Online Appendix for: Disentangling Suboptimal Updating: Structure, Sequencing, and Complexity

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1 Instructions

1.1 Common Instructions

The instructions shown in this subsection were seen by participants regardless of their treatment. These initial instructions aimed to familiarize participants with the mechanism through which they submitted their posteriors.

Figure 1: Initial Instructions I

The Interface	The Interface
In this experiment, you will evaluate the chances that certain events happen. To explain how it works consider the following simple example.	In this experiment, you will evaluate the chances that certain events happen. To explain how it works consider the following simple example.
Suppose we flip a fair coin (50% chance to land on either side), which has the word Failure written on one side and the word Success on the other.	Suppose we flip a fair coin (50% chance to land on either side), which has the word Failure written on one side and the word Success on the other.
(Failure) (Success)	Failure Success
Consider the following trivial question:	Consider the following trivial question:
What is the chance that the coin lands on Failure vs. Success? Failure %	What is the chance that the coin lands on Failure vs. Success? Failure 19% 81% Success
In the experiment, you will provide an answer to this type of question by using a slider like the one you see above. Please go ahead and click anywhere on the slider to select a point.	In the experiment, you will provide an answer to this type of question by using a slider like the one you see above. Please go ahead and click anywhere on the slider to select a point.
Your choice represents the % chance that the coin lands on Failure (left) and the % chance that the coin lands on Success (right). These two percentages add up to 100.	Your choice represents the % chance that the coin lands on Failure (left) and the % chance that the coin lands on Success (right). These two percentages add up to 100.
After you click somewhere on the slider, you can re-adjust your answer, by clicking somewhere else, by using the left/right arrows on your keyboard, or by dragging the indicator to the left/right. Give it a try. Notice how the Failure and Success percentage changes as you move the slider.	After you click somewhere on the slider, you can re-adjust your answer, by clicking somewhere else, by using the left/right arrows on your keyboard, or by dragging the indicator to the left/right. Give it a try. Notice how the Failure and Success percentage changes as you move the slider.
Setting the slider exactly at the middle means that both are equally likely (50%,50%). As you move the indicator to the left, the probability of Failure goes up, and the probability of Success goes down. As you move the indicator to the right, the opposite happens.	Setting the slider exactly at the middle means that both are equally likely (50%,50%). As you move the indicator to the left, the probability of Failure goes up, and the probability of Success goes down. As you move the indicator to the right, the opposite happens.
Wait 27s	Next 🕨

Figure 1 shows the initial page presented to the participants. To ensure that participants spend time internalizing the information, the *Next* button was made available only after a countdown of 30 seconds.¹ On this, and every other page, there is initially no indicator on the slider via which participants submit their probabilities. We made this decision to prevent participants from being anchored. The indicator and accompanying probabilities show up only after participants click somewhere on the slider. Compare the left (before clicking) and right (after clicking) screenshots in Figure 1.

¹Compare buttons on the bottom of the left and right screenshots shown in Figure 1. The left screenshot is taken 3 seconds after the page was loaded, whereas the right screenshot is taken after at least 30 seconds.

Figure 2: Initial Instructions II

The Interface	The Interface
Consider another example.	Consider one more example.
Card Example 1: In a deck of 10 cards, the word Failure is written on 2 of them, while the word Success is written on 8 of them, as shown in the image below.	Card Example 2: In a deck of 10 cards, the word Failure is written on 7 of them, while the word Success is written on 3 of them, as shown in the image below.
Failure Success	Failure Success
If the cards are well shuffled and you randomly draw a single card from the deck:	
What is the chance that the card is a Failure vs Success? Failure 20% 80% Success	What is the chance that the card is a Failure vs Success? Failure 60% 40% Success
Please select your answer by clicking on the slider above.	Please select your answer by clicking on the slider above.
Recall that you can re-adjust your answers, either by clicking somewhere else or by dragging the indicator to the left/right. Give it a try.	Recall that you can re-adjust your answers, either by clicking somewhere else or by dragging the indicator to the left/right. Give it a try.
Notice how the Failure and Success percentage changes, as it corresponds to your choice. Make sure you understand how the slider works as it will be important for the rest of the study.	Notice how the Failure and Success percentage changes, as it corresponds to your choice. Make sure you understand how the slider works as it will be important for the rest of this study.
As you move the indicator to the left, the probability of Failure goes up. As you move the indicator to the right, the probability of Success goes up.	As you move the indicator to the left, the probability of Failure goes up. As you move the indicator to the right, the probability of Success goes up.
4 Previous Wait 0s	Previous Proceed to Concrete Proceed to

Instructions continue by giving participants two more examples and reminding them how the mechanism works; see Figure 2. After these examples, participants are invited to start a simple comprehension test to ensure they know how to use the slider properly, see Figure 3.



Comprehension Question 1 out of 3	Comprehension Question 2 out of 3			
Please follow the instructions below.	You correctly answered the previous question. Please follow the instructions below.			
Select the 30% Failure and 70% Success point. Failure 30% 70% Success	Select the 90% Failure and 10% Success point. Failure 90% 10% Success			
Submit Answer	Submit Answer			
Comprehension Question 3 out of 3 (Attempt 1 out of 3)	Comprehension Questions Finished			
You correctly answered the previous question. Please follow the instructions below.				
Select the 60% Failure and 40% Success point. Failure 60% 40% Success	Well done!			
	You demonstrated that you clearly understand how the interface functions.			
Submit Answer	Proceed			

If participants submitted wrong answers more than twice, they were not allowed to

continue the study. Succesful participants continued with treatment-specific instructions.

1.2 Baseline Treatment Instructions

Instructions Instructions Details of the Main Ouestion Details of the Main Question periment consists of several rounds Here is how it will look like. In each round, a project will be selected randomly from a pool of projects (with each project having the same probability of being selected). If the test is Positiv what is the chance that the project is a Failure vs Success? Failure % % Success Within this pool of projects, 85% of projects are Failures while 15% are Successful. If the test is Negative Your task is to evaluate the chance that the project that was randomly selected is a Failure vs. Success. what is the chance that the project is a Failure vs Success? % To aid your evaluation, the computer will run a test on the selected project. Failure % Succ Once more, you can click, drag, or re-click anywhere on the interval to choose the chance of Failure vs Success that you think is correct in each question. Test Accuracy is 80% which means that: If the project is a Success the signal will be Positive with 80% probability and Negative with 20% probability. If the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. In the actual round, once you make both decisions a Submit button will appear We will ask you to submit two evaluations: • If the test is Positive, what is the chance that the project is a Success vs. Failure When you click the Submit button you will no longer be able to change your answer . If the test is Negative, what is the chance that the project is a Success vs. Failure? Instructions Instructions Rounds **Prior Information** Throughout the experiment you will be reminded of the information regarding the chances of Failed and Successful projects as well as the accuracy of the test. In particular you will see the box below. You will play a total of 20 rounds. Rounds are independent of each other You will receive \$5 for completing the experiment. Prior Information: nor information: • 85% of Projects are Failures; 15% of Projects are Successful. • 15et Accuracy is 80% which means that: • If the project is a Success the signal will be Positive with 80% probability and Negative with 20% probability. In addition, you have a 20% chance of receiving a bonus payment of \$20. If you are selected to receive the bonus payment the computer will randomly select one of the 20 rounds. Each round is equally likely to be chosen. Your answers in the randomly selected round will determine whether you receive the bonus or not, as will be described shortly. · If the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability Whether you are selected to receive the bonus payment and which round counts for your bonus will be determ d at the end whether you are setted to receive the bonus payment and which round counts for your bonus will be determined at the end of the experiment. Therefore, it is in your best interests to do your best in every single round, because that might be the round that determines your bonus! Feedback At the end of each round, once you submit your answers, you will see the actual test result, and whether the project was a Failure or Success. Important: The prior information, i.e., the fraction of Failure and Success Projects and the Test Accuracy, is the same in every round. Moreover, rounds are completely independent of each other and your submitted guesses do not influence the chances of a randomly selected project being a success or a failure or the test results. This information will be summarized at the bottom of the screen in a table, which will keep track of the outcomes of all rounds that you have previously played If you are confident in your answer, you can continue to submit the same answers as you move through the rounds. However, if, given the feedback, you have a new evaluation, naturally, you can change your answers. ✓ Previous Next ► ✓ Previous Next ► Instructions Instructions How Payments are Calculated In every question of this type, you will use the slider to indicate the probabilities of Failure and Success Summary Let X represent your chosen probability of Failure, and consequently 100 - X will be your chosen probability of Success · You will play a total of 20 rounds Now my pay a total or 20 volumes. Now any end to a second se After you submit your choice of X, the program will generate a number from 0 to 100, with each number being equally likely. Call this number Y. Your chosen number X the randomly generated number Y, and whether the outcome is Failure or Success will determine your chances of winning \$20. If Y is greater than or equal to X, you will win \$20 with Y% chance. If Y is less than X, you will win \$20 with extreme is Failure. Failure vs. Success If you are confident in your answer, you can continue to submit the same answer Given this payment scheme, it is always in your best interest to choose X that represents your best evaluation of the chance that Failure and Success will happen. · If given the feedback you have a new evaluation, naturally, you can change your answer The important thing to remember is that we have chosen the payment scheme so that it is always in your best interest to honestly report your best evaluation of the chance that Failure and Success happens. This is the end of Instruction To proceed click the Begin Study button Previous Next Begin Study

Figure 4: Baseline Treatment Instructions

1.3 Simultaneous Treatment Instructions

Figure 5: Simultaneous Treatment Instructions

Instructions Instructions Details of the Main Question Details of the Main Question The experiment consists of several rounds Here is how it will look like In each round, a project will be selected randomly from a pool of projects (with each project having the same probability of If Test 1 is Positive and Test 2 is Positiv being selected what is the chance that the project is a Failure vs Success? Within this pool of projects 50% of projects are Failures while 50% are Successful. Failure 96 % Succes Your task is to evaluate the chance that the project that was randomly selected is a Failure vs. Success. If Test 1 is Positive and Test 2 is Negative what is the chance that the project is a Failure vs Success? To aid your evaluation, the computer will run two tests on the selected project. Failure % % Success Test 1 Accuracy is 85% which means that: If the project is a Success the signal will be Positive with 85% probability and Negative with 15% probability. If the project is a Failure the signal will be Negative with 85% probability and Positive with 15% probability. Once more, you can click, drag, or re-click anywhere on the interval to choose the chance of Failure vs Success that you think is correct in each question Test 2 Accuracy is 80% which means that: If the project is a Success the signal will be Positive with 80% probability and Negative with 20% probability. For each question make sure to read Test 1 and Test 2 results carefully, as they may change from round to round. • If the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability In the actual round, once you make both decisions a **Submit** button will appear. When you click the **Submit** button you will no longer be able to change your answers We will ask you to submit evaluations given both test results. Previous Next Next 🕨 Instructions Instructions Prior Information Rounds Throughout the experiment you will be reminded of the information regarding the chances of Failed and Successful projects as well as the accuracy of the test. In particular you will see the box below. You will play a total of 20 rounds. Rounds are independent of each other Prior Information: You will receive \$5 for completing the experiment. · 50% of Projects are Failures; 50% of Projects are Successful. 50% of Projects are Failures; 50% of Projects are Successful. Test 1 Accuracy is 85% which means that: • If the project is a Success the signal will be Positive with 85% probability and Negative with 15% probability. • If the project is a Failure the signal will be Negative with 85% probability and Positive with 15% probability. • Test 2 Accuracy is 80% which means that: • If the project is a Failure the signal will be Positive with 80% probability and Negative with 20% probability. • If the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. In addition, you have a 20% chance of receiving a bonus payment of \$20. If you are selected to receive the bonus payment the computer will randomly select one of the 20 rounds. Each round is equally likely to be chosen. Your answers in the randomly selected round will determine whether you receive the bonus or not, as will be described shortly. Whether you are selected to receive the bonus payment and which round counts for your bonus will be determined at the end of the experiment. Therefore, it is in your best interests to do your best in every single round, because that might be the round that determines your bonus! Important: The prior information, i.e., the fraction of Failure and Success Projects and the Test Accuracy, is the same in every round. Moreover, rounds are completely independent of each other and your submitted guesses do not influence the chances of a randomly selected project being a success or a failure or the test results. Feedback At the end of each round, once you submit your answers, you will see the actual test result, and whether the project was a Failure or Success. If you are confident in your answer, you can continue to submit the same answers as you move through the rounds. However This information will be summarized at the bottom of the screen in a table, which will keep track of the outcomes of all rounds if, given the feedback, you have a new evaluation, naturally, you can change your answers. that you have previously played. ◆ Previous Next ► Instructions Instructions How Payments are Calculated ry question of this type, you will use the slider to indicate the probabilities of Failure and Success Summary You will play a total of 20 rounds. All rounds are the same in terms of Failure/Success probabilities and test accuracies. Rounds are completely independent of each other, that is, the outcomes of previous rounds do not affect the chances that the next project is a failure or Success. To maximize your payment, given the test results, you should give your best evaluation of the chance that the the project is a Let X represent your chosen probability of Failure, and consequently 100 - X will be your chosen probability of Succe After you submit your choice of X, the program will generate a number from 0 to 100, with each number being equally likely Arier you submit your choice of X, the program win generate a number form to into, win each number being equal winey. Call this number Y. Your chosen number X, the randomly generated number Y, and whether the outcome is Failure or Success will determine your chances of winning \$20. If Y is greater than or equal to X, you will win \$20 with Y% chance. If Y is less than X, you will win \$20 if the outcome is Failure. Failure vs. Success If you are confident in your answer, you can continue to submit the same answer. If given the feedback you have a new evaluation, naturally, you can change your answer Given this payment scheme, it is always in your best interest to choose X that represents your best evaluation of the chance that Failure and Success will happen The important thing to remember is that we have chosen the payment scheme so that it is always in your best interest to honestly report your best evaluation of the chance that Failure and Success happens.

Previous
 Begin Study

This is the end of Instructions. To proceed click the Begin Study button

1.4 Sequential Treatment Instructions

Figure 6: Sequential Treatment Instructions

Instructions Details of the Main Ouestion Instructions The experiment consists of several rounds Details of the Main Question In each round, a project will be selected randomly from a pool of projects (with each project having the same probability of being selected) Here is how it will look like. Within this pool of projects 50% of projects are Failures while 50% are Success Test 1 is Positiv what is the chance that the project is a Failure vs Success? Your task is to evaluate the chance that the project that was randomly selected is a Failure vs. Success Failure % Once more, you can click, drag, or re-click anywhere on the interval to choose the chance of Failure vs Success that you think is correct in each question. To aid your evaluation, the computer will run two tests on the selected project. Test 1 Accuracy is **85%** which means that: • If the project is a Success the signal will be Positive with 85% probability and Negative with 15% probability • If the project is a Failure the signal will be Negative with 85% probability and Positive with 15% probability. Make sure to read Test 1 results carefully, as they may change from round to round In the actual round, once you make both decisions a Submit button will appea Test 2 Accuracy is 80% which means that: When you click the Submit button you will no longer be able to change your answers If the project is a Success the signal will be Positive with 80% probability and Negative with 20% probability If the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. We will ask you to submit an evaluation after receiving Test 1 results. Afterwards we will ask you to submit two more evaluations: • Given the result of Test 1, if Test 2 is Positive, what is the chance that the project is a Success vs. Failure? • Given the result of Test 1, if Test 2 is Negative, what is the chance that the project is a Success vs. Failure Next 🕨 Instructions Details of the Main Question Instructions After receiving the result of Test 1 and submitting your evaluation, you will be asked for two more evaluations. For each possible Test 2 result (Positive and Negative), you will select a point that indicates the chance that the randomly selected project is a Success vs. Failure given the test result. Prior Information Throughout the experiment you will be reminded of the information regarding the chances of Failed and Successful projects as well as the accuracy of the test. In particular you will see the box below You will also be reminded of the result of Test 1. See below Prior Information: • 50% of Projects are Failures; 50% of Projects are Successful. Test 1 is Positive. · Test 1 Accuracy is 85% which means that Test 1 Accuracy is 85% which means that: If the project is a Success the signal will be Positive with 85% probability and Negative with 15% probability. If the project is a Success the signal will be Negative with 85% probability and Positive with 15% probability. Test 2 Accuracy is 80% which means that: If the project is a Success the signal will be Positive with 80% probability and Negative with 20% probability. If the project is a Success the signal will be Positive with 80% probability and Negative with 20% probability. If the project is a Success the signal will be Negative with 80% probability and Positive with 20% probability. If Test 2 is Positiv what is the chance that the project is a Failure vs Success? Failure % % Success If Test 2 is Negative what is the chance that the project is a Failure vs Success? Failure % % Success Feedback At the end of each round, once you submit your answers, you will see the actual test result, and whether the project was a Once more, you can click, drag, or re-click anywhere on the interval to choose the chance of Failure vs Success that you think is Failure or Su correct in each question. This information will be summarized at the bottom of the screen in a table, which will keep track of the outcomes of all rounds Make sure to read Test 1 and Test 2 results carefully, as they may change from round to round. that you have previously played. In the actual round, once you make both decisions a **Submit** button will appear. When you click the **Submit** button you will no longer be able to change your answers Next ► Instructions Instructions How Payments are Calculated Rounds You will play a total of 20 rounds. Rounds are independent of each other. In every question of this type, you will use the slider to indicate the probabilities of Failure and Success. You will receive \$5 for completing the experiment present your chosen probability of Failure, and consequently 100 - X will be your chosen probability of Su In addition, you have a 20% chance of receiving a bonus payment of \$20. If you are selected to receive the bonus payment the computer will randomly select one of the 20 rounds. Each round is equally likely to be chosen. Your answers in the randomly selected round will determine whether you receive the bonus or not, as will be described shortly. After you submit your choice of X, the program will generate a number from 0 to 100, with each number being equally likely. Call this number Y. Your chosen number X, the randomly generated number Y, and whether the outco will determine your chances of winning \$20. If Y is greater than or equal to X, you will win \$20 with 1% chance. If Y is less than X, you will win \$20 if the outcome is Failure. Whether you are selected to receive the bonus payment and which round counts for your bonus will be determined at the end of the experiment. Therefore, it is in your best interests to do your best in every single round, because that might be the round that determines your bonus! Given this payment scheme, it is always in your best interest to choose X that represents your best evaluation of the chance that Failure and Success will happen. Important: The prior information, i.e., the fraction of Failure and Success Projects and the Test Accuracy, is the same in every round. Moreover, rounds are completely independent of each other and your submitted guesses do not influence the chances of a randomly selected project being a success or a failure or the test results. The important thing to remember is that we have chosen the payment scheme so that it is always in your best interest to honestly report your best evaluation of the chance that Failure and Success happens. If you are confident in your answer, you can continue to submit the same answers as you move through the rounds. However, if, given the feedback, you have a new evaluation, naturally, you can change your answ

2 Interface

2.1 Baseline Treatment Interface

We present various screenshots of the interface presented to participants in the baseline treatments at different stages of the study. We highlight important features below.

Figure 7: Baseline Treatment Interface

Probability Evaluation (Round 1)	Probability Evaluation (Round 1)
Prior Information: • 85% of Projects are Failures; 15% of Projects are Successful. • Test Accuracy is 80% which means that: • If the project is a Success the signal will be Positive with 80% probability and Negative with 20% probability. • If the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability.	Prior Information: • 85% of Projects are Failures; 15% of Projects are Successful. • Test Accuracy is 80% which means that: • If the project is a Success the signal will be Positive with 80% probability and Negative with 20% probability. • If the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability.
	If the test is Positive what is the chance that the project is a Failure vs Success? Failure % % Success
	If the test is Negative what is the chance that the project is a Failure vs Success? Failure % % Success
Proceed	
Probability Evaluation (Round 1)	Probability Evaluation (Round 1)
Prior Information: • 85% of Projects are failures; 15% of Projects are Successful. • Test Accuracy is 80% which means that: • If the project is a Success the signal will be Positive with 80% probability and Negative with 20% probability. • If the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability.	Prior Information: • 85% of Projects are Failures: 15% of Projects are Successful. • Test Accuracy is 65% which means that: • If the project is a Success the signal will be Positive with 80% probability and Negative with 20% probability. • If the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability.
If the text is Positive what is the chance that the project is a Failure vs Success? Failure 28% 72% Success	The Test was Negative.
If the test is Negative what is the chance that the project is a Failure vs Success? Failure 93% 7% Success	The Project was a Failure.
Submit Evaluation	Next Round
Probability Evaluation (Round 2)	Probability Evaluation (Round 17)
Prior Information: • 85% of Projects are Failures; 15% of Projects are Successful. • Test Accuracy is 80% which means that: • If the project is a Success the signal will be Positive with 80% probability and Negative with 20% probability. • If the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability.	Prior Information: • 85% of Projects are Failures; 15% of Projects are Successful. • Test Accuracy is 80% which means that: • If the project is a Success the signal will be Positive with 80% probability and Negative with 20% probability. • If the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability.
If the test is Positive what is the chance that the project is a Failure vs Success? Failure 22% 78% Success	If the test is Positive what is the chance that the project is a Failure vs Success? Failure 34% 66% Success
If the test is Negative what is the chance that the project is a Failure vs Success? Failure 97% 3% Success	If the test is Negative what is the chance that the project is a Failure vs Success? Failure 95% 5% Success
Submit Evaluation	Submit Evaluation
Previous Rounds' Outcomes Round 1 Signal N Project F Phosites, NiNegative, Sisuccess, Fifallure	Previous Rounds' Outcorrest N N P P N N P P N N P P N N P P N N P P N N P P N N P P N N P P N N P P N N P P N N P P N N P P N N P P N N P P N N P P N N P P N N P P N<

• As clarified in the instructions, throughout the experiment, at the top, participants

see information regarding the prior probability of successful/failed projects as well as the signal accuracy.

- As clarified in the instructions, when asked "*If the test is Positive/Negative, what is the chance that the project is a Failure vs. Success?*" there is initially no indicator on the slider. We made this decision to prevent participants from being anchored. Only after they click somewhere on the slider does the indicator and the accompanying probabilities show up. For a concrete example, compare the top right and middle left screenshots in Figure 7.
- After clicking the "Submit Evaluation" button, participants were informed about the particular realized value of the signal and whether the project was a Failure or Success. See the middle right screenshot above.
- The realized signals and project outcomes from previous rounds are summarized in a table at the bottom of the interface. See bottom left for an example in Round 2 and bottom right for an example in Round 17. We keep track of past outcomes to shut down possible effects that imperfect recall may have.

2.2 Simultaneous Treatment Interface



	Probability Evaluation (Round 1)
Prior Information: • 08% of Projects are Failures; 50% of Projects are Successful. • Test 1 Accuracy is 85% which means that: • If the project is a Success the signal will be Negative with 85% probability and Negative with 15% probability. • If the project is a failure the signal will be Negative with 85% probability and Positive with 15% probability. • Test 2 Accuracy is 80% which means that: • If the project is a Success the signal will be Negative with 80% probability and Negative with 20% probability. • If the project is a Failure the signal will be Negative with 80% probability and Negative with 20% probability.	Prior Information: • 50% of Projects are Failures; 50% of Projects are Successful. • Test 1 Accuracy is 85% which means that: • If the project is a Success the signal will be Positive with 85% probability and Negative with 15% probability. • If the project is a Failure the signal will be Negative with 85% probability and Positive with 15% probability. • Test 2 Accuracy is 80% which means that: • If the project is a Success the signal will be Positive with 80% probability and Negative with 20% probability. • If the project is a Failure the signal will be Negative with 80% probability and Negative with 20% probability. • If the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability.
If Test 1 is Negative and Test 2 is Positive what is the chance that the project is a Failure vs Sucess?	Test 1 was Negative.
Failure 58% 42% Success	Test 2 was Negative.
If Test 1 is Negative and Test 2 is Negative what is the chance that the project is a Failure vs Sucess? Failure 97% 3% Success	The project was a Failure.
Submit Evaluation	Next Round
Probability Evaluation (Round 2) Prior Information: 9.0% of Projects are Failurer; 50% of Projects are Successful. 19.11 Accuracy is 80% which means that: 10.11 the project is a Successful be Positive with 85% probability and Positive with 15% probability. 10.11 the project is a Success the signal will be Negative with 80% probability and Negative with 20% probability. 10.11 the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. 10.11 the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. 10.11 the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. 11.11 the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. 12.11 the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. 13.11 the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. 14.11 the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. 15.11 the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. 15.11 the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. 15.11 the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. 15.11 the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. 15.11 the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. 15.11 the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. 15.11 the project is a Failure the signal will be Negative with 80% probability. 15.11 the project is a Failure the signal will be Negative with 80% probability. 15.11 the pro	Probability Evaluation (Round 17) Prior Information: 9. % of Projects are Failures; 50% of Projects are Successful. 19. The Accuracy is 85% which means that: 10. If the project is a Success the signal will be Positive with 85% probability and Positive with 15% probability. 10. If the project is a Success the signal will be Positive with 85% probability and Negative with 20% probability. 11. If the project is a Success the signal will be Positive with 85% probability and Negative with 20% probability. 12. If the project is a Failure the signal will be Positive with 80% probability and Positive with 20% probability. 13. If the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. 14. If the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. 15. If the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. 15. If the project is a Failure the signal will be Negative with 80% probability and Positive with 20% probability. 16. If the project is a Failure the signal will be Negative with 80% probability and Positive with 20% prob
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Display of Display and Display	Probability Evaluation (Round 17) Dividing the service of the

• Most of the design choices are unchanged from the Baseline treatment. However, in the simultaneous treatment, participants received both signals at the same time.

2.3 Sequential Treatment Interface

Probability Evaluation (Round 16)	Probability Evaluation (Round 16)			
Prior Information: • S0% of Projects are Failures; 50% of Projects are Successful. • If the project is a Success the signal will be Positive with 85% probability and Negative with 15% probability. • If the project is a Success the signal will be Negative with 85% probability and Positive with 15% probability. • If the project is a Failure the signal will be Positive with 85% probability and Positive with 15% probability. • If the project is a Failure the signal will be Positive with 80% probability and Negative with 20% probability. • If the project is a Failure the signal will be Positive with 80% probability and Positive with 20% probability.	Prior Information: S0% of Projects are Successful. First Accuracy is 85% which means that If the project is a Success the signal will be Positive with 85% probability and Negative with 15% probability. If the project is a Success the signal will be Negative with 85% probability and Positive with 15% probability. Test Accuracy is 90% which means that If the project is a Success the signal will be Positive with 80% probability and Negative with 25% probability. If the project is a Success the signal will be Positive with 80% probability and Positive with 25% probability. If the project is a Success the signal will be Positive with 80% probability and Negative with 20% probability. If the project is a Success the signal will be Negative with 80% probability and Positive with 25% probability. If the project is a Success the signal will be Negative with 80% probability and Positive with 25% probability. If the project is a Success the signal will be Negative with 80% probability and Positive with 25% probability. If the project is a Success the signal will be Negative with 80% probability and Positive with 25% probability. If the project is a Success the signal will be Negative with 80% probability and Positive with 25% probability. If the project is a Success the signal will be Negative with 80% probability and Positive with 25% probability. If the project is a Success the signal will be Negative with 80% probability and Positive with 25% probability. If the project is a Success the signal will be Negative with 80% probability and Positive with 25% probability. If the project is a Success the signal will be Negative with 80% probability and Positive with 25% probability. If the project is a Success the signal will be Negative with 80% probability and Positive with 25% probability. If the project is a Success the signal will be Negative with 80% probability and Positive with 25% probability. If the project is a Success the signal will be Negative with 80% probability. If the project is a Success the signal will be			
Test 1 is Positive. What is the chance that the project is a Failure vs Success?	Test 1 is Positive.			
Tanue 17.8 UV.8 diccess	If Test 2 is Positive what is the chance that the project is a Failure vs Success? Failure 6%94% Success			
	If Test 2 is Negative what is the chance that the project is a Failure vs Success? Failure 44% 56% Success			
Submit Evaluation	Submit Evaluation			
Previous Rounds' Outcomes Round 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 Signal 1 N P P N N P P P P N N N N Signal 2 P N N N P P P P N <td< td=""><td>Previous Rounds' Outcomes Round 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 Signal 1 N P P N N P P P N</td></td<>	Previous Rounds' Outcomes Round 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 Signal 1 N P P N N P P P N			

- Once more, most of the design choices are unchanged from the previous treatments. However, in the sequential treatment, participants received signals sequentially. Upon receiving the first signal, their posterior probability was elicited. Afterward, participants stated their posteriors conditional on the realized value of the second signal.
- The interface displays the outcome of the first signal when participants make choices conditional on the outcome of the second signal.

3 Related Data Analysis

3.1 Individual Level Analysis

Figure 8 displays the counterpart of Figure 9 in the main text, utilizing data from the last five rounds only.



Figure 8: Average Individual Choices: Last Five Rounds

<u>Notes:</u> To help distinguish the large amount of data bundled on the pBRN level, we apply a jitter of 1.5 magnitude. This jittering perturbs the datapoint no further than a distance of 1.5 from the initial value. The top(bottom) row displays data across treatments under parametrization A(B).

3.2 Classifying Types

The elbow method is a way to determine the optimal number of clusters in a dataset for k-means clustering. It works by plotting the sum of squared distances between each point and the centroid of its cluster against the number of clusters used. The plot looks like an arm, and the elbow point on the arm represents the best number of clusters to use. This is because the elbow point is where adding more clusters does not significantly improve the clustering results. The elbow method helps to select an appropriate number of clusters for k-means clustering, avoiding underfitting or overfitting the data. The graphs shown in Figure 9 reveal that the elbow method recommends three clusters for parametrization A, while for parametrization B, the score is somewhat ambiguous between two, three, and four clusters. We supplement our calculations by determining the optimal number of clusters via the silhouette method.

Figure 9: Distortion Score Elbow for K-Means Clustering



The silhouette method is a way to evaluate the quality of clustering results in a dataset. It works by measuring how similar an observation is to its own cluster compared to other clusters. The silhouette score ranges from -1 to 1, with higher values indicating better clustering results. A score of 1 indicates that the observation is well-matched to its own cluster and poorly-matched to other clusters. A score of -1 indicates the opposite, while a score of 0 indicates that the observation is equally similar to its own cluster and other clusters. The silhouette method calculates the average silhouette score of all observations in the dataset and uses this as a measure of how well the data is clustered. The method can be used to compare different clustering methods or to select the best number of clusters to use in a k-means clustering analysis. By selecting the number of clusters that maximizes the silhouette score, the method can help improve the accuracy and reliability of the clustering results. The graphs shown in Figure 10 reveal that the silhouette score is maximized under three clusters.



Figure 10: Silhouette Scores For K-Means Clustering

We thus decide to proceed with the clustering exercise with three clusters.

4 Pilot Data

4.1 Estimated Means

We ran two pilot studies under parametrization A for the Baseline and Simultaneous treatment. In Table 1, we compare the estimated mean from Baseline A and Simultaneous A with the estimated means in their corresponding pilot treatments. The variable *Constant* captures the estimated mean in the regular session, whereas the variable *Pilot* captures the difference of the estimated mean from this value in the pilot treatment. As can be seen, regardless of the error clustering level, the difference is never statistically significant.

	Baseline A			Simultaneous A		
	No C	Ind C	Ind C + Last 5	No C	Ind C	Ind C + Last 5
Constant	63.79***	63.79***	60.43***	41.65***	41.65***	40.29***
	(0.595)	(1.971)	(2.428)	(0.384)	(0.987)	(1.295)
Pilot	0.434	0.434	5.911	1.001	1.001	1.483
	(1.041)	(3.680)	(4.285)	(0.667)	(1.740)	(2.382)
N	3000	3000	750	3020	3020	755

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

4.2 Individual Level Analysis

In Figure 11, we plot the individual level data for Baseline A and Simultaneous A, as well as their corresponding pilot treatments.



Figure 11: Average Individual Choices

<u>Notes:</u> To help distinguish the large amount of data bundled on the pBRN level, we apply a jitter of 1.5 magnitude. This jittering perturbs the datapoint no further than a distance of 1.5 from the initial value.

In Figure 12, we do the same utilizing data from the last five rounds only.

Figure 12: Average Individual Choices: Last Five Rounds





• Individual Averages • Bayesian • pBRN

<u>Notes:</u> To help distinguish the large amount of data bundled on the pBRN level, we apply a jitter of 1.5 magnitude. This jittering perturbs the datapoint no further than a distance of 1.5 from the initial value.