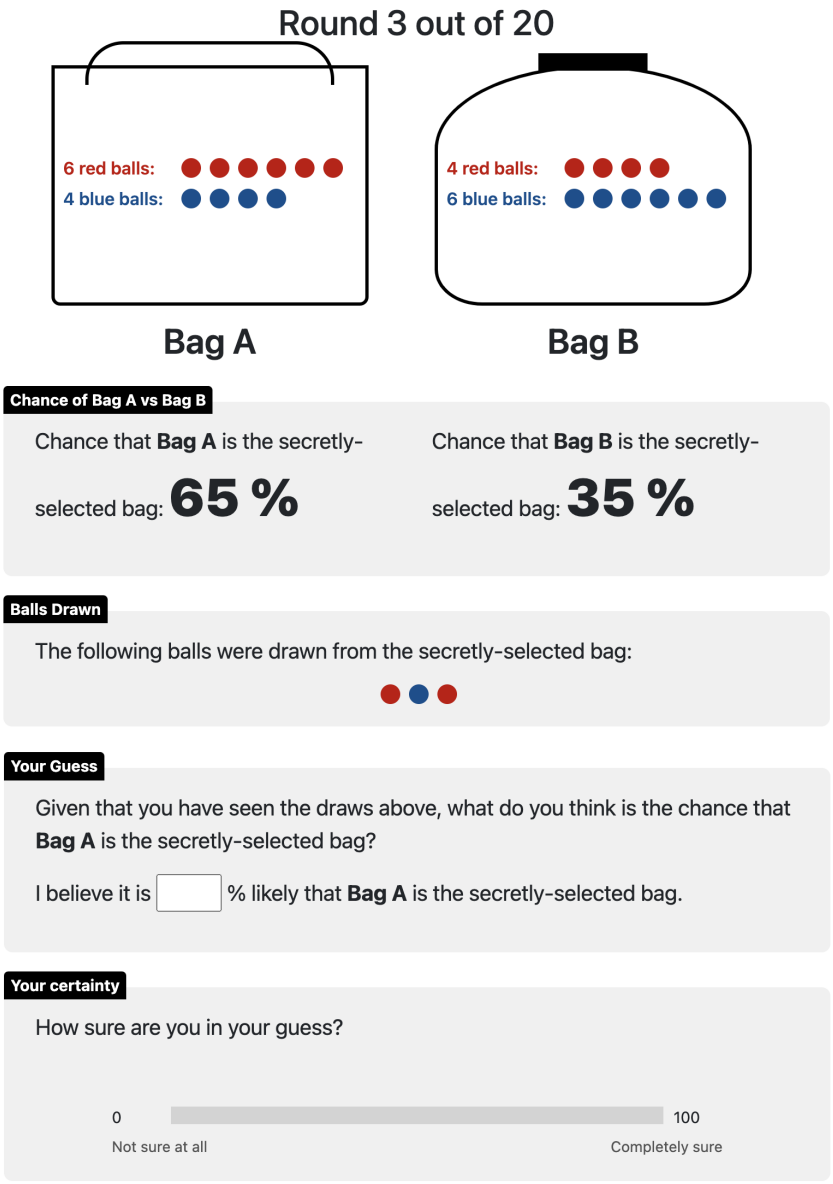


Figure F.1: Screenshot of an Example Task in Part 1

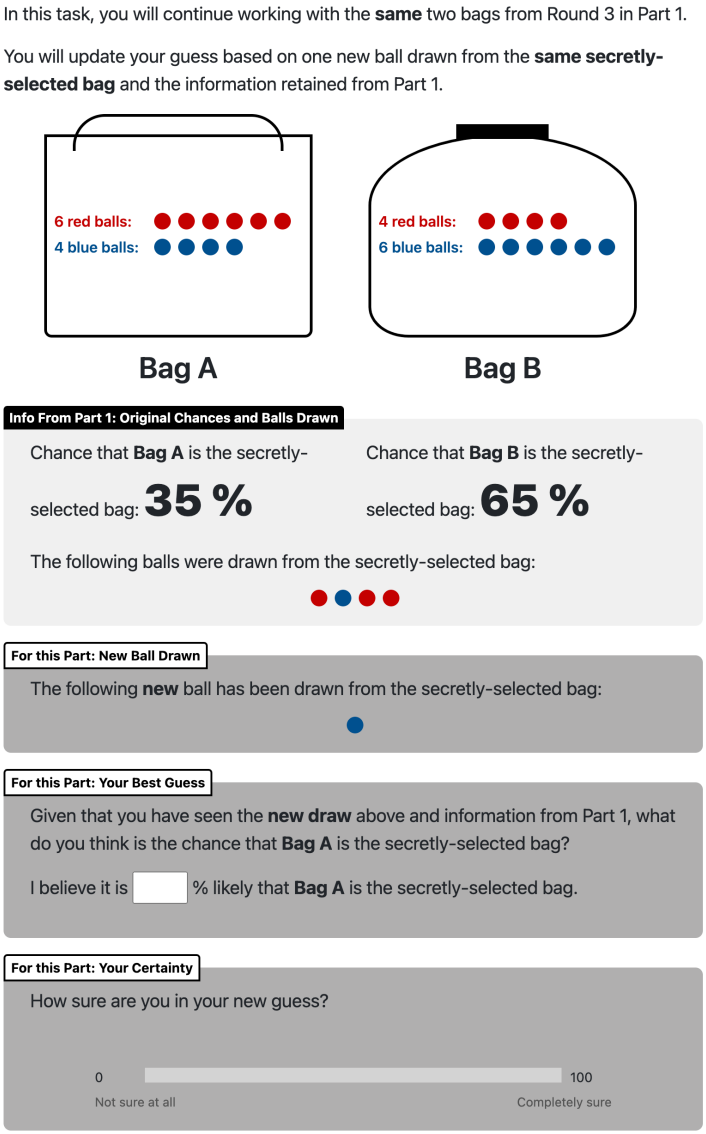


Figure F.2: Screenshot of an Example Update-from-posterior Task in Part 2 in the *NewSignal* Treatment

Notes: The "New Ball Drawn" block was not shown to subjects in the *noNewBall* treatment.

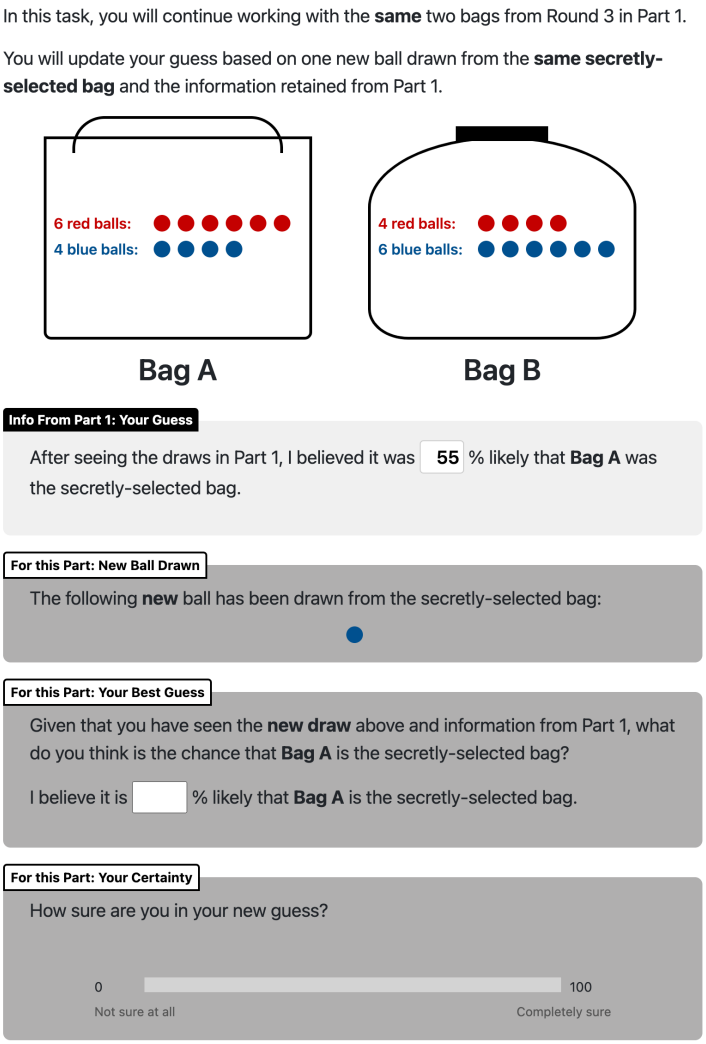
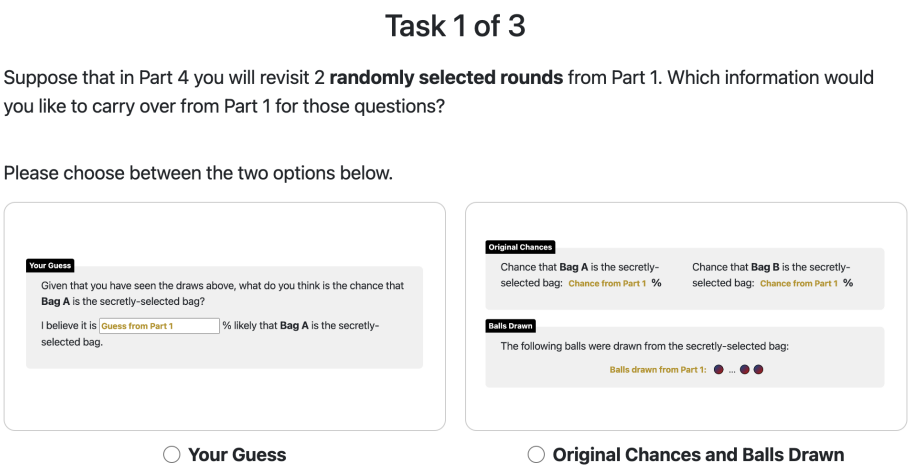


Figure F.3: Screenshot of an Example Update-from-previous-signals Task in Part 2 in the *NewSignal* Treatment

Notes: The "New Ball Drawn" block was not shown to subjects in the *noNewSignal* treatment.



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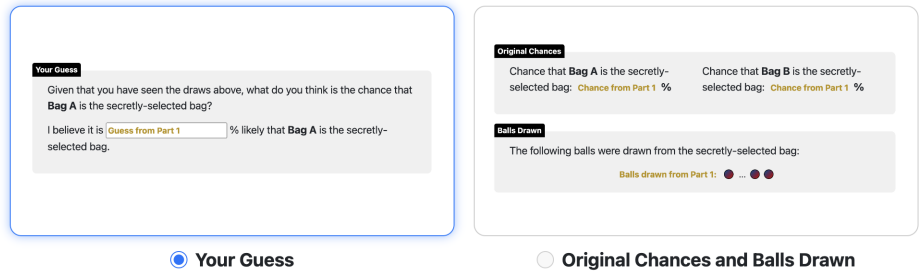
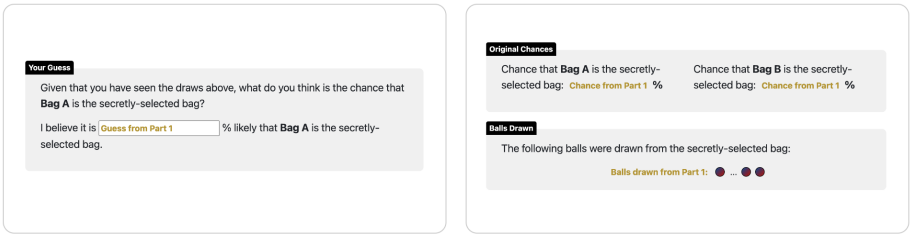


Figure F.4: Screenshots of Unconditional Elicitation in Part 3

Task 3 of 3

Suppose that in Part 4 you will revisit 2 rounds from Part 1, where you saw **relatively more balls drawn (12-15 balls)**. Which information would you like to carry over from Part 1 for those questions?

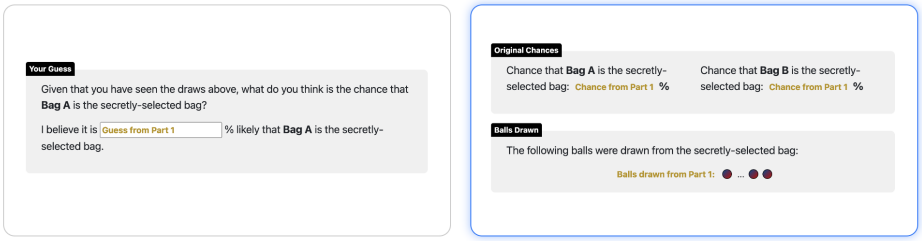
Please choose between the two options below.



◯ **Your Guess** ◯ **Original Chances and Balls Drawn**

[Page Break]

Task 3 of 3



◯ **Your Guess** ◉ **Original Chances and Balls Drawn**

You indicated that you prefer to see **Original Chances and Balls Drawn** for 2 rounds from Part 1, where you saw relatively more balls drawn (12-15 balls)..

Would you instead be willing to see **Your Guess** for those tasks, if we offered you an additional **5 cents bonus**?

◯ **Yes** ◯ **No**

Next

Note: your answer to this question cannot influence whether we offer you this bonus or not. Whether you are offered the bonus is determined by random chance completely independent of your choice. Your answer to this question can determine the information you get only in the case that the computer randomly selects to offer the bonus payment.

Figure F.5: Screenshots of an Example Conditional Elicitation in Part 3

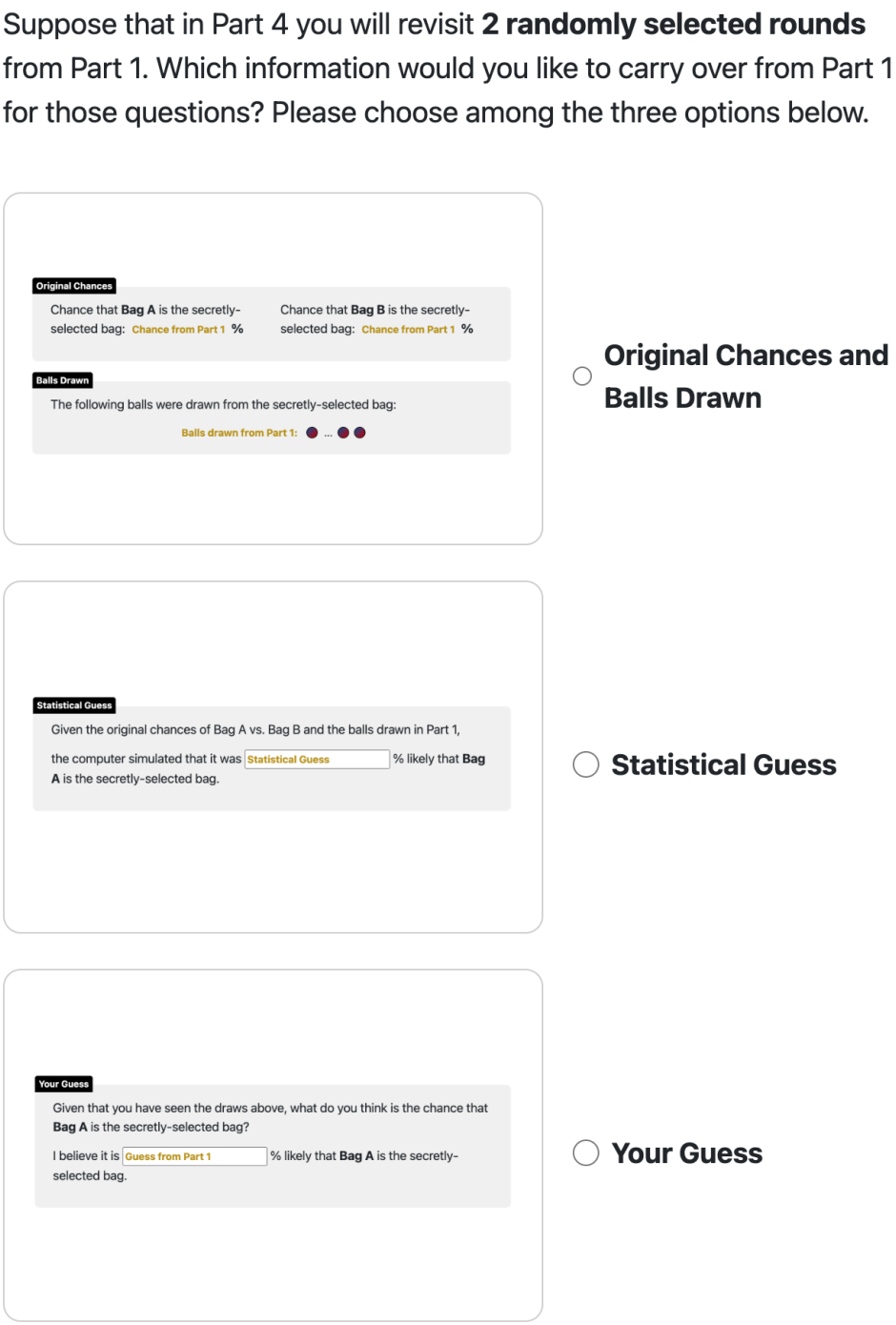
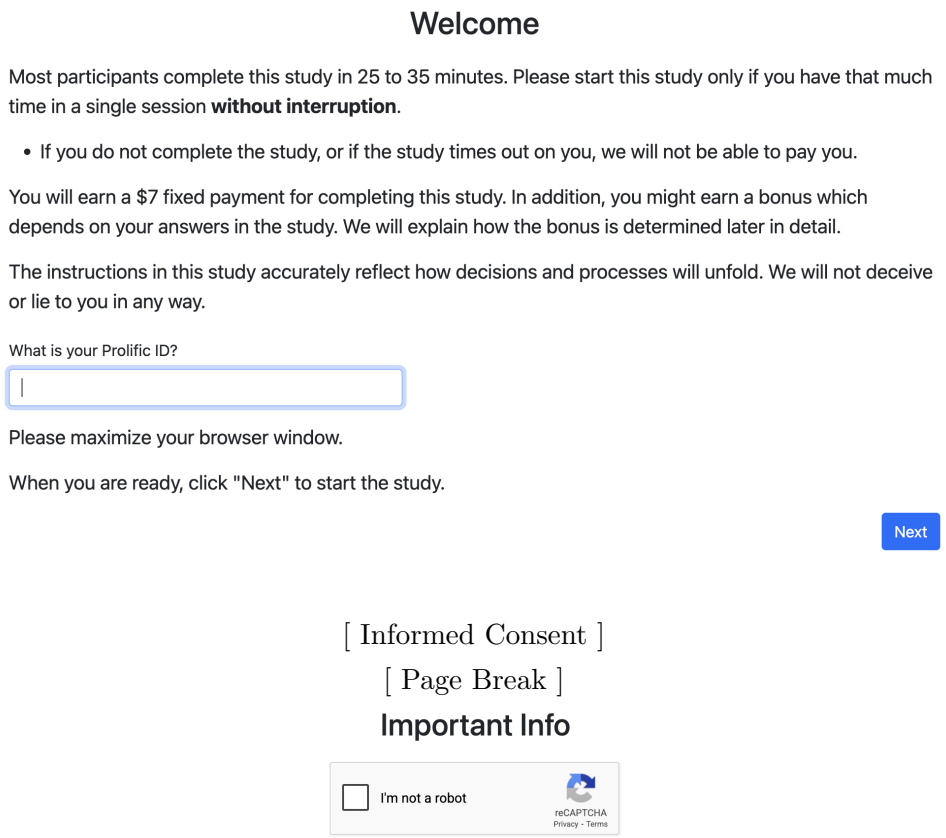


Figure F.6: Screenshots of Preference Elicitation for the Expanded Choice Menu in Part 3

G Instructions and Comprehension Questions

Instructions for each part were presented immediately before the comprehension questions and the corresponding tasks. In Part 1, subjects in both *NewSignal* and *noNewSignal* treatment saw exact the same instructions.



[Informed Consent]

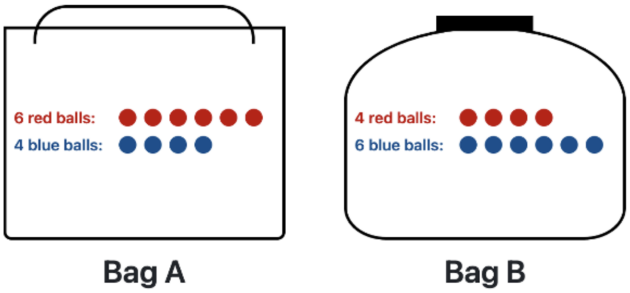
[Page Break]

Part 1: Instructions (1/2)

Task Setup

In Part 1, you'll be asked to complete 20 guessing tasks.

- In each guessing task, there will be two bags "Bag A" and "Bag B". Bag A contains **6 red** balls and **4 blue** balls and Bag B contains **4 red** balls and **6 blue** balls. **This composition is unchanged throughout the experiment.** The following figure shows the two bags with colored balls.



- One of the bags will be secretly selected by the computer with some chance. You will not observe which bag was drawn, but we will tell you the chance that the computer selects Bag A versus Bag B. This chance may vary across the guessing tasks. The secretly-selected bag will be selected each round, and which bag is selected in a given round does not depend on anything that happened in the past; it only depends on the chances that we will provide to you in the current round. In the following example, Bag A and Bag B are selected with equal chance:

Chance of Bag A vs Bag B

Chance that **Bag A** is the secretly-selected bag: **50 %**

Chance that **Bag B** is the secretly-selected bag: **50 %**

- After the computer has chosen a bag, it randomly draws one or more balls from the selected bag, **putting the ball back after each draw**. As an example, if the computer selects two balls from the secretly-selected bag, it will first draw one ball randomly, then put that ball back into the bag, and then make another random draw. Each ball from the secretly-selected bag is equally likely to be selected.
- In the following example, the balls drawn are **red red blue blue red blue**.

Balls Drawn

The following balls were drawn from the secretly-selected bag:

Please click the "Next" button to learn the details of the tasks.

Chance of Bag A vs Bag B

Chance that **Bag A** is the secretly-selected bag: **50 %**

Chance that **Bag B** is the secretly-selected bag: **50 %**

- After the computer has chosen a bag, it randomly draws one or more balls from the selected bag, **putting the ball back after each draw**. As an example, if the computer selects two balls from the secretly-selected bag, it will first draw one ball randomly, then put that ball back into the bag, and then make another random draw. Each ball from the secretly-selected bag is equally likely to be selected.
- In the following example, the balls drawn are **red red blue blue red blue**.

Balls Drawn

The following balls were drawn from the secretly-selected bag:

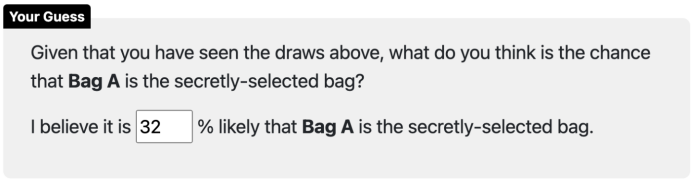
Please click the "Next" button to learn the details of the tasks.

Part 1: Instructions (2/2)

Your tasks

Guessing Tasks

- Your task in Part 1 is to guess the likelihood that **Bag A** is the secretly selected bag *after seeing the balls drawn*.
- You will type your guess as a number between 0 and 100 (without decimal points). In this example, you think it is 32% likely that **Bag A** is the secretly-selected bag.



- The guessing task will count toward your payment. The payment mechanism is designed so that reporting your best guess maximizes the chance of receiving the bonus from this task.

Certainty Ratings

- After providing your guess, you will be asked to rate how sure you are in your guess on a 100 scale, where 0 means you are not sure at all and 100 means you are completely sure.

[Page Break]

Important Info

This experiment consists of four parts and a short follow-up survey:

1. **Part 1 – Guessing Tasks:** you'll make your best guess about the chance that Bag A is the secretly-selected bag;
2. **Part 2 – New Guessing Tasks:** some information will be repeated from Part 1 and you'll see a new ball; Using both, you'll make a new guess;
3. **Part 3 - Information Choices:** you'll choose between some information options for tasks in Part 4;
4. **Part 4 – New Guessing Tasks:** you'll see information you chose from Part 3 and see a new ball; Using both, you'll make a new guess;
5. **Survey:** you'll answer a few questions about yourself and your experience in this experiment.

Important: Because later parts might repeat some information from Part 1, including your guess, and you'll need to rely on those information to complete the tasks, making your best guess in Part 1 will help with the follow-up tasks. Therefore, please report your guesses as accurately as possible.

You are about to begin Part 1. Click "Next" when you're ready.

[Page Break]

[Part 1 Tasks]

The screenshots below show the instructions in the *NewSignal* treatment. In the *noNewSignal* treatment, subjects were not presented with the block showing "New Ball Drawn". The instructions for the *noNewSignal* treatment is as follows:

Your Task

In this part, you will revisit some tasks from Part 1 (i.e., the part you completed just now). In any given task, the secretly selected bag will always be the same bag as it was in that task in Part 1.

No new ball will be drawn from the secretly selected bag.

However, we will show you some information repeated from Part 1.

Your task is to make a guess about the likelihood that Bag A is the secretly selected bag and to provide a certainty rating for your guess, similar to what you did in Part 1.

The guessing task will count toward your payment. The payment mechanism is designed so that reporting your best guess maximizes your chance of receiving the bonus from this task.

Part 2: Instructions (1/1)

Your tasks

In this part, you will revisit some tasks from Part 1 (i.e., the part you completed just now). In any given task, the secretly-selected bag will always be the same bag as it was in that task in Part 1.

A new ball will be drawn from the secretly-selected bag and displayed to you.

In addition to this new information, we will show you some information repeated from Part 1.

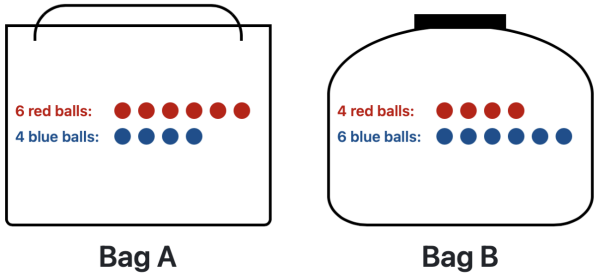
Your task is to make a guess about the likelihood that Bag A is the secretly-selected bag and give a certainty rating of your guess, similar to what you did in Part 1.

The guessing task will count toward your payment. The payment mechanism is designed so that reporting your best guess will maximize the chance of receiving the bonus from this task.

Types of Information

There'll be 10 rounds of tasks in this part. In each round, **either** of the following two types of information will be repeated from Part 1.

- **Your Guess:** This will show the guess you made in the selected task in Part 1. Below is an example screen showing what your tasks will look like in Part 2 if "your guess" is repeated.



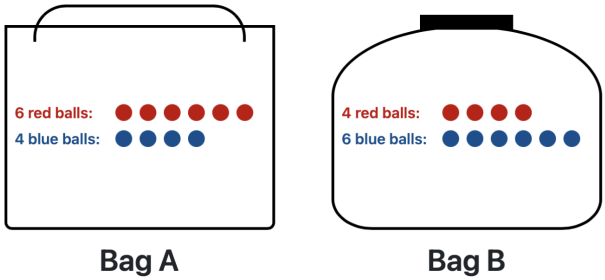
Info From Part 1: Your Guess

After seeing the draws in Part 1, I believed it was 15 % likely that **Bag A** was the secretly-selected bag.

For this Part: New Ball Drawn

The following **new** ball has been drawn from the secretly-selected bag:

- **Original Chances and Balls Drawn:** This will show you the original chance of Bag A vs. B, and the balls drawn from the secretly-selected bag in Part 1. Below is an example screen showing what your tasks will look like in Part 2 if "the original chances and balls drawn" are repeated.



Info From Part 1: Original Chances and Balls Drawn

Chance that **Bag A** is the secretly-selected bag: **40 %**

Chance that **Bag B** is the secretly-selected bag: **60 %**

The following balls were drawn from the secretly-selected bag:

For this Part: New Ball Drawn

The following **new** ball has been drawn from the secretly-selected bag:

Part 2: Instructions (1/1)

Your tasks

In this part, you will revisit some tasks from Part 1 (i.e., the part you completed just now). In any given task, the secretly-selected bag will always be the same bag as it was in that task in Part 1.

A new ball will be drawn from the secretly-selected bag and displayed to you.

In addition to this new information, we will show you some information repeated from Part 1.

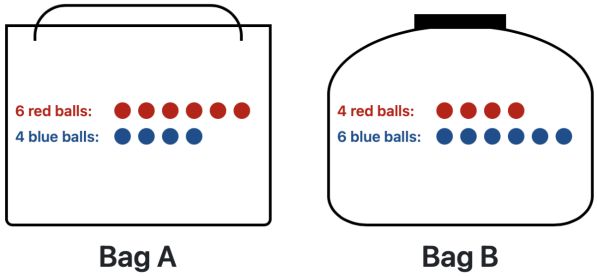
Your task is to make a guess about the likelihood that Bag A is the secretly-selected bag and give a certainty rating of your guess, similar to what you did in Part 1.

The guessing task will count toward your payment. The payment mechanism is designed so that reporting your best guess will maximize the chance of receiving the bonus from this task.

Types of Information

There'll be 10 rounds of tasks in this part. In each round, **either** of the following two types of information will be repeated from Part 1.

- **Your Guess:** This will show the guess you made in the selected task in Part 1. Below is an example screen showing what your tasks will look like in Part 2 if "your guess" is repeated.



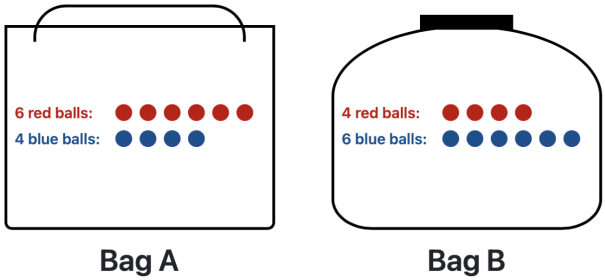
Info From Part 1: Your Guess

After seeing the draws in Part 1, I believed it was 15 % likely that **Bag A** was the secretly-selected bag.

For this Part: New Ball Drawn

The following **new** ball has been drawn from the secretly-selected bag:

- **Original Chances and Balls Drawn:** This will show you the original chance of Bag A vs. B, and the balls drawn from the secretly-selected bag in Part 1. Below is an example screen showing what your tasks will look like in Part 2 if "the original chances and balls drawn" are repeated.



Info From Part 1: Original Chances and Balls Drawn

Chance that **Bag A** is the secretly-selected bag: **40 %**

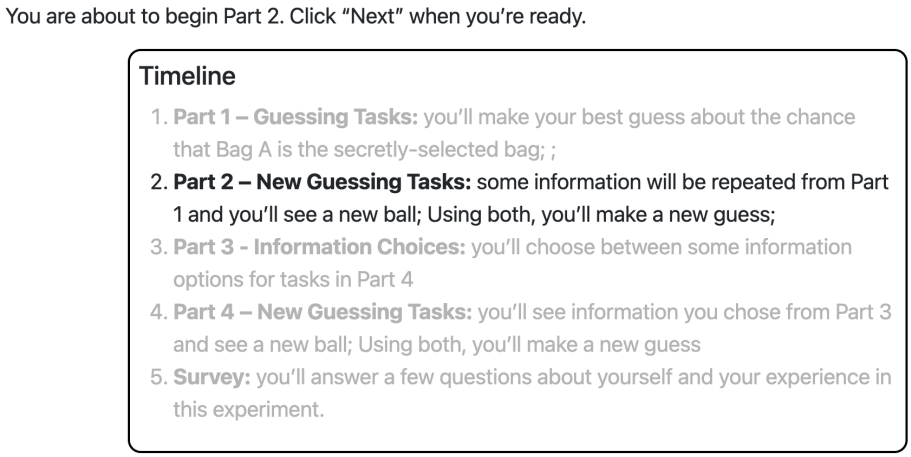
Chance that **Bag B** is the secretly-selected bag: **60 %**

The following balls were drawn from the secretly-selected bag:

For this Part: New Ball Drawn

The following **new** ball has been drawn from the secretly-selected bag:

Below is a screenshot of the transition page in the *NewSignal* treatment.



[Page Break]

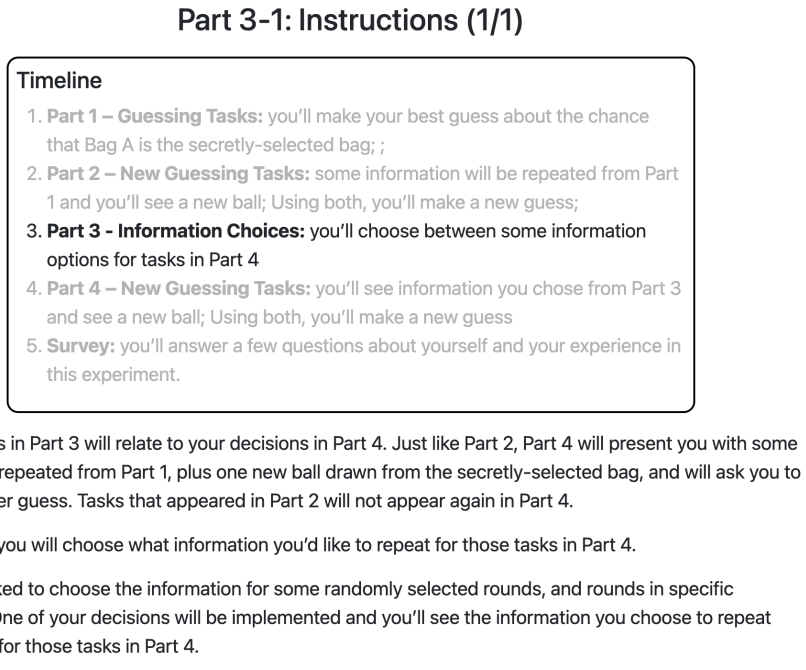
[Part 2 Tasks]

In the *noNewSignal* treatment, the descriptions for Part 2 and Part 4 in the transition page are as follows:

Part 2 - New Guessing Tasks: some information will be repeated from Part 1 and you'll make a guess again

Part 4 – New Guessing Tasks: you'll see information you chose from Part 3 and you'll make a guess again

Below is a screenshot of the introduction of Part 3 tasks in the *NewSignal* treatment.



[Page Break]
[Unconditional Binary Choice]
[Page Break]
[Indifference Break]
[Page Break]
[Conditional Elicitation 1 with binary choice and indifference break on separate pages]
[Conditional Elicitation 2 with binary choice and indifference break on separate pages]

In the *noNewSignal* treatment, the timeline was replaced as in the previous transition page, and the first paragraph was replaced with:
Your choices in Part 3 will relate to your decisions in Part 4. Just like Part 2, Part 4 will present you with some information repeated from Part 1, and will ask you to make another guess. Tasks that appeared in Part 2 will not appear again in Part 4.

Part 3-1: Comprehension Questions (1/2)

Please answer the following question to the best of your ability. You will be able to proceed to the next page after you have answered the question correctly.

Q1: My task in Part 3 is

- ○ to choose the information that I want to help me make my guesses in Part 4
- ○ unrelated to my task in Part 4

Part 3-1: Comprehension Questions (2/2)

Q2: When I make my guesses in Part 4:

- ○ I will see the information I choose to keep, plus one new ball drawn from the secretly-selected bag
- ○ I will see only the information I choose to keep; there are no new balls drawn from the secretly-selected bag

This is not an understanding question; we're just curious about your thoughts before we proceed: Do you think your guesses in Part 4 will or should be different from your guesses in Part 1? (Please select ALL that apply)

- ☐ No; they should be the same because I will not see any new balls.
- ☐ No; they should be the same because the information I have doesn't matter.
- ☐ Yes; they might be different because I will see a new ball.
- ☐ Yes; they might be different because I might have made a mistake in Part 1 or otherwise changed my mind.

[Unconditional Elicitation]

[Conditional Elicitation]

Timeline

1. **Part 1 – Guessing Tasks:** you'll make your best guess about the chance that Bag A is the secretly-selected bag; ;
2. **Part 2 – New Guessing Tasks:** some information will be repeated from Part 1 and you'll see a new ball; Using both, you'll make a new guess;
3. **Part 3 - Information Choices:** you'll choose between some information options for tasks in Part 4
4. **Part 4 – New Guessing Tasks:** you'll see information you chose from Part 3 and see a new ball; Using both, you'll make a new guess
5. **Survey:** you'll answer a few questions about yourself and your experience in this experiment.

Thank you for completing Part 3-1. Before moving on to Part 3-2, please answer the following question.

Do you think there is a statistically correct answer to the questions in Part 1 and Part 2?

- ○ Yes
- ○ No

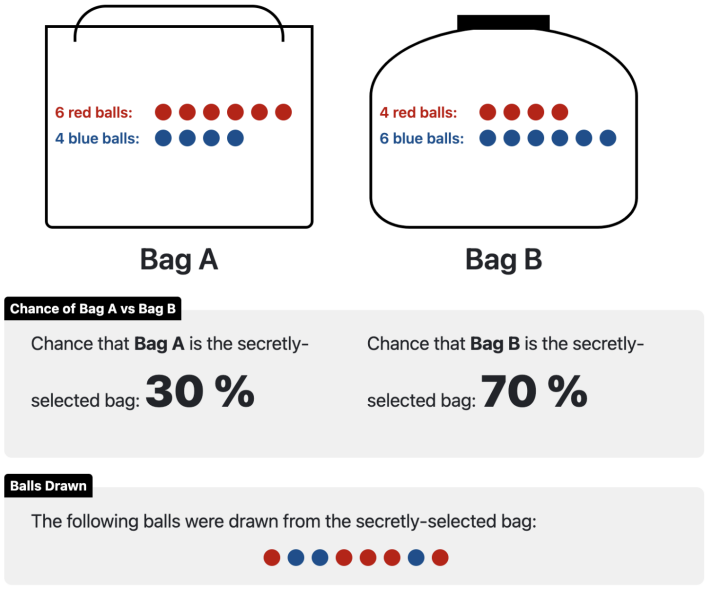
Part 3-2: Instructions (1/2)

Thank you for completing the first part of Part 3. We're now showing you instructions for the second part of Part 3. Please read carefully.

Statistical Guess

In guessing tasks like the ones you've been doing, the computer can simulate a *statistical guess*.

To explain how this *statistical guess* is calculated, consider an example of the guessing question below, like those in Part 1. The numbers and balls drawn are just an example for illustration purposes and to simplify the explanation.



To generate the statistical guess, the computer could run the following procedure 1 billion times:

- First, the computer selects the secretly-selected bag given the chances specified above (30% chance of Bag A and 70% chance of Bag B).
- Then, the computer draws 8 balls from the secretly selected bag given the composition of the colored balls in the bags.
- Next, the computer keeps **only** the cases in which the drawn balls are red blue blue red red red blue red (like shown above).
- Finally, the computer computes the fraction of times in which the secretly-selected bag was Bag A rather than Bag B among the cases remaining from the last step. This is the *statistical guess*.

Below is a screenshot for the last portion of Part 3 instructions in the *NewSignal* treatment. Subjects in the *noNewSignal* treatment did not see the "New Ball Drawn" block.

Part 3-2: Instructions (2/2)

Your Task

Recall that in Part 4, you'll revisit some tasks in Part 1.

You just indicated what information, Your Guess or Original Chances and Balls Drawn, you would like to repeat from Part 1 for those tasks in Part 4.

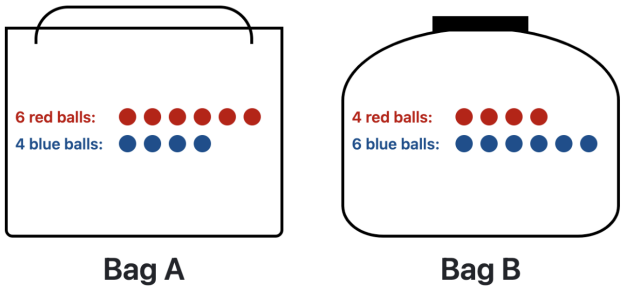
Now, in addition to those two options, we will provide you with the option of learning the Statistical Guess, in case you would prefer to see the Statistical Guess over either of the other two options.

The Statistical Guess provided will coincide with the procedure you learned from the last page, using the chances of Bag A vs. Bag B and the exact sequence of balls drawn as in the corresponding rounds of Part 1.

Remember that one of your decisions in Part 3 will be implemented and you'll see the information you choose for those tasks in Part 4.

Example Screen for Statistical Guess

Below is an example of updating task you'll see in Part 4 if you choose to see Statistical Guess.



Info From Part 1: Statistical Guess

Given the original chances of Bag A vs. Bag B and the balls drawn in Part 1, the computer simulated that it was **55** % likely that **Bag A** was the secretly-selected bag.

For this Part: New Ball Drawn

The following **new** ball has been drawn from the secretly-selected bag:

Part 3-2: Comprehension Questions (1/1)

Please answer the following question to the best of your ability. You will be able to proceed to the next page after you have answered the question correctly.

Q1: What is a statistical guess?

- ○ A guess calculated statistically by computer simulation that accurately reflects the likelihood of Bag A is the secretly-selected bag, given the original chances and the balls drawn
- ○ A guess made by some rule of thumb that approximates the likelihood of Bag A is the secretly-selected bag, given the original chances and the balls drawn

Below is a screenshot for the beginning of Part 4.

Thank you for completing Part 3.

You are about to begin Part 4. Click "Next" when you're ready.

Timeline

1. **Part 1 – Guessing Tasks:** you'll make your best guess about the chance that Bag A is the secretly-selected bag; ;
2. **Part 2 – New Guessing Tasks:** some information will be repeated from Part 1 and you'll see a new ball; Using both, you'll make a new guess;
3. **Part 3 - Information Choices:** you'll choose between some information options for tasks in Part 4
4. **Part 4 – New Guessing Tasks:** you'll see information you chose from Part 3 and see a new ball; Using both, you'll make a new guess
5. **Survey:** you'll answer a few questions about yourself and your experience in this experiment.

One of the guessing tasks from Part 1, 2, or this part will be selected for payment. The payment mechanism is designed so that reporting your best guess maximizes the chance of receiving the bonus from this task.