PROCEDURES APPENDIX FOR

MENTAL MODELS AND LEARNING:

THE CASE OF BASE RATE NEGLECT

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Contents

1 Instructions **2**

2 Screenshots **19**

3 Voting Treatments **48**

1 Instructions

In this procedures appendix we reproduce the instructions used in the experiment. In italics we reproduce comments for the experimenter that did not appear in the written instructions provided to subjects. After subjects sign the consent form and are sitting in their assigned terminal, the experimenter provides subjects with written instructions with the welcome message and the interface. These instructions, reproduced below, are read aloud.

For expositional purposes, the experimental design is described in five parts in the paper while the instructions subjects were given was broken up into nine parts. Below we provide a short summary of the mapping between the parts as labelled in the paper (written in bold) and the parts as labelled in the instructions.

1. **Updating task: Round 1.** Corresponds to Part 2 in the instructions.
2. **Learning: Repetition of updating task, rounds 2-200.** Corresponds to Parts 3 and 4 in the instructions.
3. **Recollection of feedback.** Corresponds to Parts 4 in the instructions.
4. **Summary tables.** Corresponds to Parts 6, 7 and 8 in the instructions.
5. **Transfer of learning.** Corresponds to Parts 9 in the instructions.

Part 1 in the instructions introduces belief elicitation and the incentive mechanism.

Differences across treatments appear starting in part 2. Between brackets [] we highlight sentences that are different across treatments. A sentence preceeded with Treatment P (Treatment NP) correspond to a treatment in which primitives were (not) shown to subjects, that is, Primitives, Primitives w/ shock, Primitives w/ lock in, Primitives w/ freq. (No Primitives, No No Primitives w/ lock in, No Primitives w/ freq.). Instructions that only appeared in treatments with a lock-in option are preceeded by "Lock-In treatments." Instructions that appeared only in treatments where the feedback was presented in a two-by-two table are preceeded by "Freq. treatments."

In the instructions that subjects received neither the treatments nor the brackets appeared, just the corresponding sentence. Starting in Part 4 instructions are no longer distributed on paper and read aloud, but appear directly on the subjects' screens. Subjects have to answer questions on understanding prior to proceeding with the corresponding part. For details with respect to what parts each treatment includes, see Online Appendix B.

Following these instructions we provide a set of screenshots of the interface. Between brackets {} in the instructions we reference the related screenshot. Comments between brackets {} were not available in the written instructions to subjects.

Welcome

You are about to participate in a session on decision-making, and you will be paid for your participation with cash, privately at the end of the session. The experiment will last 90 minutes. There is no incentive to finish early since, if someone finishes early, they will not be allowed to browse the internet or use their phone. Everyone will be paid at the end of the 90 minutes. The entire session will take place through computer terminals and there will be no interaction with participants seated at other terminals. Please turn off your cell phone now and place it on the top shelf of your desk. Using your phone during the experiment is not allowed.

The experiment will consist of 9 parts. One of these parts will be randomly selected for payment at the end of the experiment. In the part that is randomly selected for payment you can make either $25 or $0. In addition to your earnings from the experiment, you will also receive a show up fee of $10 for participating in the experiment. This means that at the end of the experiment you will receive a payment of $35 (if in the randomly selected part you made $25) or $10 (if in the randomly selected part you made $0).

The interface

Experimenter, start the interface. {The subject's screen displays screenshot 1.}

In the interface you can now see a message at the top asking you to wait for my instructions and boxes with letters at the bottom. You will see a screen like this one throughout the experiment. Each time you see a screen like this one, it means you have to wait for me to tell you to proceed. I will give you a code, you will enter it on the screen, and then you will be allowed to continue with the experiment.

Please now click on letter A and then on letter C. Once you get to the new screen, do not click anywhere until I ask you to. {Subjects see screenshot 2.}

In this experiment, you will assess the chances that certain events will happen. We will now use a simple example to explain how to use the interface to submit your assessments.

Suppose we flip a fair coin. With 50% chance it lands Heads and with 50% chance it lands Tails. Consider the following trivial question:

- What is the chance that the coin lands Heads vs. Tails?

In the experiment, you will provide an answer to this type of question by using a slider like the one you see on the screen. Please go ahead and click anywhere on the slider to select a point. {An example of a selection is presented in screenshot 3.} Your choice is associated with a response for the % chance that the coin lands Heads (see top of the slider) and the % chance that the coin lands Tails (see bottom of the slider). Obviously, these two percentages add up to 100.

Now try clicking on different points on the slider to practice. You can also click on the arrow buttons to move the slider up or down. Please do not click the submit button yet.

For this example, please go ahead and choose the point where you think the slider should be and click on 'submit' to tell the computer that this is your choice. After you click on the submit button you can no longer change your choice. Please do not click on the orange 'Move On' button that will appear on your screen in a few seconds.

In this example, the chance that the coin lands Heads is 50% and the chance it lands Tails is 50%, so you should have positioned the slider exactly at the middle. Please click on the 'Move On' button.

Payment details: We will now describe how we will pay you based on your answer to a question like this one. If you find the details hard to follow, all you have to remember is that we will pay you in a manner that guarantees that it is always in your best interest to report your best assessment of the chance that the relevant event happens.

Here is exactly how we will pay you: In every question of this type, you will submit a choice X about the chance that an event (shown on the top of the slider) happens. In this example, the event is that the coin flip lands Heads, so X represents the percentage chance of Heads. After you submit your choice of X, the interface will draw a value from 0 to 100, with each value being equally likely. Call this value Y. The values of X, Y, and whether or not the event occurs will determine your chances of winning $25 or $0.

If Y is greater than or equal to X, you will win $25 with Y% chance. If Y is less than X, you will win $25 if the event occurs (in this example, if the coin flip lands Heads).

Given this payment scheme, it is always in your best interest to choose X that represents your best assessment of the chance that the relevant event happens.

For example, in the coin flipping problem it is optimal to choose X = 50 which is the percent chance that the coin flip lands Heads.

To see this, consider choosing a lower value for X; for example X= 20. In that case, if the value of Y that is drawn is between 20 and 50, you will win $25 with Y% chance, which is between 20% and 50%. If you had instead submitted X = 50, you would have been more likely to get the $25 because you would have gotten $25 if the coin had landed Heads (which happens with 50% chance).

Similarly, consider choosing a higher value for X; for example X = 80%. In that case, if the value of Y that is drawn is between 50 and 80, you will win $25 if the coin flip lands Heads (which happens with 50% chance). If you had instead submitted X = 50, you would have been more likely to get the $25 because you would have gotten $25 with Y% chance, which is between 50% and 80%.

The important thing to remember is that we have chosen the payment scheme so that it is always in your best interest to report your best assessment of the chance that the relevant event happens.

Experimenter: once this part is completed, distribute the instructions for part 1 and read those instructions aloud. {Subjects' screens display screenshot 1.}

Part 1

Part 1 consists of two questions. If this part is selected for payment, the interface will randomly select one of the two questions for payment. When we are ready to proceed, I will indicate which code to enter on this screen.

Question 1.

There are two decks of cards. Each deck has a total of 100 cards, and each card can be green or blue. We will combine these two decks of cards and we will select one card at random, where each of the 200 cards has an equal chance of being selected.

On your screen, you will see information about the number of Green and Blue cards in each deck. We will ask you to submit two assessments about the randomly drawn card:

- If the card belongs to Deck #1, what is the chance that it is Green vs. Blue?
- If the card belongs to Deck #2, what is the chance that it is Green vs. Blue?

For each of the two decks (Deck #1 and Deck #2), you will select a point that indicates the chance that the randomly selected card is Green vs. Blue if it belongs to that deck.

If this question is selected for payment, the interface will first randomly select a card. If the selected card is from Deck #1, we will use your submitted choice for the case where the card belongs to Deck #1 and pay you as explained in the instruction period. If the selected card is from Deck #2, we will use your submitted choice for the case where the card belongs to Deck #2 and pay you as explained in the instruction period. The important thing to remember is that to maximize your chance of receiving $25, you should give us your best assessment of the chance that the card is Green vs. Blue given the deck that it came from.

Please now click on letter B, letter D and letter E. {Subjects see screenshot 4.[1]} In the box at the bottom of your screen you can see the number of Green and Blue cards in each deck. You can now select your assessment in case the card belongs to Deck #1. After you submit this assessment, you will be able to submit your assessment in case the card belongs to Deck #2. {Example in screenshot 5.} A few seconds after you submit your second assessment an orange 'Move On' button will appear. Please do not click on that button until I ask you to.

Experimenter: wait until all participants have finished. If all have submitted the thresholds, proceed.

After you submit both assessments the box at the bottom of the screen presents an explanation of what your answer should have been in order to maximize the chance of getting $25. {Example in screenshot 6.} Please read this explanation carefully. After you read the explanation, we will move to the next question. If you finished reading the explanation, click on 'Move On,' but please do not make any choices until I ask you to.

Experimenter: check that everybody finished with Question 1 prior to reading Question 2.

Question 2.

This question is the same as Question 1, except that the composition of the two decks is different: Please read the new composition of the cards on your screen.

For each of the two decks (Deck #1 and Deck #2), you will select a point that indicates the chance that the randomly selected card is Green vs. Blue if it belongs to that deck. If this question is selected for payment, you will be paid according to your choices as we explained before when

[1] One question involves Deck #1 having 75 green (25 blue) cards and Deck #2 with 25 green (75 blue cards) and the other question involves Deck #1 having 25 green (75 blue) cards and Deck #2 with 75 green (25 blue cards). The interface randomized which of the two possible parameterizations was presented as question 1 and which as question 2 at the subject level, which is why the specific composition of the decks is not described in the written instructions and is presented directly on the subjects' screen.

we went over Question 1. You can now go ahead and make your choices. A few seconds after you submit your choices a 'Move On' button will appear. Please do not click on 'Move On' until I ask you to.

Experimenter: wait until all participants have finished. If all have submitted the thresholds, proceed.

On your screen, you will see an explanation of what your answer should have been in order to maximize the chance of getting $25. Please read this explanation carefully. {Example in screenshot 7.}

Once you finish reading the explanation, click on 'Move On'.

From now on, you probably have a good sense of how the interface works, so we will no longer provide an explanation after you answer a question.

Experimenter: distribute the instructions for part 2 and read the instructions aloud. {Subjects' screens display screenshot 1.}

Part 2

Part 2 consists of one question.

There is a total of 100 projects, and one of these projects will be randomly selected (with all projects having an equal chance of being selected).

[Treatment P: Of the 100 projects, there are 15 projects that are successes and 85 projects that are failures.]

[Treatment NP: Of the 100 projects, a certain number of them are successes and the remaining ones are failures. We will not tell you how many of them are successes and how many are failures.]

Your task is to assess the chance that the project that was randomly selected is a Success vs. Failure.

To aid your assessment, the computer will run a test on the selected project.

[Treatment P: The test result can be either Positive or Negative and has a reliability of 80%.]

[Treatment NP: The test result can be either Positive or Negative and has a reliability of R%.]

That means that:

[Treatment P:

- If the project is a Success, the test result will be Positive with 80% chance and the test result will be Negative with 20% chance.
- If the project is a Failure, the test result will be Negative with 80% chance and the test result will be Positive with 20% chance.]

[Treatment NP:

- If the project is a Success, the test result will be Positive with R% chance and the test result will be Negative with (100-R)% chance.
- If the project is a Failure, the test result will be Negative with R% chance and the test result will be Positive with (100-R)% chance.

The reliability R is a specific number between 0 and 100, but we will not tell you this number.]

We will ask you to submit two assessments:

- If the test is Positive, what is the chance that the project is a Success vs. Failure?
- If the test is Negative, what is the chance that the project is a Success vs. Failure?

For each possible test 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. [Treatment NP: Clearly, you are not given enough information to make an informed decision. Please go ahead and take a guess.]

If this part is selected for payment, the interface will first randomly select a project. It will then conduct a test, as described above. If the test result is Positive, we will use your submitted choice for the case where the test is Positive and pay you as explained in the instruction period. If the test result is Negative, we will use your submitted choice for the case where the test is Negative and pay you as explained in the instruction period. The important thing to remember is that to maximize your payment you should give us your best assessment of the chance that the project is a Success vs. Failure given the test result.

Select letters A, B and E. {Screens display screenshot 8.}

Before providing answers for part 2, you have to answer a few questions on the screen. If your answer to a question is correct, after you click on 'submit' a 'move on' button will appear. If the 'move on' button does not appear, your answer is not correct. When you click on 'move on,' another question will be presented to you. After you answer all questions correctly, you can enter your answers for part 2.

Subjects have to answer three questions that appear on the screen:

1. *Out of 100 projects, how many are successes? {Screenshot 9.}*
2. *Out of 100 projects, how many are failures? {Screenshot 10.}*
3. *What is the percentage reliability of the test? {Screenshot 11.}*

The interface allows to select either a numerical answer (so that subjects can provide the correct answers in P) or to select 'I was not provided with this information,' which is the answer in NP. Subjects are not allowed to proceed until they have answered all questions correctly. If their answer is incorrect, the interface informs them that their answer is incorrect and that they need to provide the correct answer in order to proceed. {Once answers are correct subjects see screenshot 12. After submitting the answer to the first choice, they see screenshot 13. Once they submit both choices, their screens display screenshot 1.}

Experimenter: Once all subjects provided their answers, distribute the instructions for part 3 and read them aloud.

Part 3

The structure of this part is very similar to the previous part, except that this process will be repeated for 99 rounds and you will receive feedback after each round.

[Lock in treatments. Instead of the previous paragraph, replace with the following: "The structure of this part is very similar to the previous part, except that this process will be repeated for 199 rounds and you will receive feedback after each round."]

In each round, your task is to submit, for each possible test result (Positive and Negative), a choice that indicates the chance that the randomly selected project is a Success vs. Failure given the

test result. At the end of each round, you will observe the actual test result (Positive or Negative) that was generated for the project randomly selected in that round as well as whether the project was a Success or Failure. If this part is selected for payment, we will randomly select one of the rounds and you will be paid for this round as described earlier for this type of question. Remember that it is always in your best interest to submit your best assessment of the chance that the project is a Success vs. Failure given the test result.

Importantly, in every single round, you will face the same environment that you faced in Part 2:

- [Treatment P: You face 100 projects, where 15 are successes and 85 are failures.]
- [Treatment NP: You face 100 projects, where a certain number of them are successes and the remaining ones are failures, but we will not tell you how many are successes and how many are failures.]
- One project is randomly selected.
- The computer will run a test to provide some information on whether the selected project is a Success or a Failure.
- [Treatment P: The test result is either Positive or Negative and has a reliability of 80%.]
- [Treatment NP: The test result is either Positive or Negative and has a reliability of R%, but we will not tell you the value of R.]

Once again, the environment is the same in every single round, meaning that the number of successes and failures and the reliability of the test is the same in every single round. If it helps, you can think of each of the 100 projects as being represented by a ball in a 100-ball jar. Whenever a ball with a certain project is randomly selected in one round, the ball is then returned to the jar at the end of the round. So that the type of projects assigned to you in previous rounds will have no impact on the type of project assigned to you in the current round.

You have approximately 40 minutes for this part of the experiment. You can make your choices at your own pace, and we will keep track of time so that the session ends on time.

We will refer to your Part 2 answer as the answer to Round 1 of Part 3. Please select letter C and letter D on your screen and do not click anywhere until I ask you to. {An example of what subjects see is in screenshot 14.}

On your screen, you will be able to see the choices that you made in Part 2. Please do not click on 'Move On'. At the bottom of the screen, you can see the feedback for that previous round, which includes the actual test result (Positive or Negative) that was generated for the project randomly selected in Part 2 as well as whether the project was a Success or Failure. Do not click yet on 'Move On', but when I ask you to click on 'Move On', you will start with Round 2.

At the beginning of each round, the interface will display the choices you submitted in the previous round. You can modify these choices prior to clicking on the submit button. The feedback you observe from all past rounds will appear on the table on the right side of your screen. For each past round, the table will track whether the test was Positive/Negative and whether the project was a Success/Failure. Please click on 'Move On' now. Part 3 will end after you make your choice for Round 100.

[Lock-in treatments. Instead of the previous paragraph, instructions include the following one: "At the beginning of each round, the interface will display the choices you submitted in the previous round. You can modify these choices prior to clicking on the submit button. You will also have a "lock-in" option. This option enables you to use your current choices for the current round and all future rounds. In other words, if you select this option, you will not need to click through all the remaining rounds; instead you will jump to the end of the experiment. But this also means that you will not be able to modify your choice for future rounds. Note that even if you use the "lock-in" option to skip to the end of the experiment, you will not be able to leave early. We will pay you only after everybody is done. You will be able to make choices at your own pace in this part. Part 3 will end after you make your choices for all rounds. Please click on 'Move On' now to begin the last part of the experiment."]

[Freq. treatments. Instead of the previous paragraph, instructions include the following ones: "The feedback you observe from all past rounds will appear on a table on the right side of your screen. We will present feedback from past rounds in a two-by-two table in order to make it easier for you to visualize. For instance, in the first column and row (Positive, Success) you will see the number of rounds that the test result was Positive and the Project was a Success.

	Positive	Negative
Success		
Failure		

As rounds pass the table will populate, adding the previous round entry in the corresponding cell.

In addition to observing the two-by-two table, the screen will display the following two pieces of information:

*Out of all rounds where the test result was Positive, you will be told the percentage of rounds where the project was a Success vs. Failure, rounded to the nearest integer.

* Out of all rounds where the test result was Negative, you will be told the percentage of rounds where the project was a Success vs. Failure, rounded to the nearest integer.

Please click on 'Move On' now to answer a few questions on the instructions. Part 3 will end after you make your choice for Round 100."

]

Experimenter: Read the following statement in all treatments except lock-in treatments: "After you finish this part, instructions will appear on the screen for all the following parts. We will not distribute these instructions on paper, so please read them carefully and proceed at your own pace." {After clicking on 'Move On' subjects move to round 2, an example provided in screenshot 15. For each choice, the interface by default displays their selection in the previous round. Subjects can change the choice before clicking on the corresponding submit button. After subjects submit their choices, the feedback for the round appears. Screenshot 16 provides an example of feedback in round 5. The table on the right-hand side displays all past choices.}

Part 4

{Not distributed as written instructions, but appears on their screens directly. See screenshot 17.}From now on, you will have to read instructions on your own and proceed at your own pace. At the end of the instructions for this part you will be asked a question to check your understanding. Please click the Continue button.

{See screenshot 18} In this part, you will continue with the same problem from the previous part for another 100 rounds, that is, rounds 101 through 200. The only difference is that you will now only be asked to submit choices every 10 rounds, that is, in rounds 110, 120, 130, 140, 150, 160, 170, 180, 190, and 200.

You will receive feedback about the test result (Positive or Negative) and the type of project (Success or Failure) in all rounds, not only in the rounds you are asked to make a decision.

If this part is selected for payment, we will randomly select one of the rounds where you had to make a decision for payment. Please click on Continue.

{See screenshot 19} Select all answers that are applicable. In this part, compared to the previous part:

(a) There are the same number of successes and failures.

(b) The reliability of the test is the same.

(c) You will only be asked to submit choices in some of the rounds.

{Screenshot 20 shows that the Move On button appears only after subjects have selected all three answers.}

Part 5

{Not distributed as written instructions, but appears on their screens directly. See screenshot 21.}In this part, you will be asked the following question about the feedback you received in the last 200 rounds:

You will have to enter the number of rounds where the feedback was:

A Positive test result and project is a Success: ____

A Positive test result and project is a Failure: ____

A Negative test result and project is a Success: ____

A Negative test result and project is a Failure: ____

Total: ____ rounds

As you provide your answers, the interface will compute the total number of rounds. The total must add up to 200, and you will not be able to submit your answers unless the total is 200.

{Screenshot 22} After submitting your answers, we will put them in a two-by-two table in order to make it easier for you to visualize. The table will look as follows, except that it will be filled in with the numbers you provided. For example, in the first column and row (Positive, Success) you will see the number of rounds that you reported the test result was Positive and the Project was a Success.

	Positive	Negative
Success		
Failure		

After you see your answers in the two-by-two table, you will be given a chance to make changes

to your answers or confirm and submit your answers. You can go back and forth as many times as you would like. After you confirm your answers on the two-by-two table, you will move on to the next part.

{Screenshot 23.} Payment. If this part is selected for payment, the interface will randomly select one of the four entries on the table. If the number you reported for this entry is within plus or minus 5 of the actual number you experienced during the 200 rounds, you will receive $25; otherwise, you will receive $0.

{Screenshot 24 displays the entry page where students submit their answers. When they click on the 'Check if you answers sum up to 200' button, if the answers indeed add up to 200, then they observe the confirmation message in screenshot 25 and the information is displayed on the table. They can then modify their answers (going back to a screen as in screenshot 23) or submit their answers. If their answers do not add up to 200, they observe a message with the number that their answers add up to and are asked to correct their answers so that they add up to 200.}

Part 6

{Not distributed as written instructions, but appears on their screens directly. See screenshot 27.}In this part, we will begin by showing you a two-by-two table with the actual number of projects of each type you experienced in the 200 rounds. You will then be asked to submit choices one more time.

If this part is selected for payment, you will be paid as described earlier for this type of question. Remember that it is always in your best interest to submit your best assessment of the chance that the project is a Success vs. Failure given the test result.

{Screenshot 28 provides an example with the information that subjects would see. The screen first displays the four lines that correspond to the entry lines in part 5 and displays this information in the right-hand side table as well. When subjects click on "Proceed to Make Choices" they move on to a screen as in screenshot 29, where the table is still available while they make selections.}

Part 7

{Not distributed as written instructions, but appears on their screens directly. See screenshot 30.}We have now asked the interface to simulate another 800 rounds of the experiment using the same rules that were used to generate the 200 rounds that you experienced.

The interface will first show you a two-by-two table that shows the number of rounds of each

type. Out of a total of 1,000 rounds, 200 rounds are those you experienced earlier and 800 rounds are the simulated ones. You will then be asked to submit choices one more time.

{Screenshot 31.} If this part is selected for payment, you will be paid as described earlier for this type of question. Remember that it is always in your best interest to submit your best assessment of the chance that the project is a Success vs. Failure given the test result.

{Screenshot 32 provides an example with the information that subjects could see. Screenshot 33 displays the screen in which a subject would make their first choice for part 7.}

Part 8

{Not distributed as written instructions, but appears on their screens directly. See screenshot 34.}In addition to observing the two-by-two table from the previous part, you will be presented with the following two pieces of information:

- Out of the 1,000 rounds where the test result was Positive, you will be told the percentage of rounds where the project was a Success vs. Failure, rounded to the nearest integer.
- Out of the 1,000 rounds where the test result was Negative, you will be told the percentage of rounds where the project was a Success vs. Failure, rounded to the nearest integer.

{Screenshot 35} You will then have to report this information, to make sure that you are carefully reading the instructions.

Before providing answers for part 8, you have to answer a few questions on the screen. If your answer to a question is correct, after you click on 'submit' a 'move on' button will appear. If the 'move on' button does not appear, your answer is not correct. When you click on 'move on,' another question will be presented to you.

{Screenshot 36} After reporting the information you received, you will have to submit choices one more time.

If this part and question is selected for payment, you will be paid as described earlier for this type of question. Remember that it is always in your best interest to submit your best assessment of the chance that the project is a success vs. failure given the test result.

{Screenshot 37 presents the information that subjects would see. When they click on 'Proceed to Answer Questions' they move on to the entry page presented in screenshot 38. If the entries

they submit do not match up with the correct answers in the box at the bottom, when they click on submit they are informed that choices do not match up and are asked to change their answers. If their answers match, they move on to screenshot 39.

Part 9

{Not distributed as written instructions, but appears on their screens directly. See screenshot 40.}Part 9 consists of one question. The problem in Part 9 is similar to the problem in previous parts. But the number of projects that are a Success vs. Failure has changed. Also, the reliability of the test result is different. [Treatment NP Moreover, we will now tell you how many projects are successes and failures as well as the reliability of the test. {Notice that screenshot 40 presents this line. In treatment P the screenshot omits this line.}]

{Screenshot 41} In Part 9:

- There are 100 projects: **95 are successes and 5 are failures**.
- One project is randomly selected.
- The computer will run a test to provide some information on whether the selected project is a Success or a Failure.
- The test result is either Positive or Negative and has a **reliability of 85%**. That means that:

1. If the project is a Success, the test result will be Positive with 85% chance and the test result will be Negative with 15% chance.
2. If the project is a Failure, the test result will be Negative with 85% chance and the test result will be Positive with 15% chance.

{Screenshot 42} This part of the experiment consists of only one round. For each possible test result (Positive and Negative), your task is to select a point that indicates the chance that the randomly selected project is a Success vs. Failure given the test result.

If this part is selected for payment, you will be paid as described earlier for this type of question. Remember that it is always in your best interest to submit your best assessment of the chance that the project is a Success vs. Failure given the test result.

{Screenshot 43 informs subjects that they have to answer questions before proceeding with Part 9. Screenshot 44 presents the first question, regarding the number of projects out of 100 that are successes. Screenshot 45 presents the second question, regarding the number of projects out of 100 that are failures. Screenshot 46 presents the question on the reliability of the test. Screenshot 47 presents the first choice that subjects make in part 9. Since we do not provide them with written instructions the bottom of the screen reminds them of the values for the primitives.}

{Screenshot 48 presents the survey questions we asked once subjects finished with part 9. Upon submitting the survey subjects were told the part that was selected for payment and if it is a part with many choices, which was the choice that was selected for payment. They were also informed of the total payment. Subjects were paid only when there were 5 minutes left for the 90-minute mark, as we announced that the experiment would take 90 minutes. After receiving their compensation, subjects were allowed to leave.}

Differences with mechanism treatments

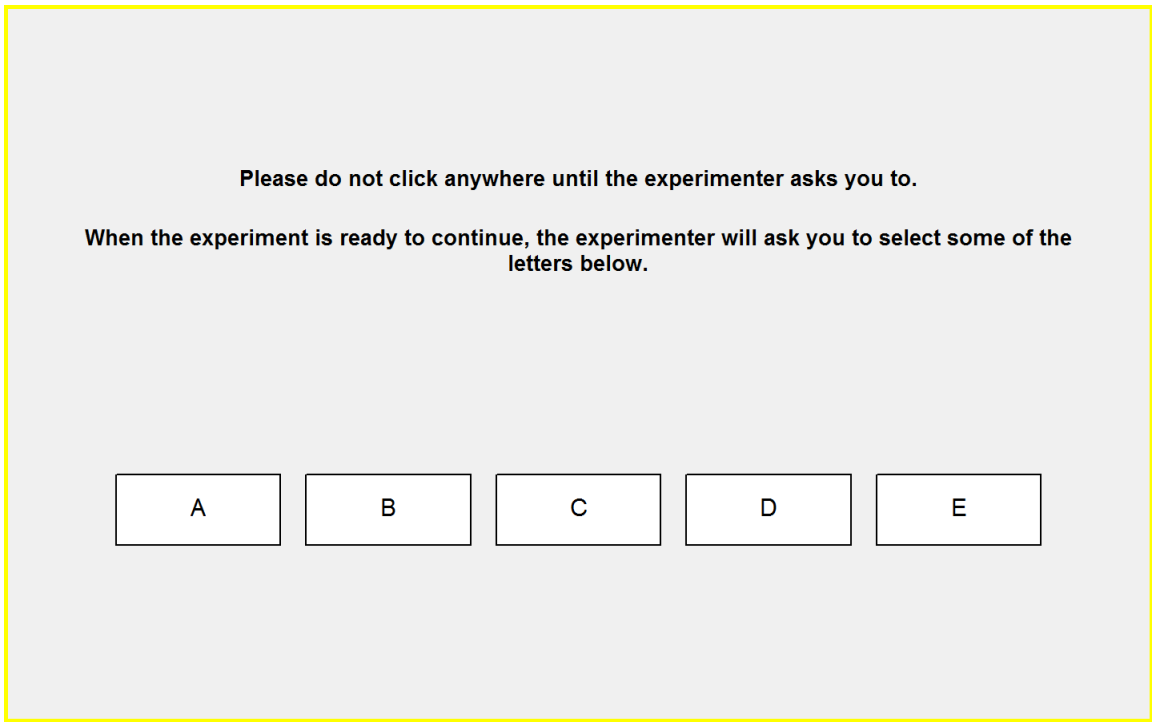
{Screenshot 49 presents an example of the message that a subject would receive in the Primitives w/ shock treatment at the beginning of Part 3 in case the subject submitted incorrect answers in Part 2. If the subject only submitted one incorrect answer, the message would read "At least one of the answers that you provided in Part 2 is NOT CORRECT." This screen is the only difference between treatment Primitives and treatment Primitives w/shock.}

{Screenshot 50 corresponds to the first time when subjects can decide to lock-in choices in a treatment with such option. If the subject clicks the gray button, the interface moves to Screenshot 51, where the subject is asked to confirm that they want to lock in their choice. If the subject clicks on the gray button, the choice is confirmed. If the subject clicks on the red button, the interface returns to Screenshot 50. If in Screenshot 50 the subject clicks on the red button, the interface moves to Round 2 and the subject keeps on making choices round by round. From Round 2 onwards we do not ask subjects to click on a button to indicate that they want to continue making choices round by round. Instead, the interface moves to the next round 3 seconds after presenting the feedback, unless the subject clicks on a button indicating that they want to lock in choices. An example is presented in Screenshot 52. Clicking on the gray button takes the subject to a confirmation screen (akin to Screenshot 51) where they have to confirm their choice or return to making choices round by round.}

{Screenshots 53 and 54 correspond to the understanding questions that subjects have to answer in Freq. treatments before starting with Part 3. Subjects cannot start with Part 3 until these ques-

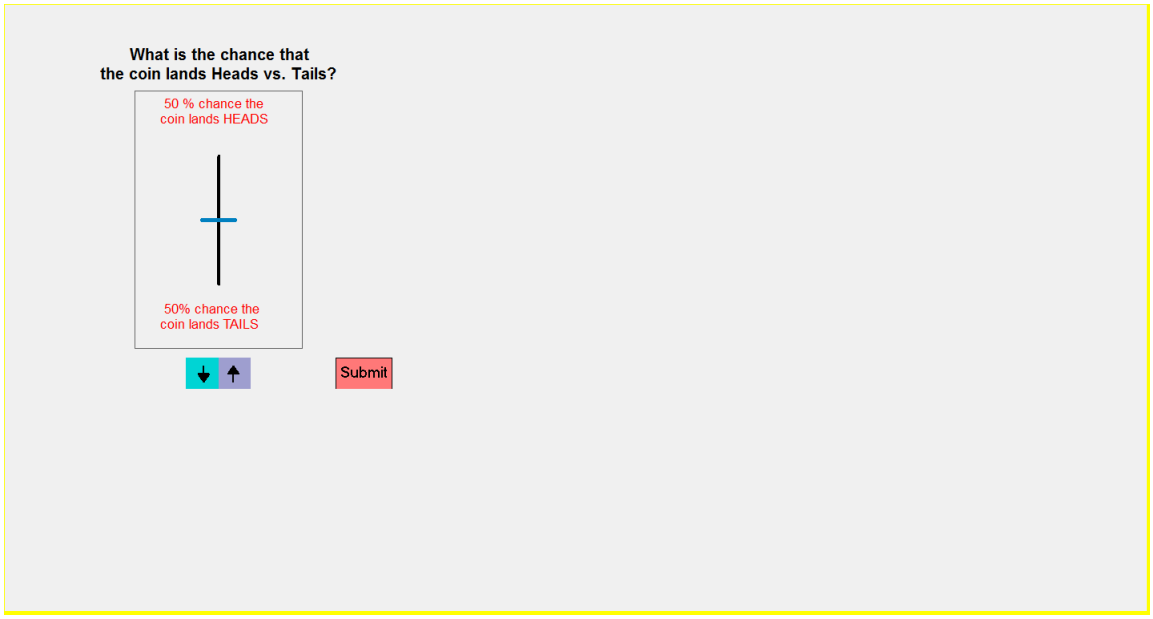
tions are answered correctly. Screenshot 55 shows the interface in Round 2 of a Freq. treatment. The bottom of the screen computes the frequencies for subjects, while the two-by-two table is presented on the right side of the screen. Screenshot 56 displays an example of what a subject could have collected up until round 19. Every 20 rounds subjects are asked to report back the frequencies before continuing with the experiment. An example of such case is presented in Screenshot 57. Subjects are not allowed to proceed until they answer the questions correctly.}

2 Screenshots

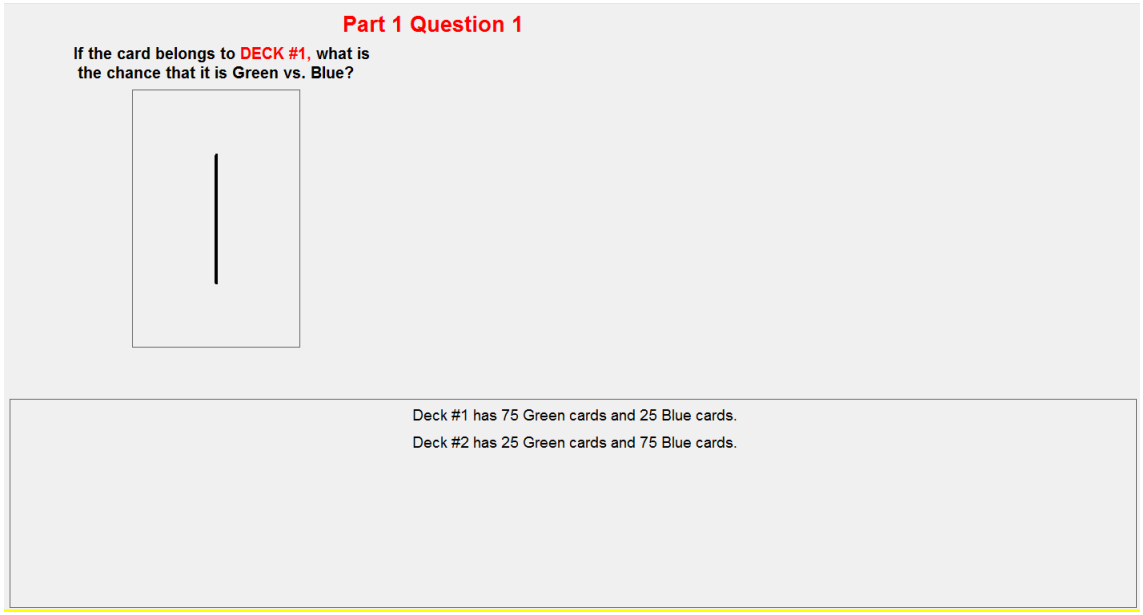


Screenshot 1

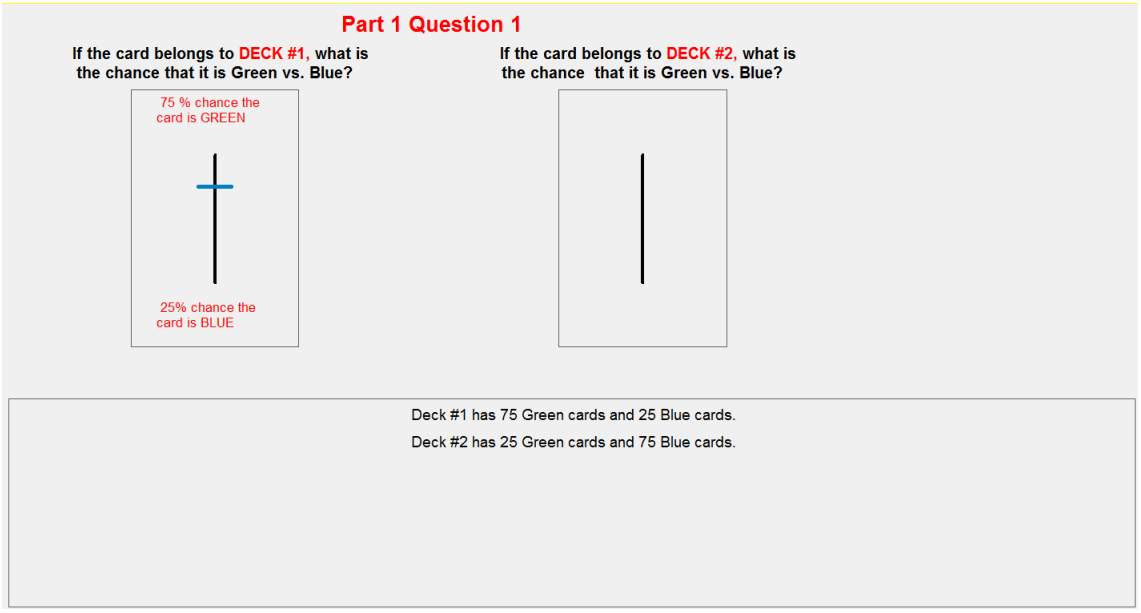
Screenshot 2



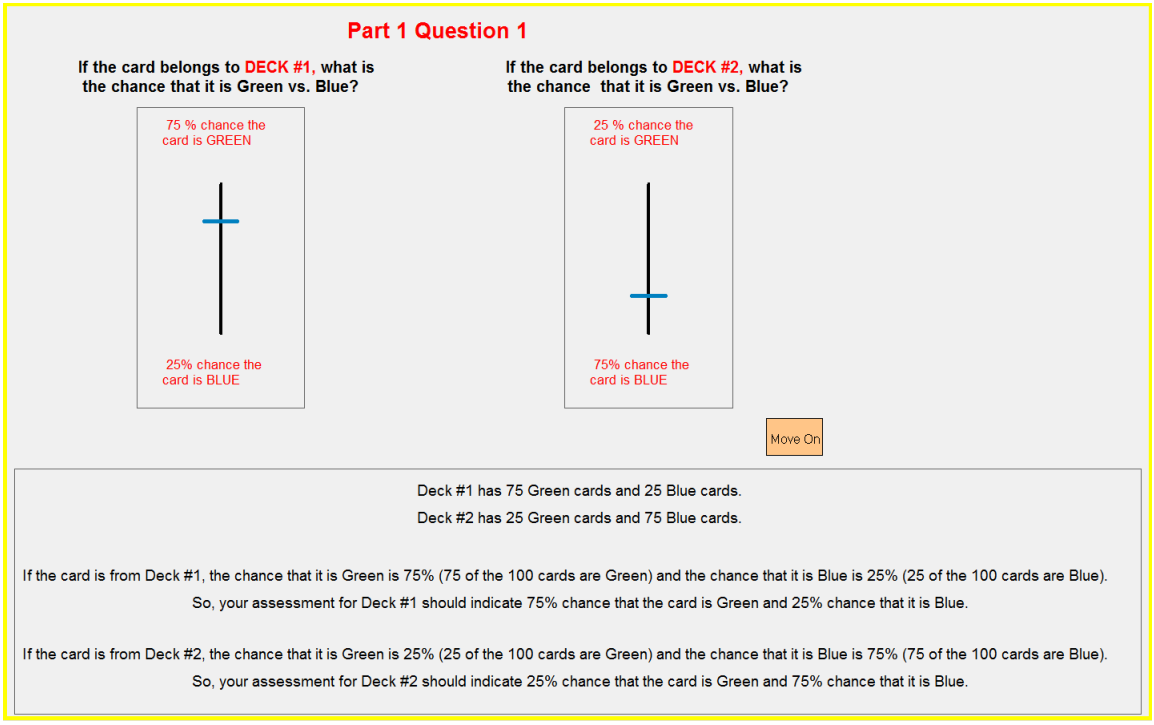
Screenshot 3



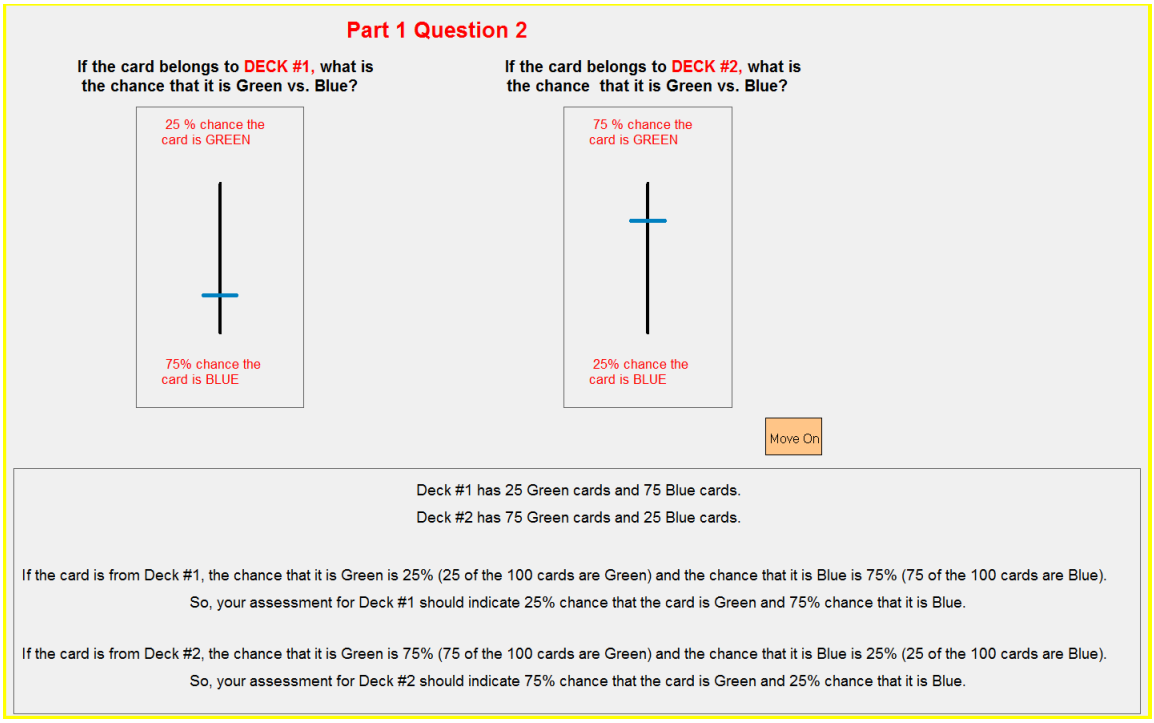
Screenshot 4



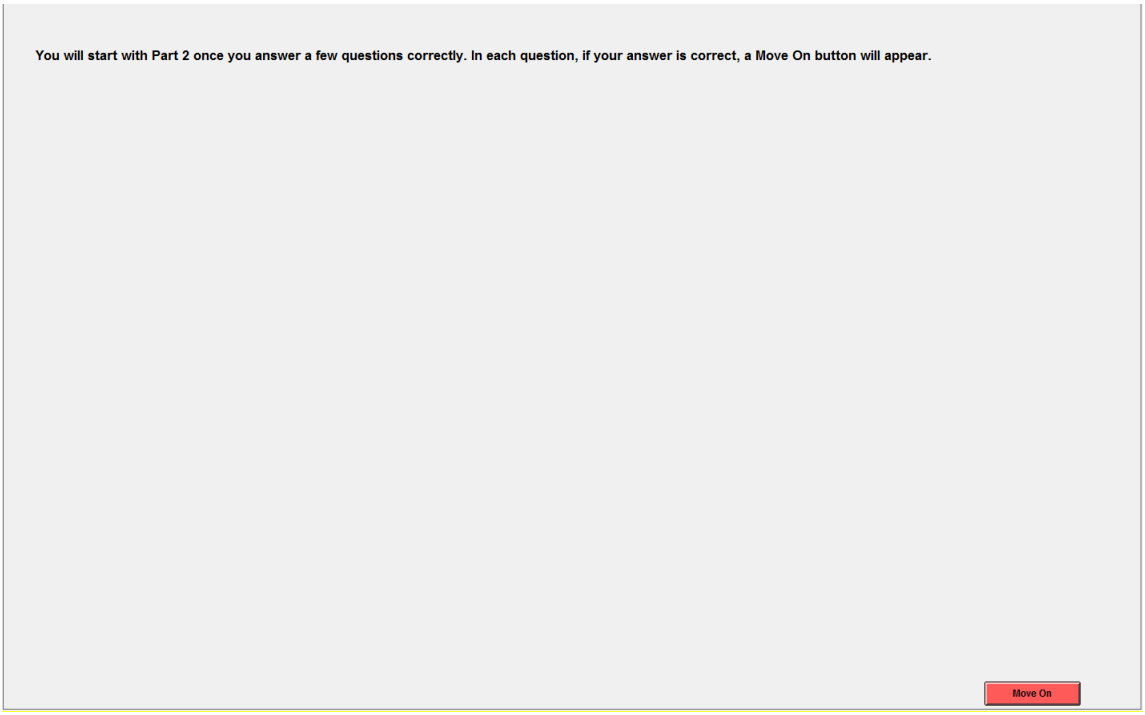
Screenshot 5



Screenshot 6



Screenshot 7

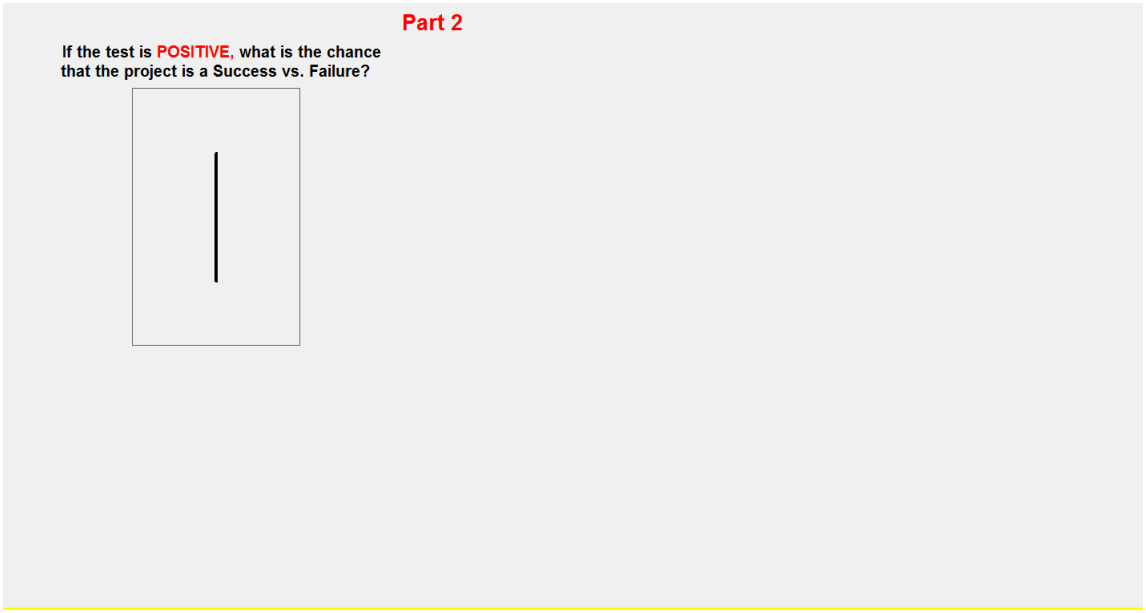


Screenshot 8

Screenshot 9

Screenshot 10

Screenshot 11



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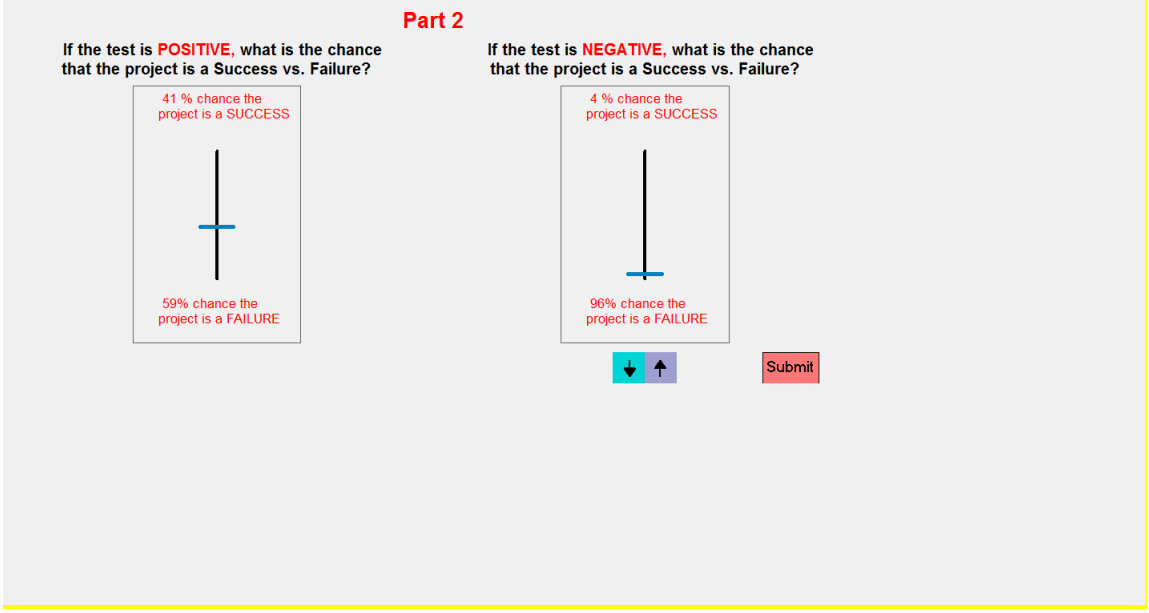

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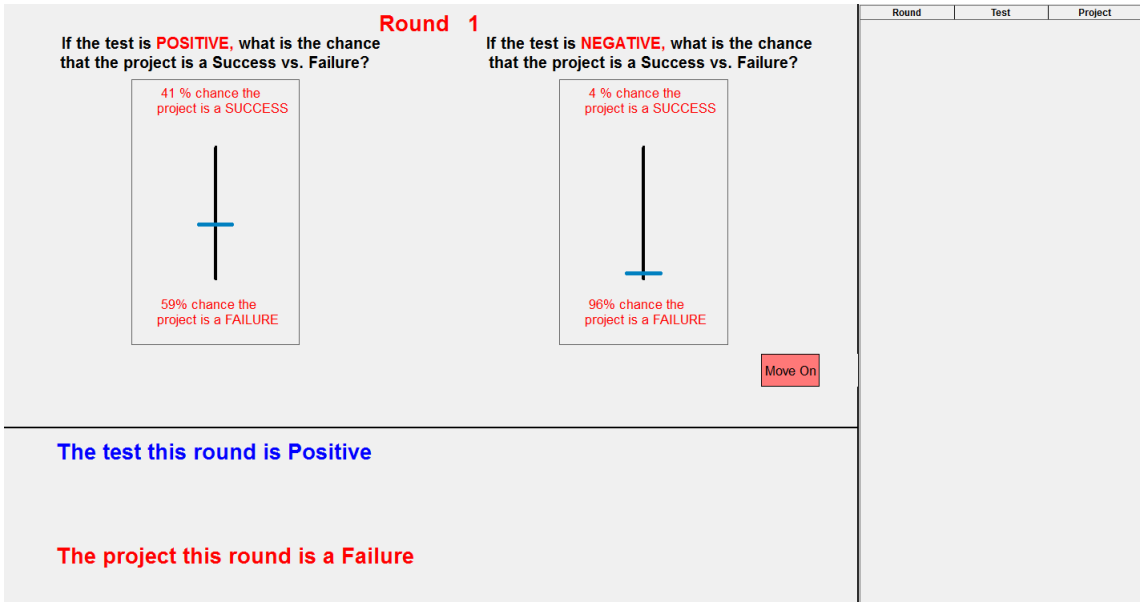

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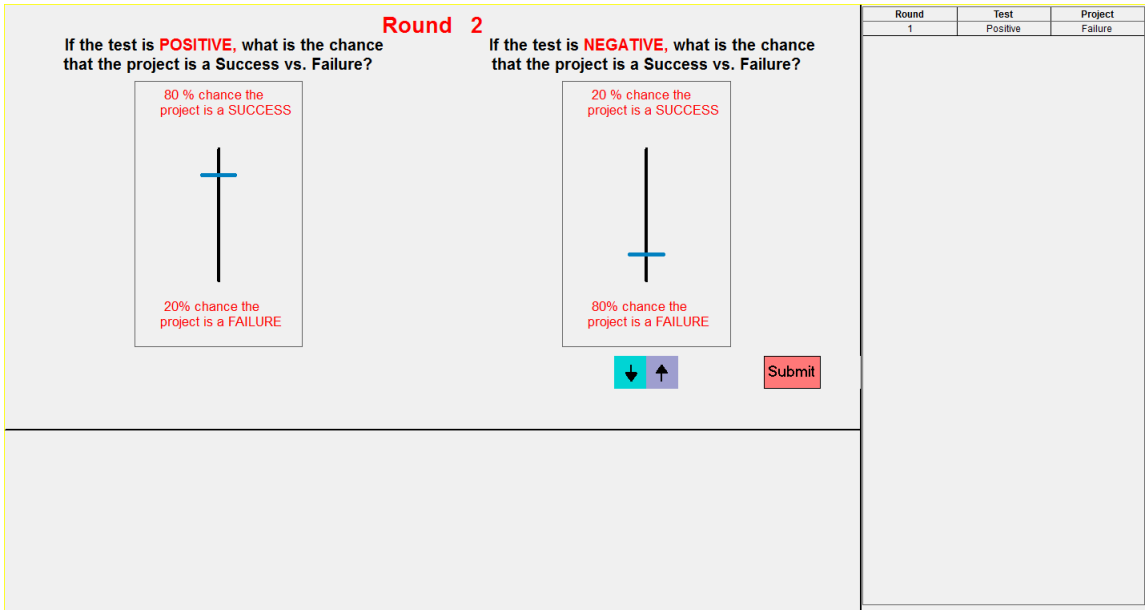

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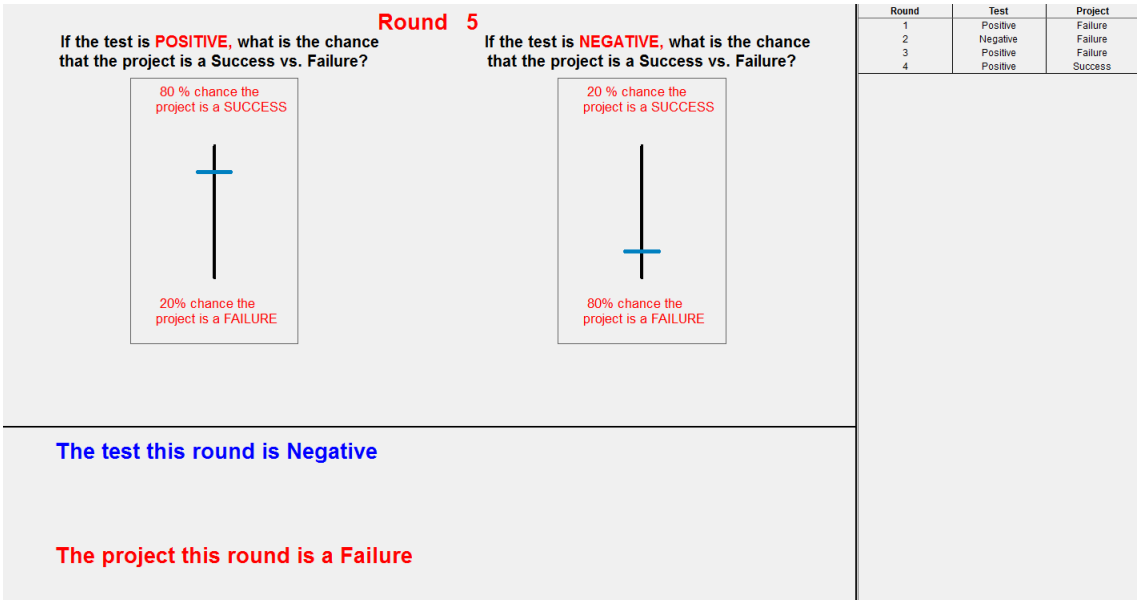

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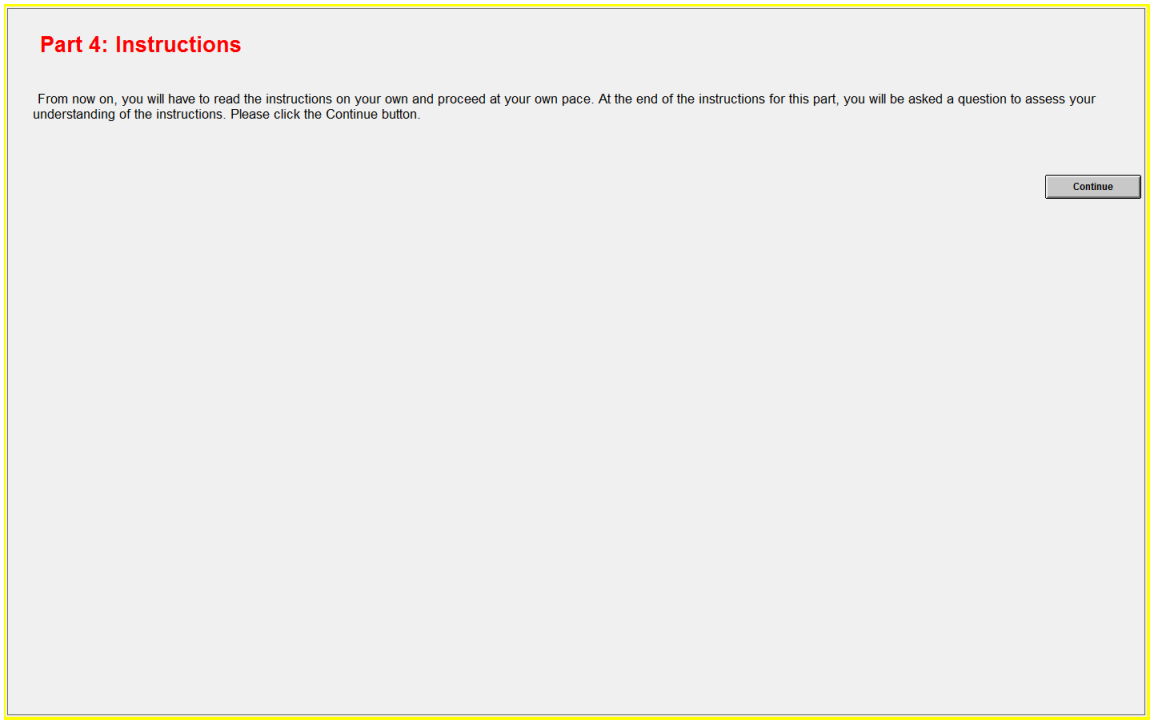

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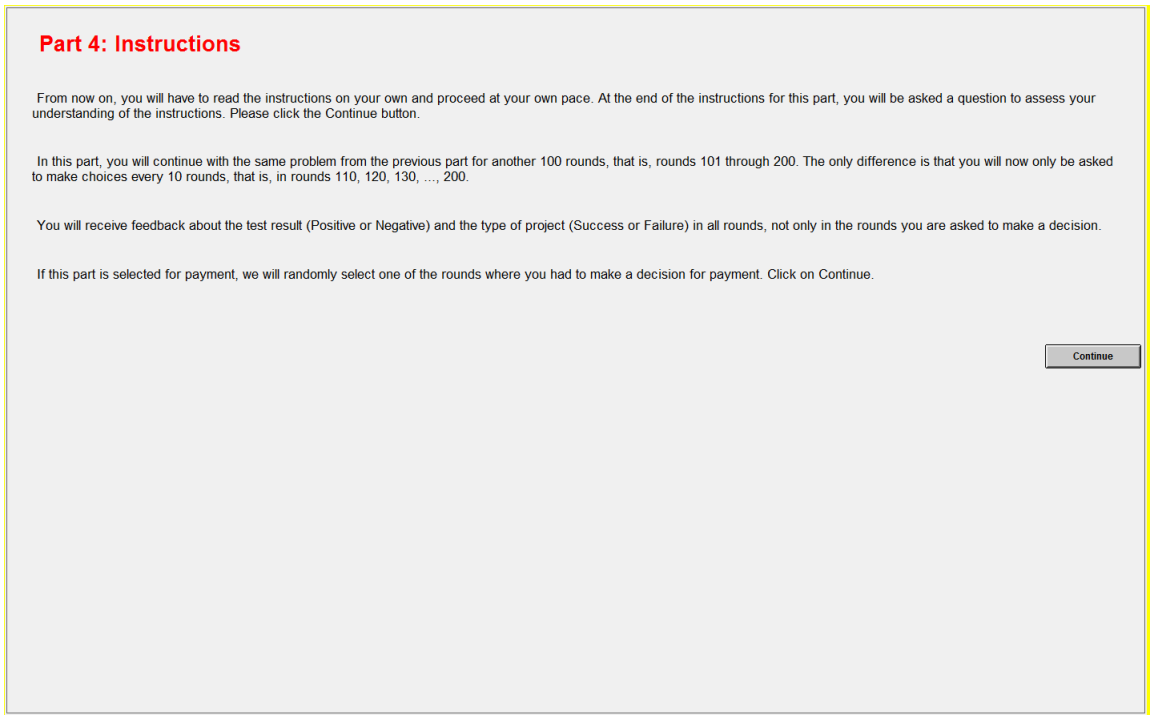
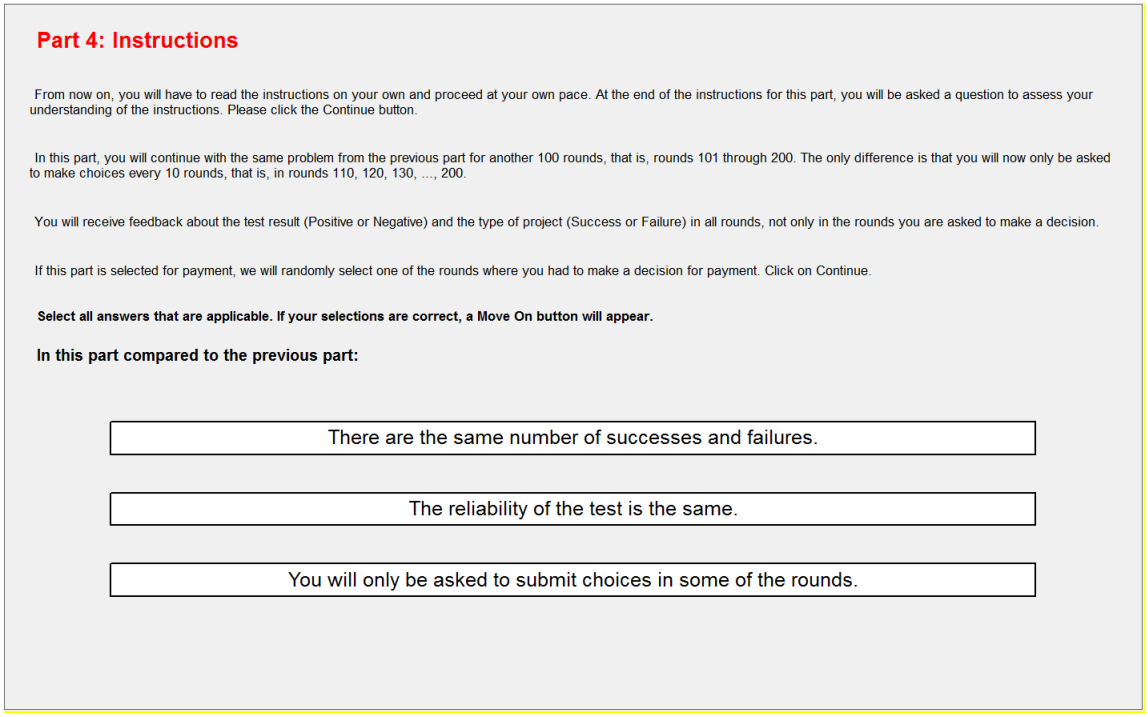
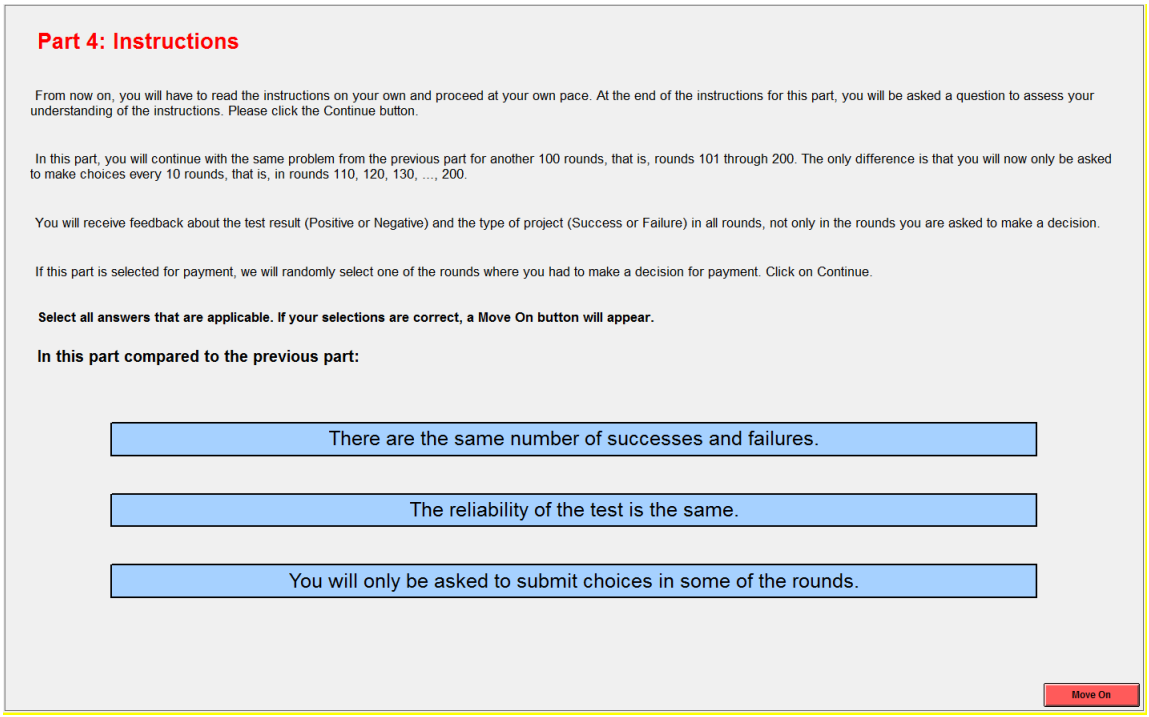


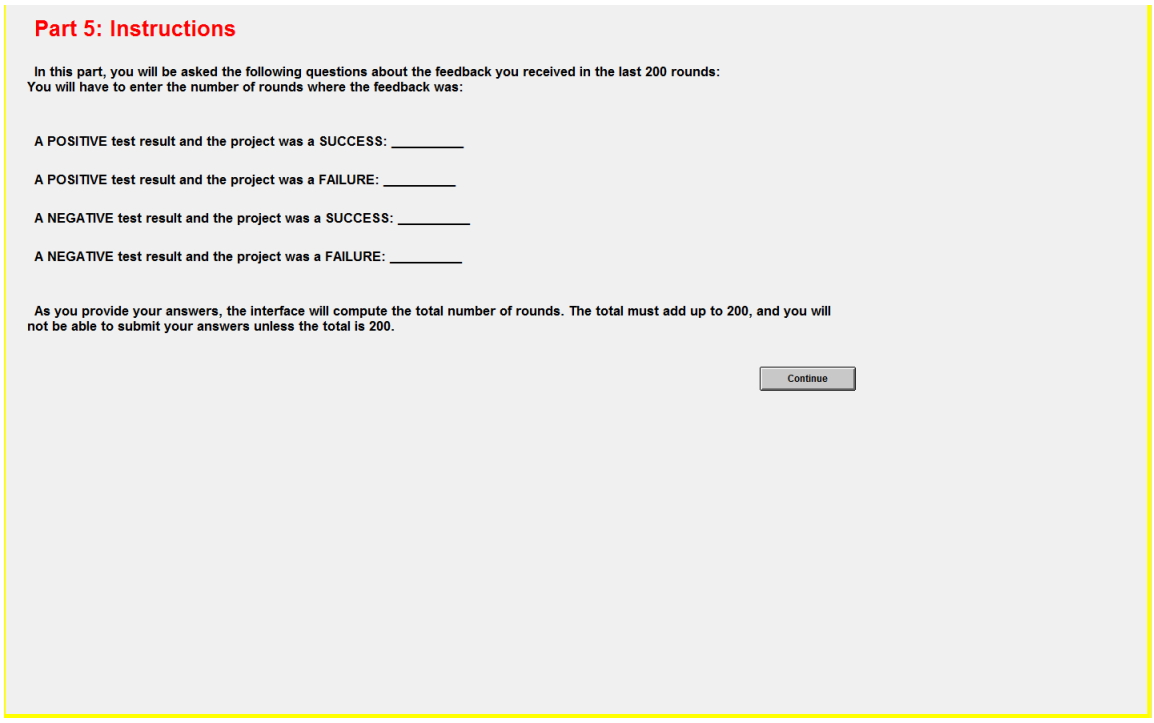
Screenshot 18



Screenshot 19



Screenshot 20



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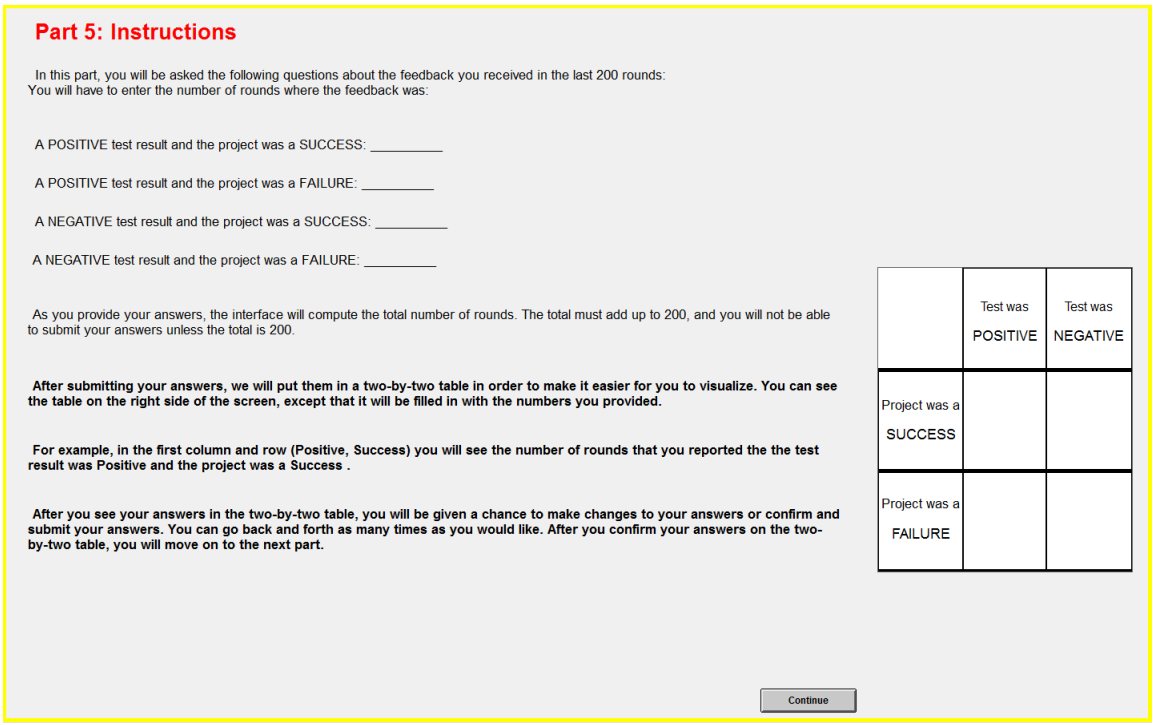

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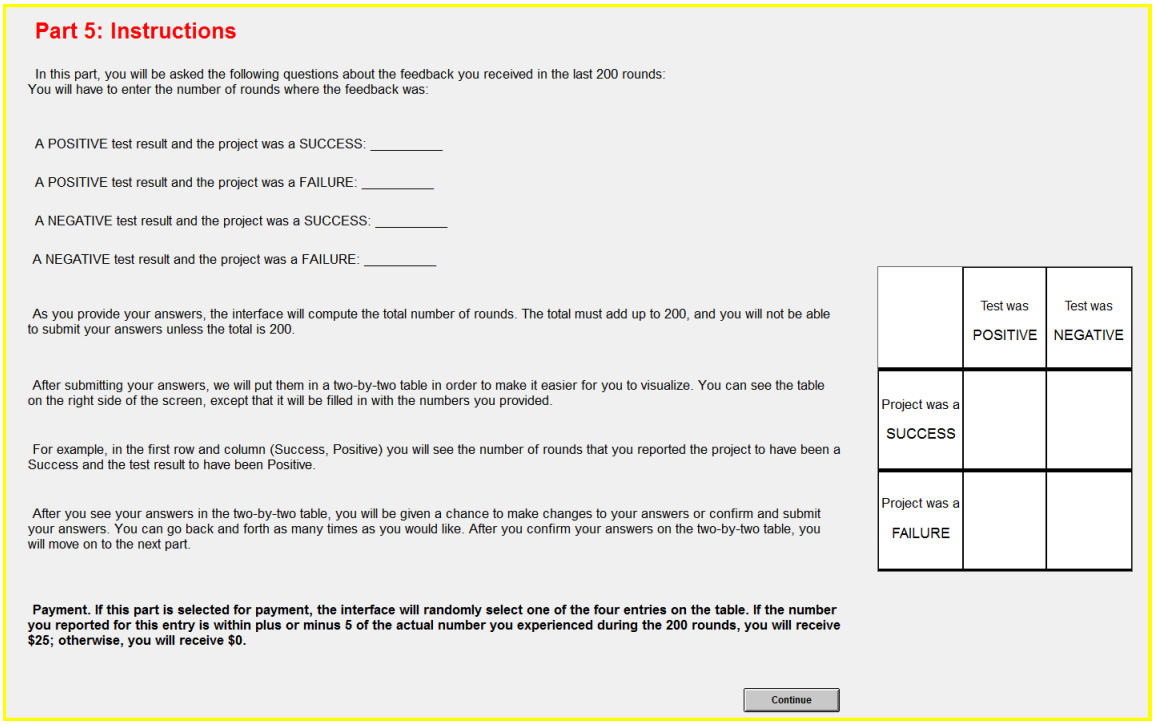

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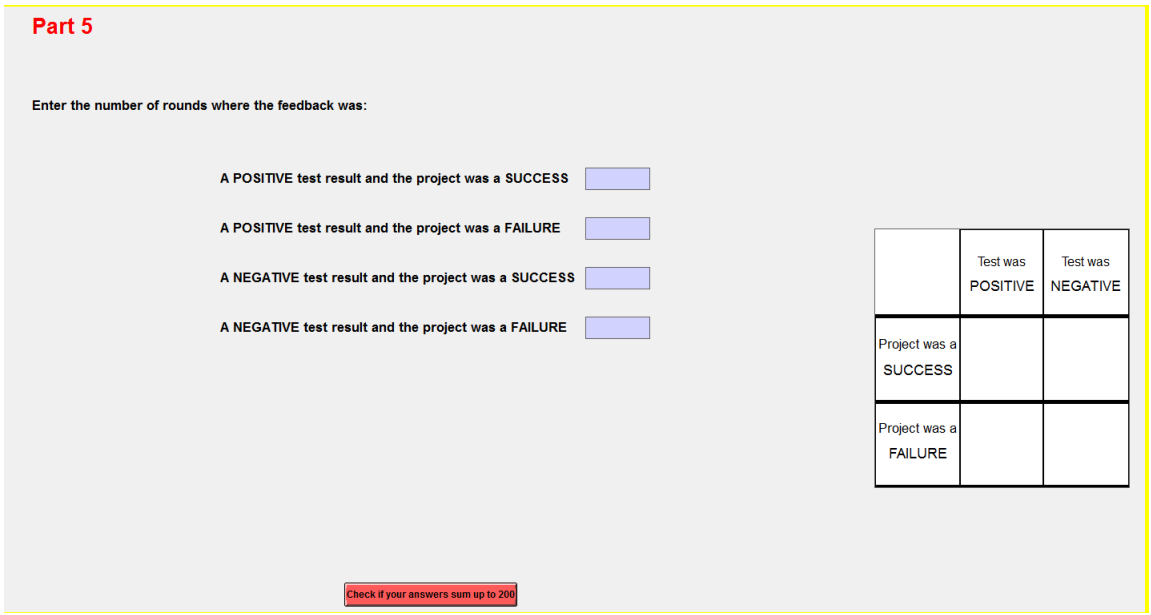

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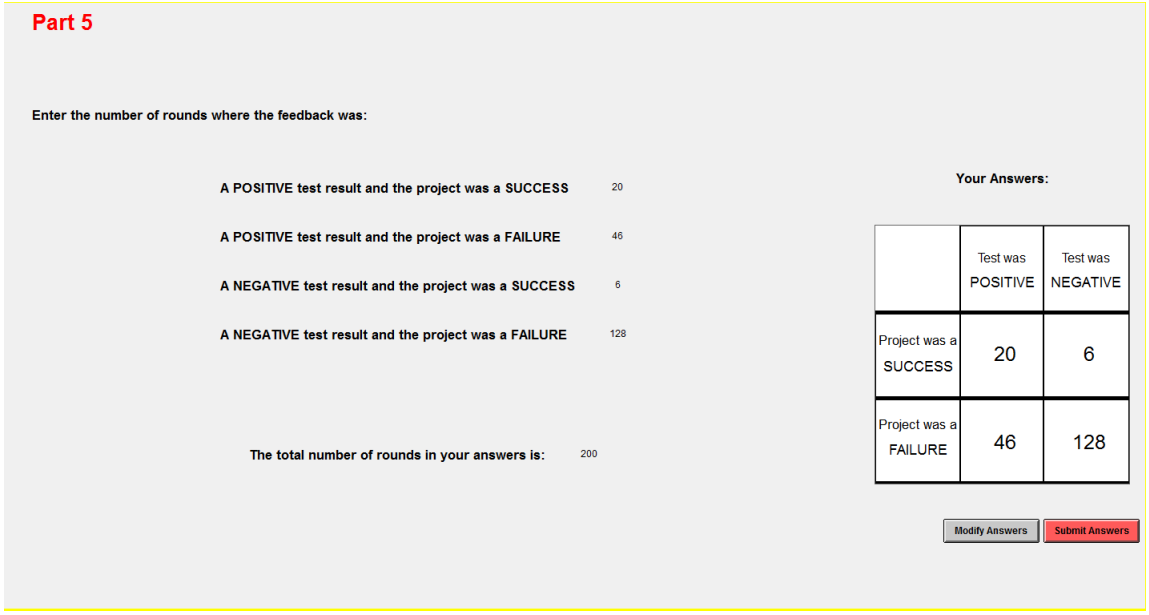

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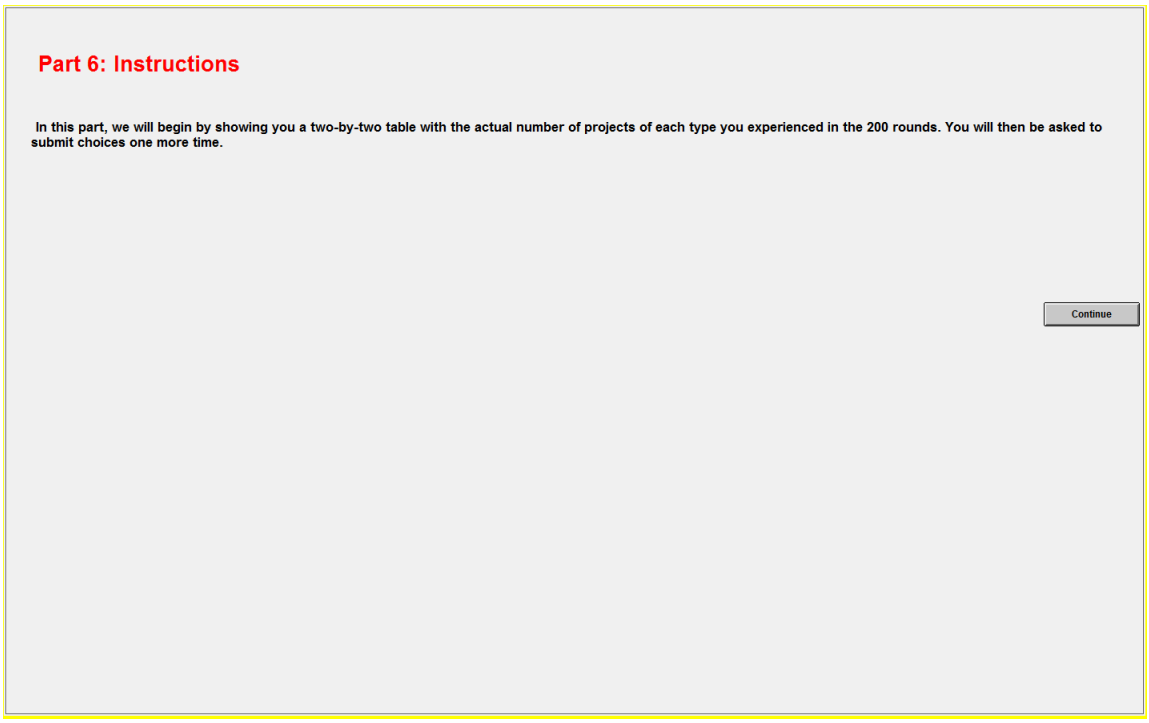
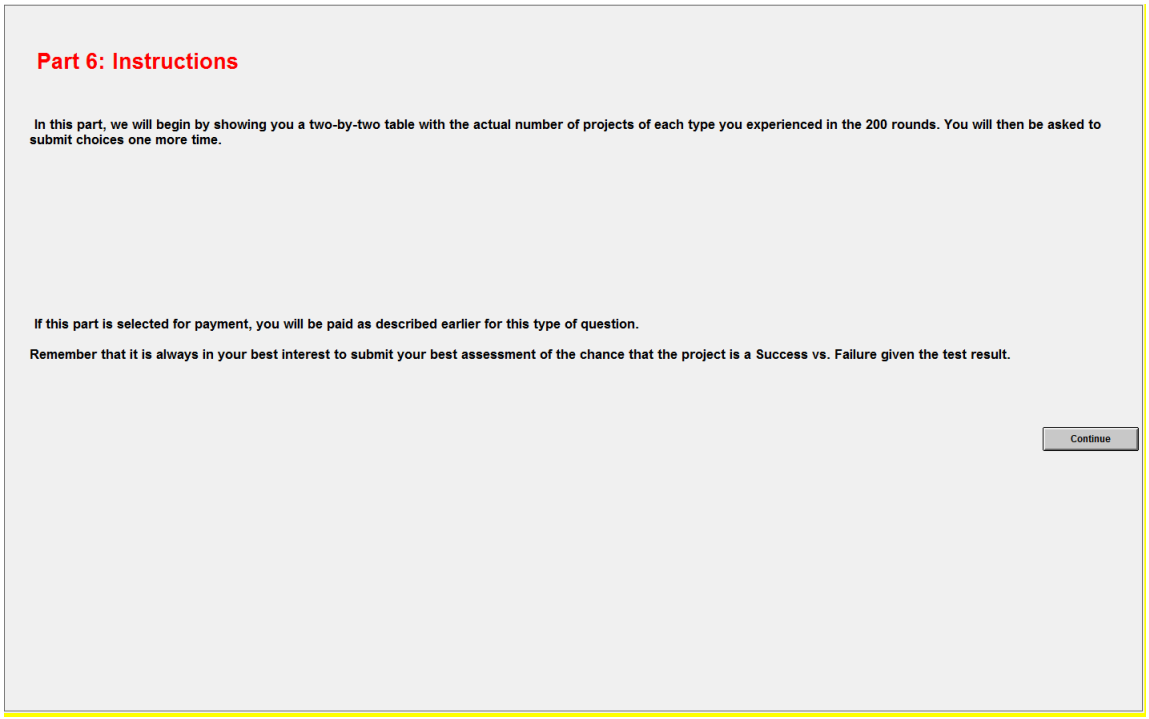


Screenshot 26



Screenshot 27

Part 6

Summary of the 200 rounds that you actually observed:

A POSITIVE test result and the project was a SUCCESS	23
A POSITIVE test result and the project was a FAILURE	43
A NEGATIVE test result and the project was a SUCCESS	5
A NEGATIVE test result and the project was a FAILURE	129

The two-by-two table on the right also summarizes this information and will be available when you make your choices.

Summary of the 200 rounds that you actually observed:

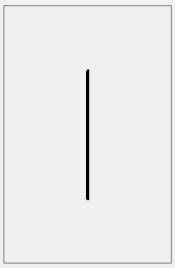
	Test was POSITIVE	Test was NEGATIVE
Project was a SUCCESS	23	5
Project was a FAILURE	43	129

Proceed to Make Choices

Screenshot 28

Part 6

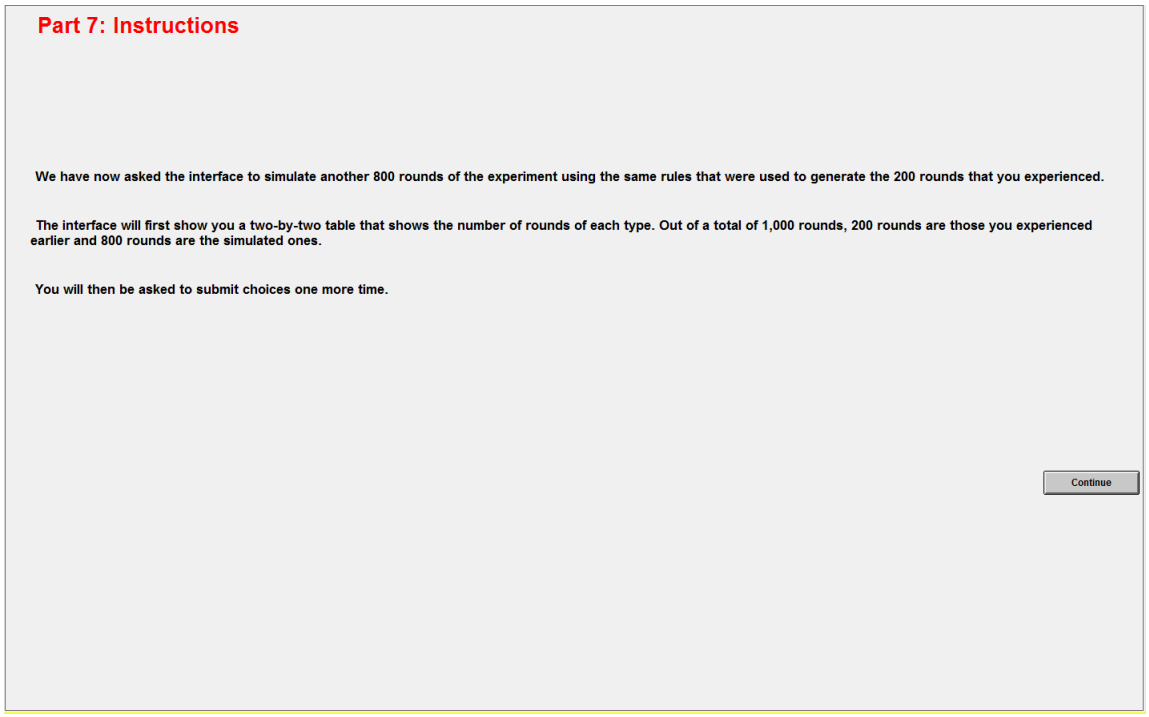
If the test is POSITIVE, what is the chance that the project is a Success vs. Failure?



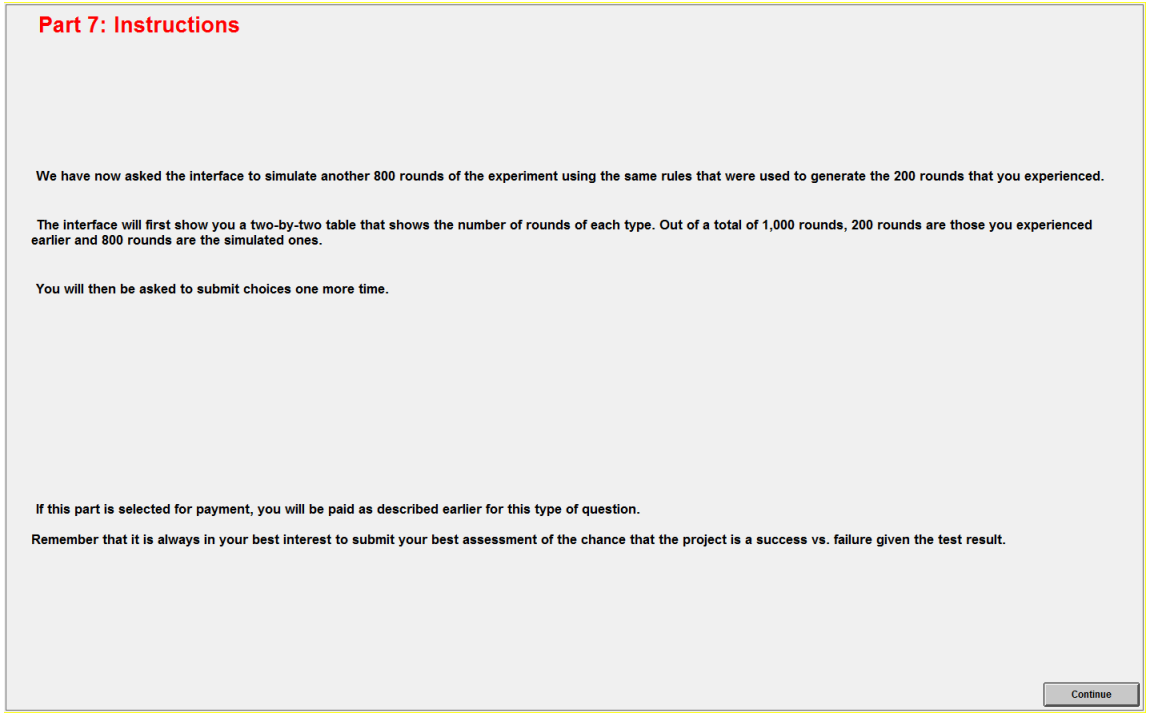
Summary of the 200 rounds that you actually observed:

	Test was POSITIVE	Test was NEGATIVE
Project was a SUCCESS	23	5
Project was a FAILURE	43	129

Screenshot 29



Screenshot 30



Screenshot 31

Part 7

Summary of the 200 rounds that you actually observed plus 800 simulated rounds:

A POSITIVE test result and the project was a SUCCESS	112
A POSITIVE test result and the project was a FAILURE	172
A NEGATIVE test result and the project was a SUCCESS	23
A NEGATIVE test result and the project was a FAILURE	693

The two-by-two table on the right also summarizes this information and will be available when you make your choices.

Summary of the 200 rounds that you actually observed plus 800 simulated rounds:

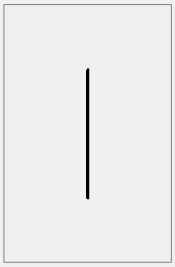
	Test was POSITIVE	Test was NEGATIVE
Project was a SUCCESS	112	23
Project was a FAILURE	172	693

Proceed to Make Choices

Screenshot 32

Part 7

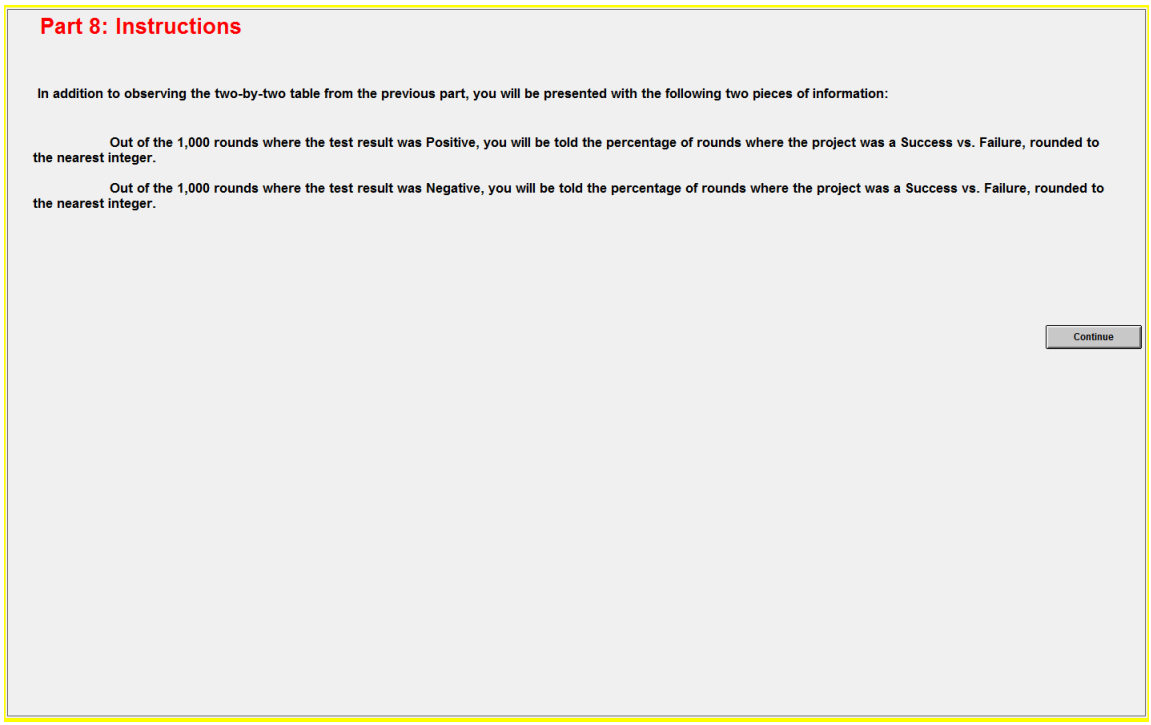
If the test is POSITIVE, what is the chance that the project is a Success vs. Failure?



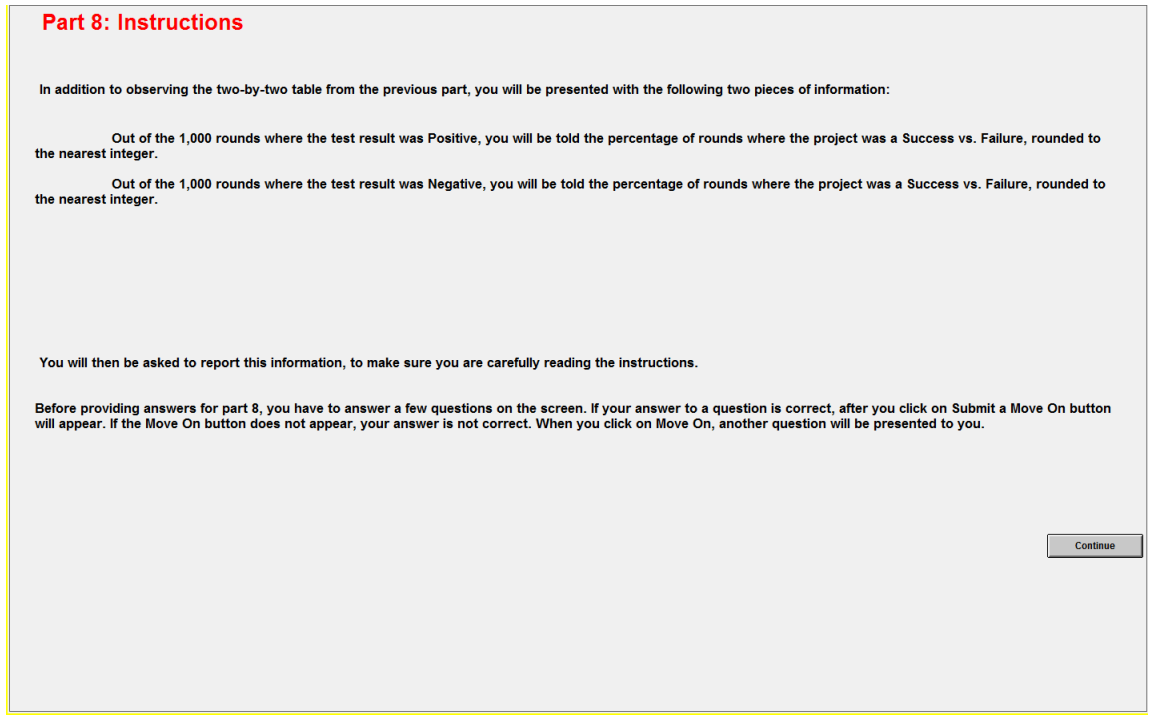
Summary of the 200 rounds that you actually observed plus 800 simulated rounds:

	Test was POSITIVE	Test was NEGATIVE
Project was a SUCCESS	112	23
Project was a FAILURE	172	693

Screenshot 33



Screenshot 34



Screenshot 35

Part 8: Instructions

In addition to observing the two-by-two table from the previous part, you will be presented with the following two pieces of information:

Out of the 1,000 rounds where the test result was Positive, you will be told the percentage of rounds where the project was a Success vs. Failure, rounded to the nearest integer.

Out of the 1,000 rounds where the test result was Negative, you will be told the percentage of rounds where the project was a Success vs. Failure, rounded to the nearest integer.

You will then be asked to report this information, to make sure you are carefully reading the instructions.

Before providing answers for part 8, you have to answer a few questions on the screen. If your answer to a question is correct, after you click on Submit a Move On button will appear. If the Move On button does not appear, your answer is not correct. When you click on Move On, another question will be presented to you.

After reporting the information you received, you will have to submit choices one more time.

If this part and question is selected for payment, you will be paid as described earlier for this type of question. Remember that it is always in your best interest to submit your best assessment of the chance that the project is a success vs. failure given the test result.

Continue

Screenshot 36

Part 8

Summary of the 200 rounds that you actually observed plus 800 simulated rounds:

	Test was POSITIVE	Test was NEGATIVE
Project was a SUCCESS	118	31
Project was a FAILURE	162	689

Proceed to Answer Questions

When the test result was Positive:

The percentage of rounds where the project was a Success was: **42%**

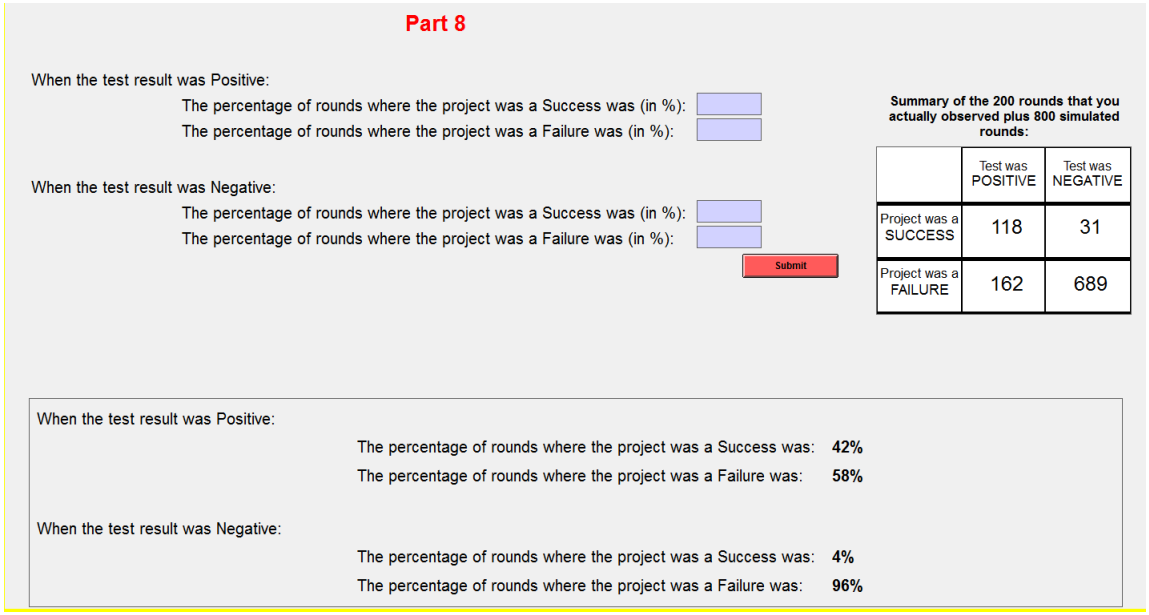
The percentage of rounds where the project was a Failure was: **58%**

When the test result was Negative:

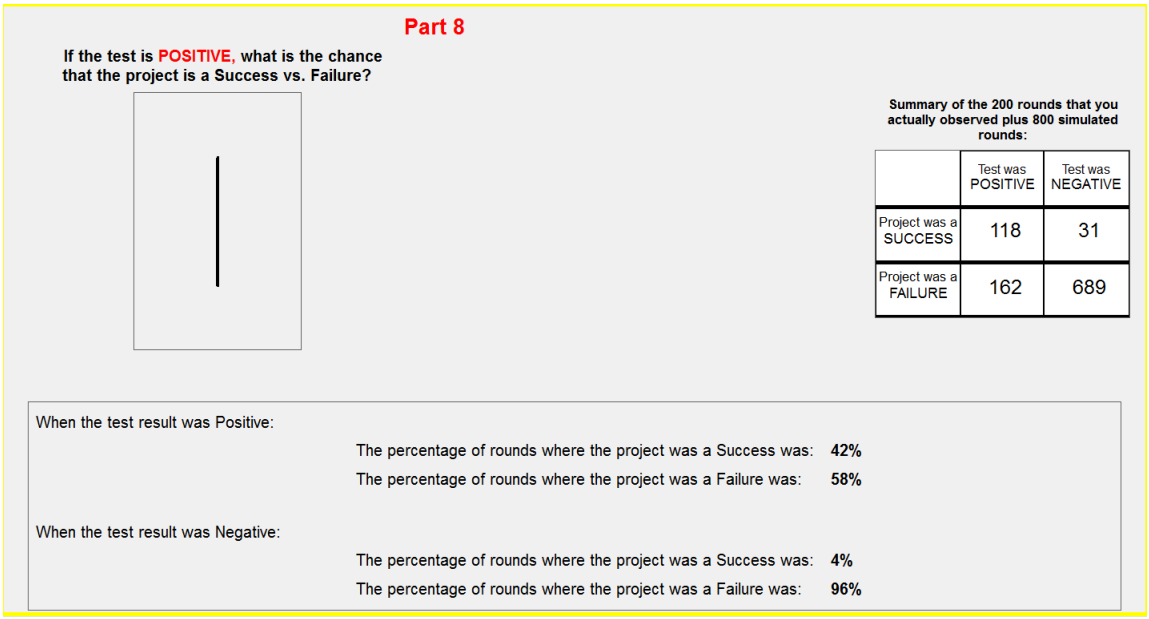
The percentage of rounds where the project was a Success was: **4%**

The percentage of rounds where the project was a Failure was: **96%**

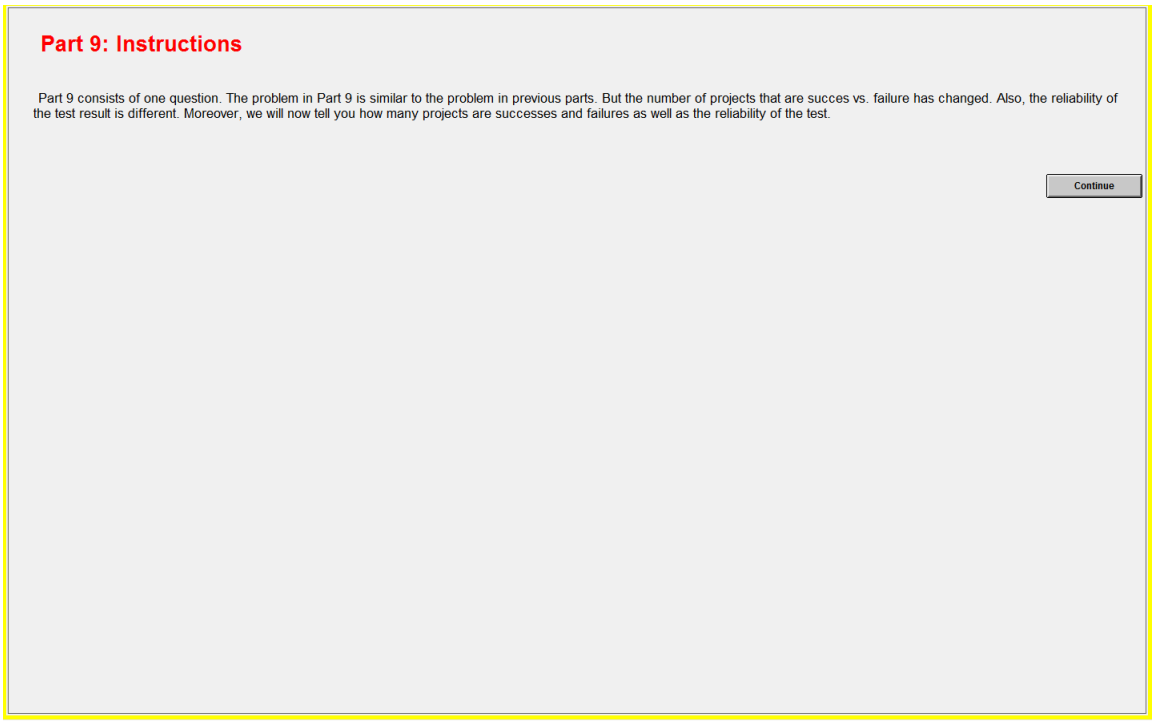
Screenshot 37



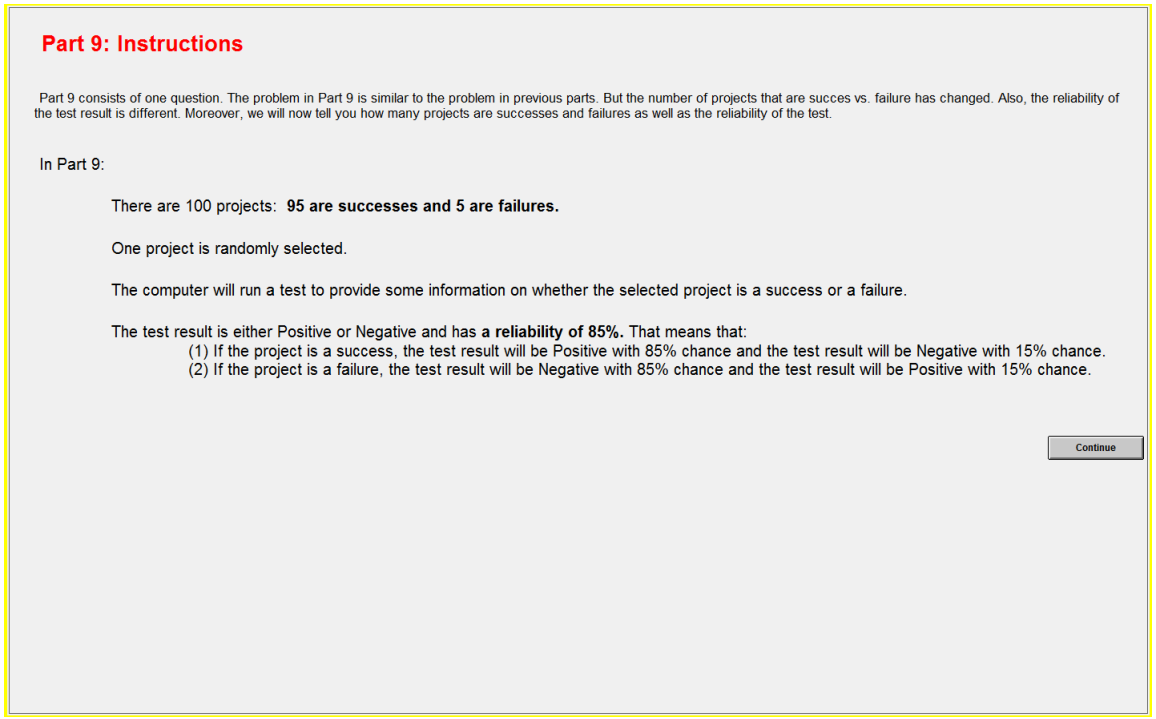
Screenshot 38



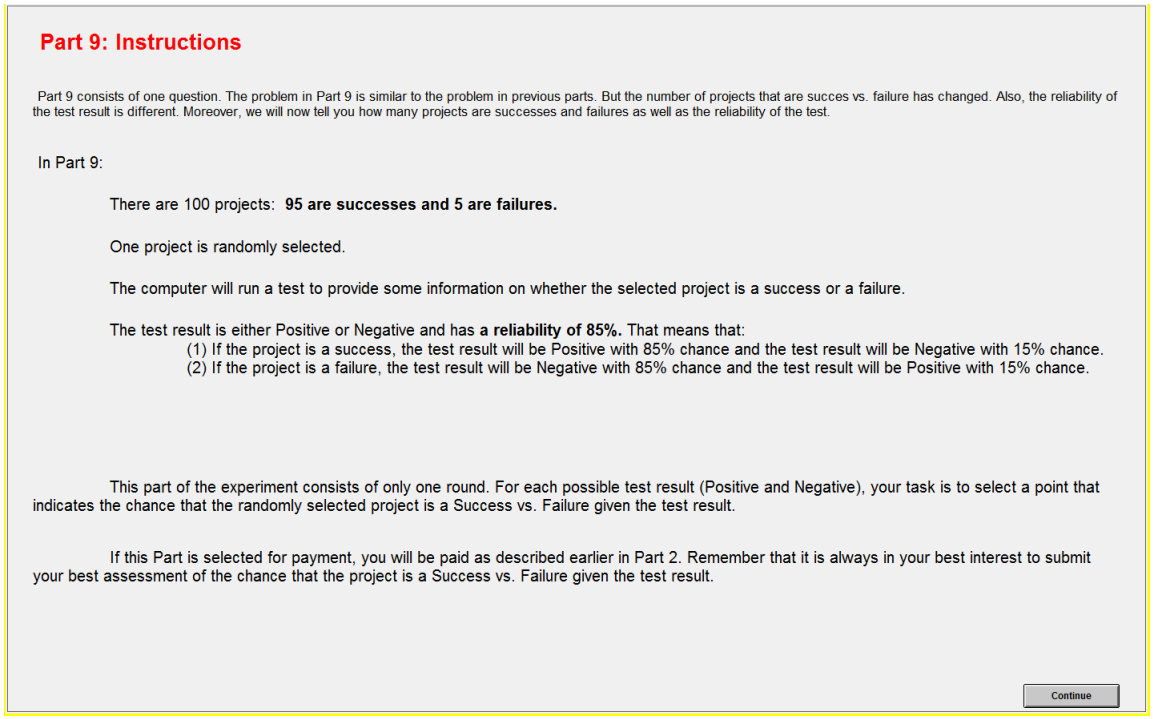
Screenshot 39



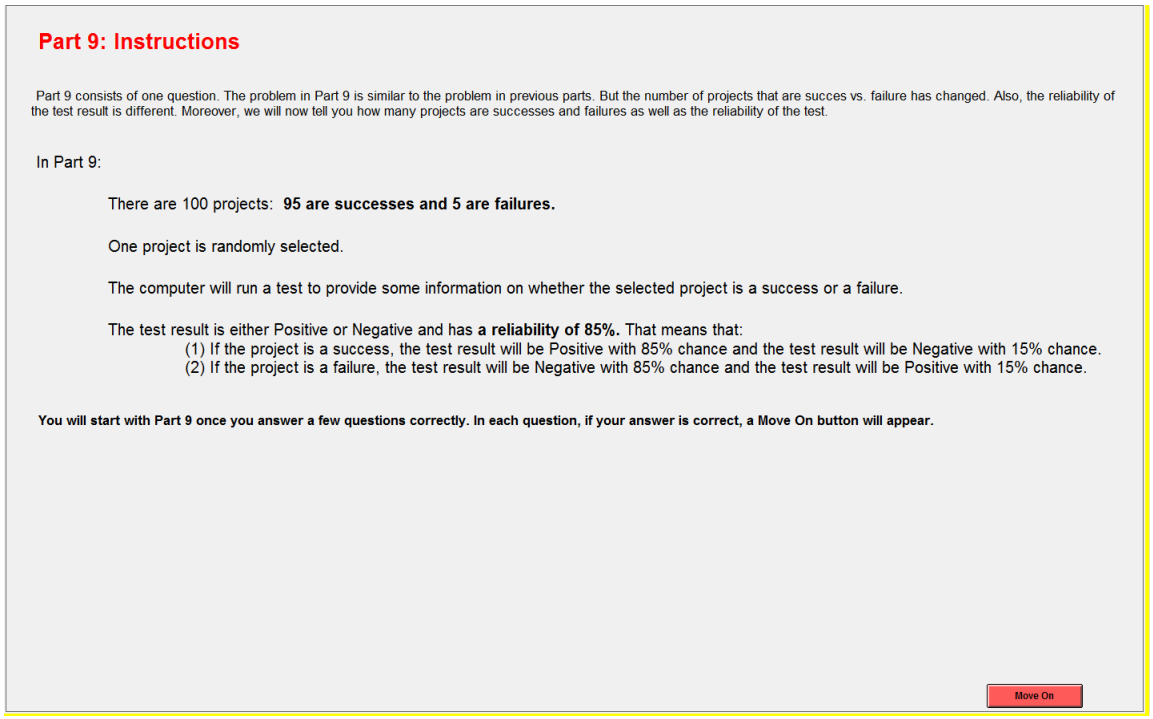
Screenshot 40



Screenshot 41

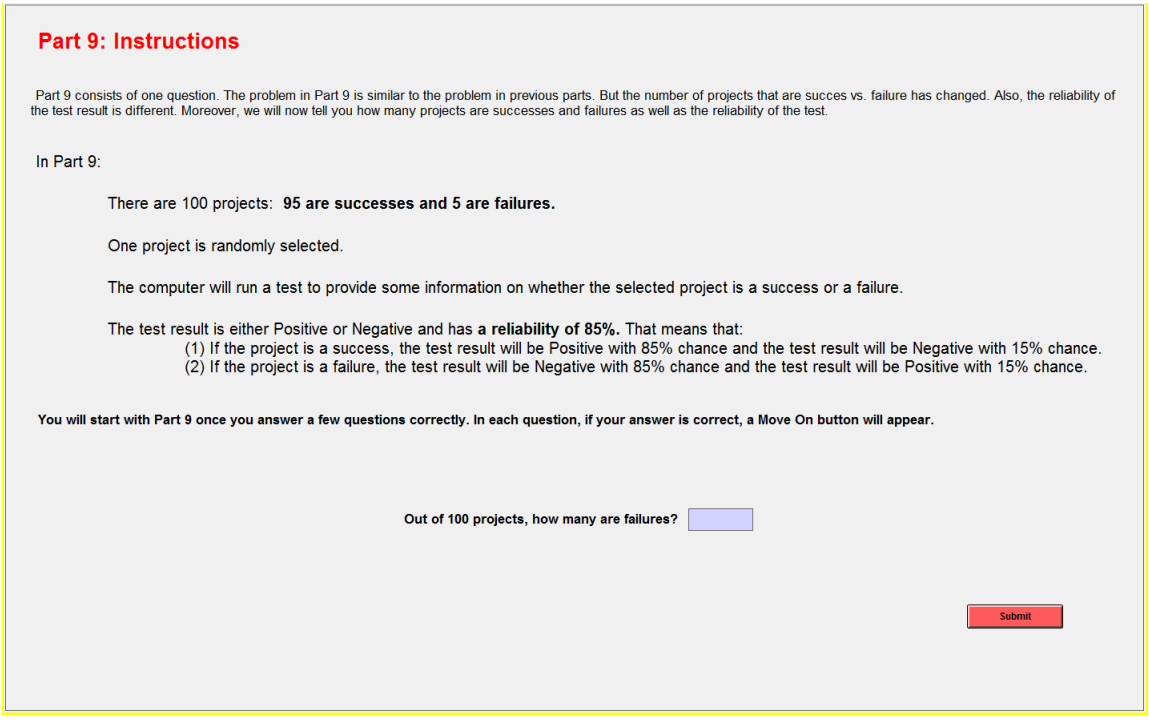


Screenshot 42



Screenshot 43

Screenshot 44



Screenshot 45

Part 9: Instructions

Part 9 consists of one question. The problem in Part 9 is similar to the problem in previous parts. But the number of projects that are succes vs. failure has changed. Also, the reliability of the test result is different. Moreover, we will now tell you how many projects are successes and failures as well as the reliability of the test.

In Part 9:

There are 100 projects: **95 are successes and 5 are failures.**

One project is randomly selected.

The computer will run a test to provide some information on whether the selected project is a success or a failure.

The test result is either Positive or Negative and has **a reliability of 85%.** That means that:
(1) If the project is a success, the test result will be Positive with 85% chance and the test result will be Negative with 15% chance.
(2) If the project is a failure, the test result will be Negative with 85% chance and the test result will be Positive with 15% chance.

You will start with Part 9 once you answer a few questions correctly. In each question, if your answer is correct, a Move On button will appear.

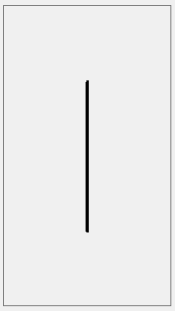
What is the percentage reliability of the test? [Do not include the symbol % in your response.]

Submit

Screenshot 46

Part 9

If the test is POSITIVE, what is the chance that the project is a Success vs. Failure?



Reminder that in Part 9:

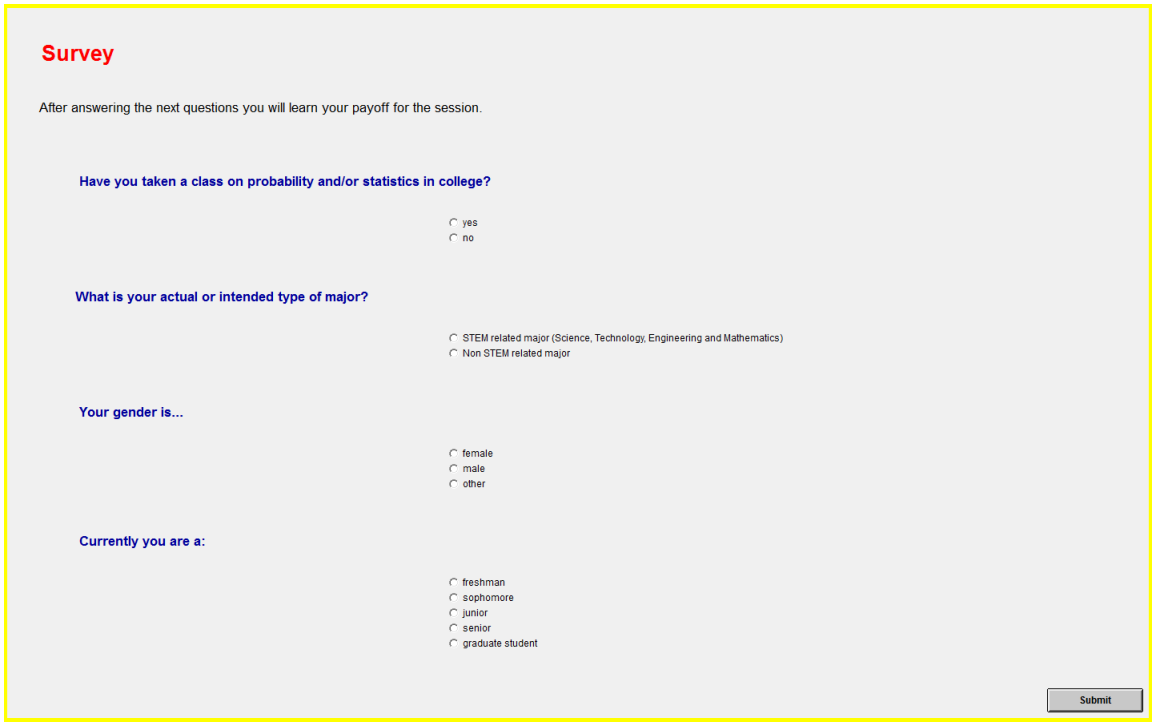
There are 100 projects: **95 are successes and 5 are failures.**

One project is randomly selected.

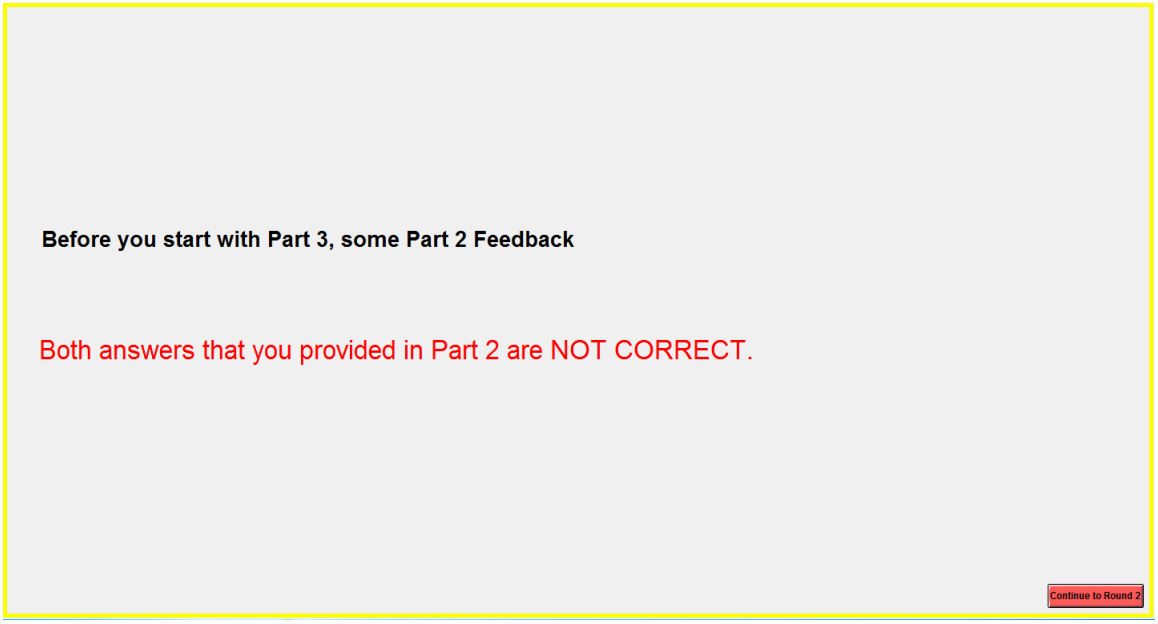
The computer will run a test to provide some information on whether the selected project is a success or a failure.

The test result is either Positive or Negative and has a **reliability of 85%** . That means that:
(1) If the project is a success, the test result will be Positive with 85% chance and the test result will be Negative with 15% chance.
(2) If the project is a failure, the test result will be Negative with 85% chance and the test result will be Positive with 15% chance.

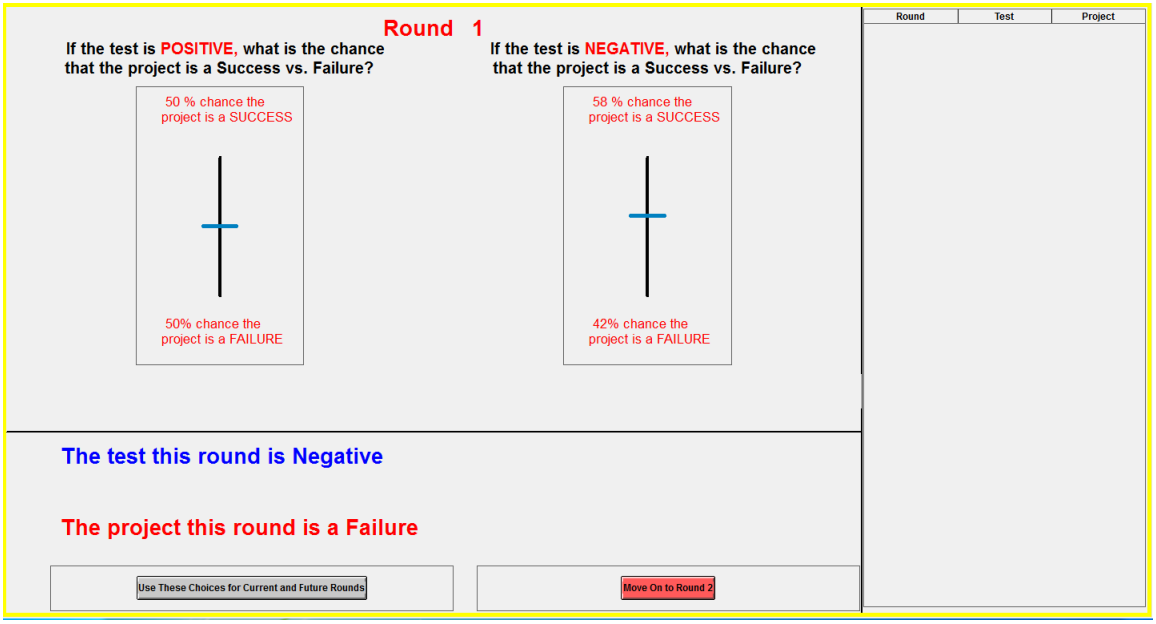
Screenshot 47



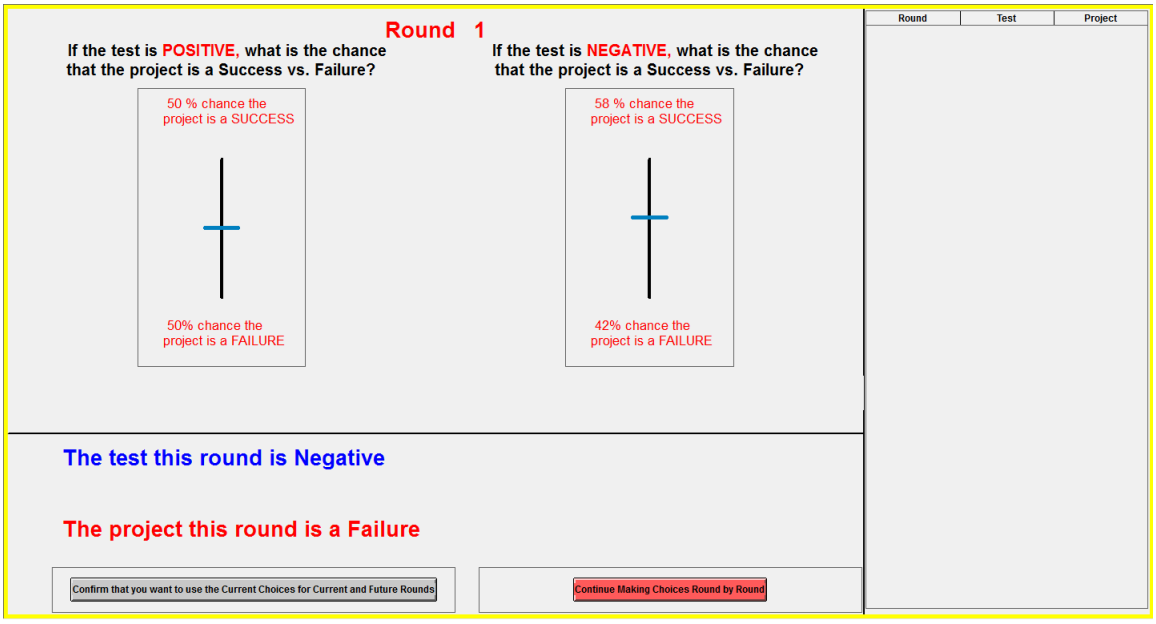
Screenshot 48



Screenshot 49



Screenshot 50



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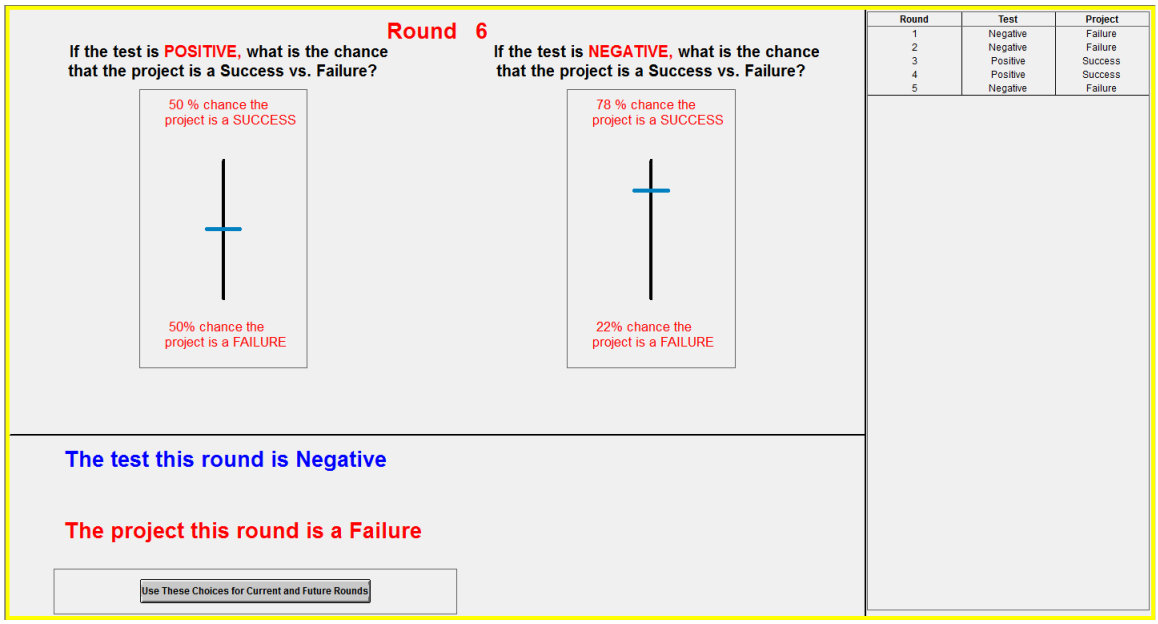
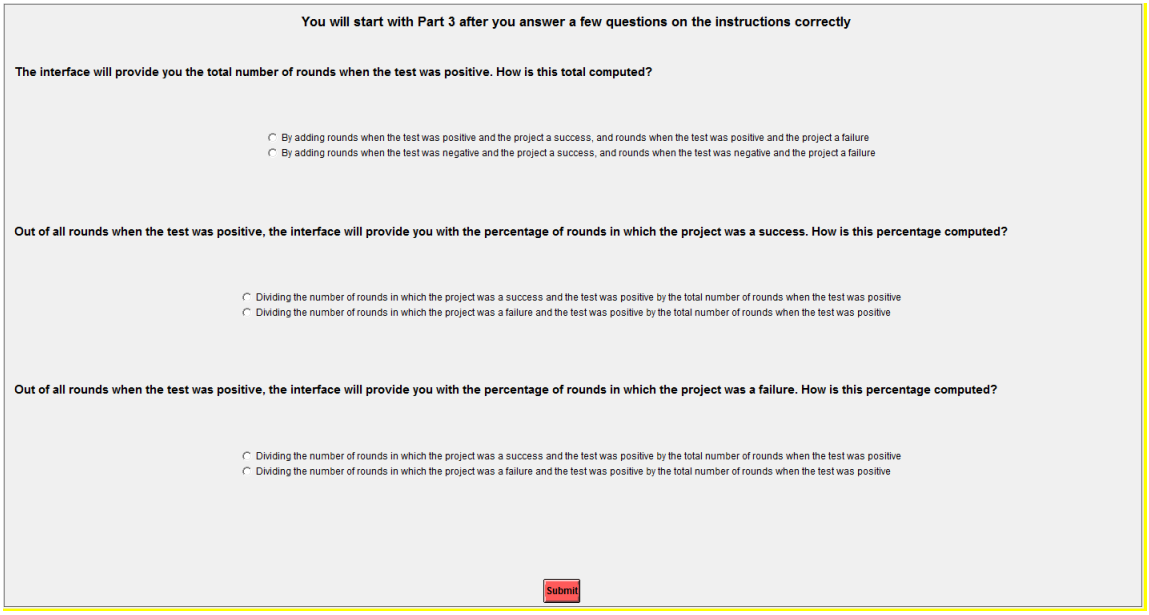
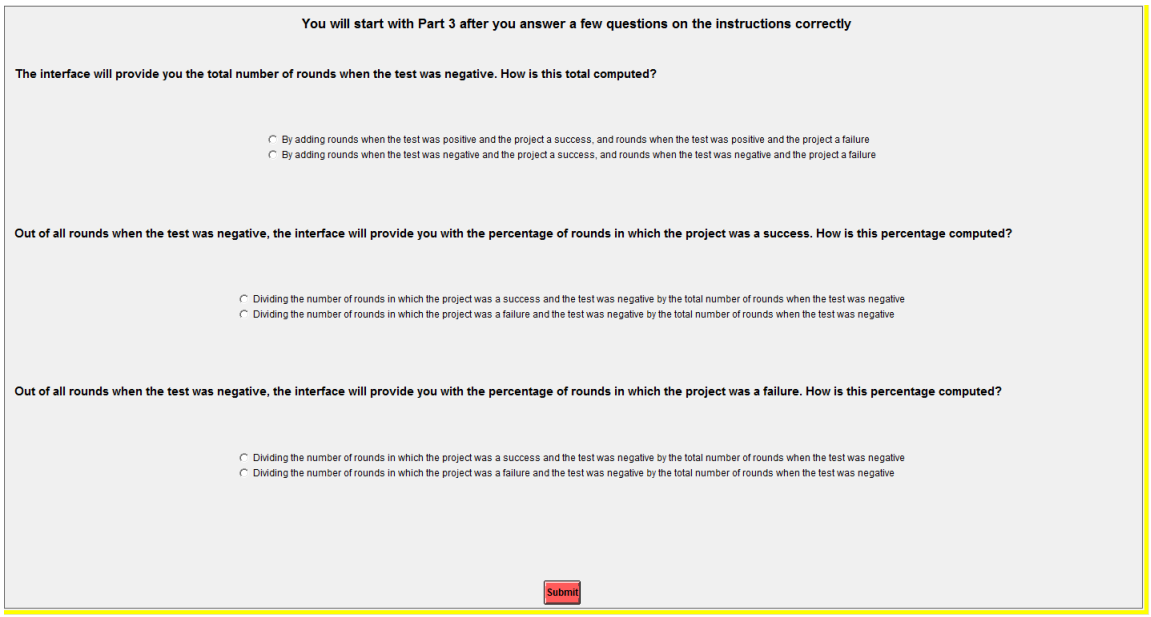


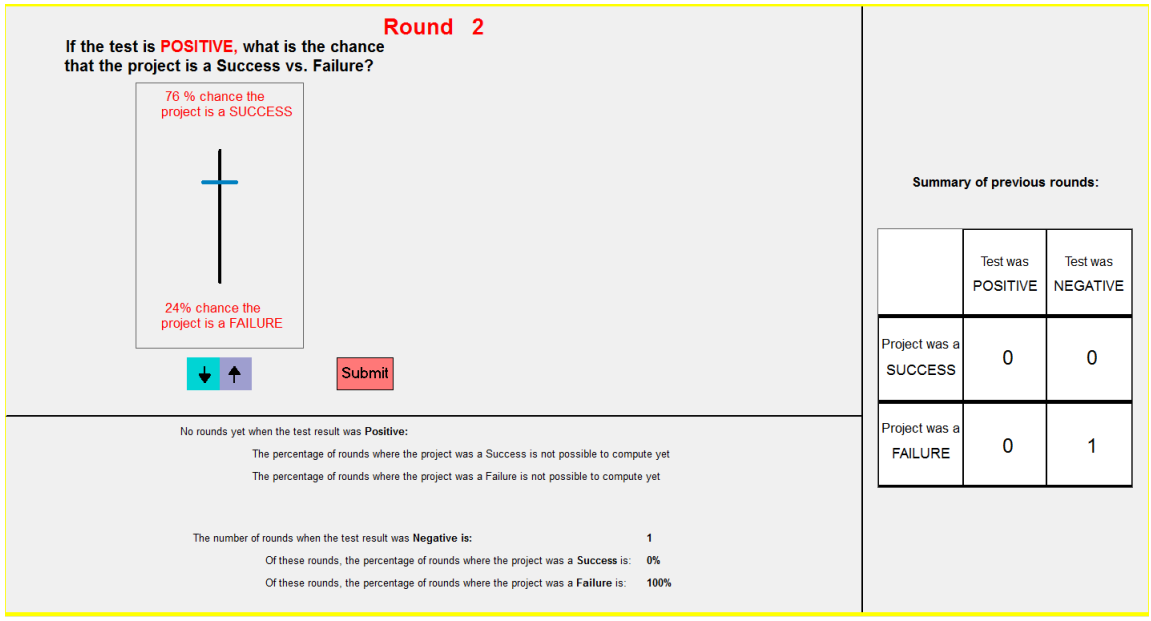
Screenshot 52



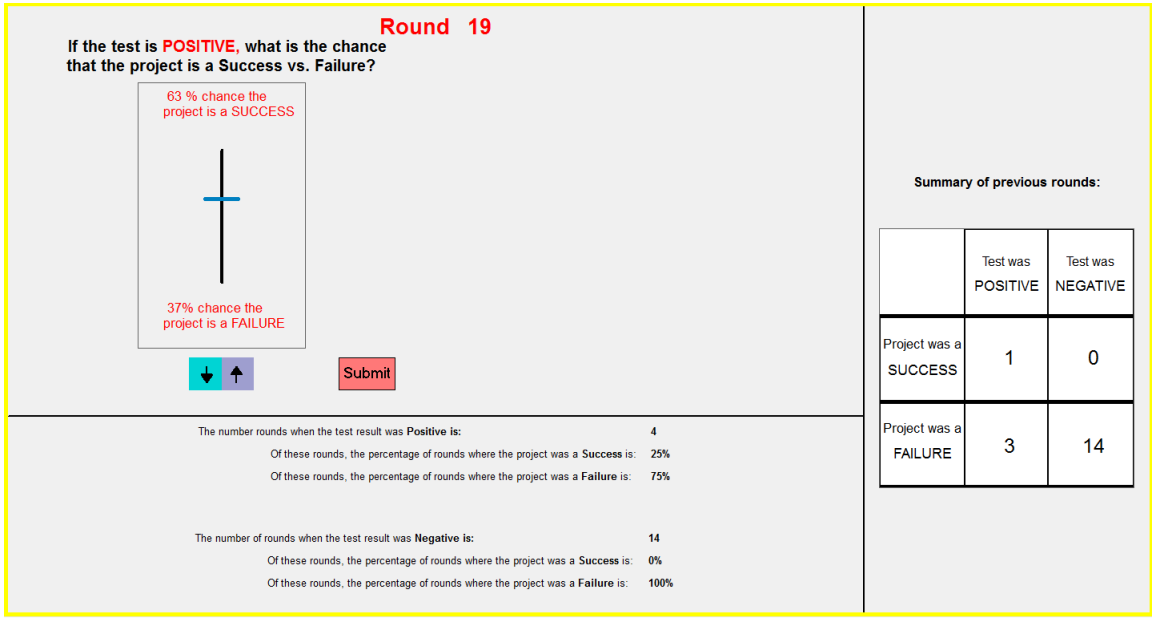
Screenshot 53



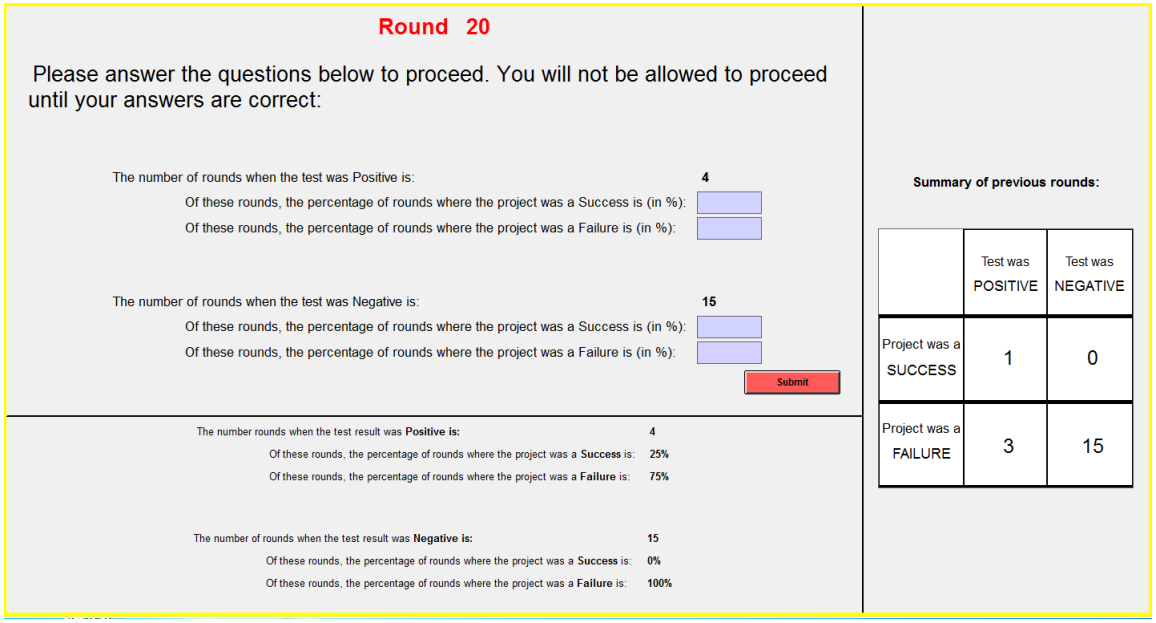
Screenshot 54



Screenshot 55



Screenshot 56



Screenshot 57

3 Voting Treatments

These treatments were conducted on Prolific. Participants were selected to be in the U.S. Participants first enter their prolific ID, subsequently read the consent form and after they provide consent, the experiment moves on to the first page of instructions, shown on Screenshot 58. Next, the instructions to part 1 appear in sequence, paragraph by paragraph. The sequence is shown in Screenshots 59 to 62. The screenshots correspond to the Primitives (Voting) treatment. Taking Screenshot 62 as a reference other treatments are identical until "(...) two options." From then on, we replace the remaining instructions, as described for each treatment next.

- In No Primitives (Voting):
  - Option 1 pays $A.
  - Option 2 pays either $B or $C.
  - We will not tell you the values of A, B or C.
  - Whether Option 2 pays $B or $C depends on a randomly selected number between 1 and 100 (each with equal chance). If the number is greater than X, the payment is $C, otherwise it is $B. We will not tell you the value of X.
  - Which option is implemented for you depends on your vote and the computer player's vote. If any of you vote for Option 1, then Option 1 will be implemented. That is, Option 2 will be implemented if and only if both of you vote for Option 2. Unlike you, the computer player knows the random number, but we will not tell you whether or how the computer player's vote depends on the random number.
- In Complex Primitives (Voting):
  - Option 1 pays either $0, $6, or $10.
  - Option 2 pays either $0, $6 or $10.
  - How much each option pays depends on how a randomly selected number between 1 and 100 (each with equal chance) compares to X. X is equal to 60.
  - Whether Option 1 pays $0, $6 or $10 depends on the random number as well as on how many people in the group vote for Option 1. Option 1 pays $6 for sure if there is only one vote for Option 1. If there are two votes for Option 1, then the payment is $6 if the random number is smaller than or equal to X, $0 if the random number is from X+1 to X+10, and $10 if the random number is greater than X+10."

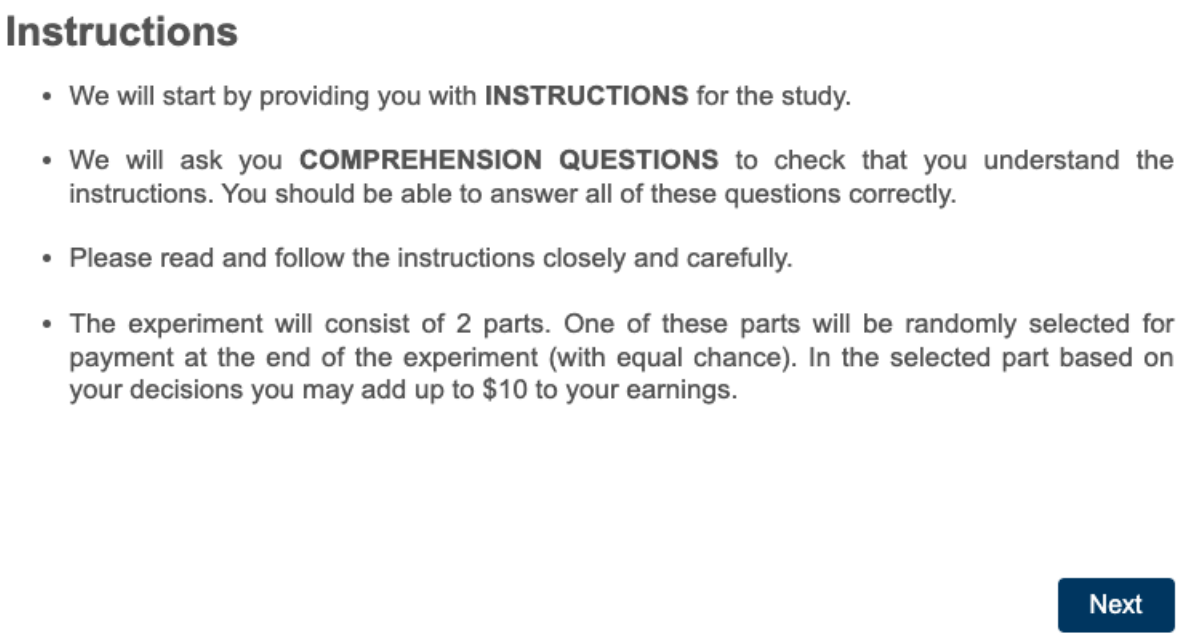
- Whether Option 2 pays \$0, \$6 or \$10 depends only on the random number. The payment is \$0 if the random number is smaller than or equal to X-2, \$6 if the random number is X-1 or X, and \$10 if the random number is greater than X."
- Which option is implemented for you depends on your vote and the computer player's vote. If any of you vote for Option 1, then Option 1 will be implemented. That is, Option 2 will be implemented if and only if both of you vote for Option 2. Unlike you, the computer player knows the random number and is programmed to vote for Option 2 whenever the random number is higher than 60.

- In Complex Primitives (Voting):
  - Option 1 pays either \$A, \$B, or \$C.
  - Option 2 pays either \$A, \$B or \$C.
  - We will not tell you the values of A, B or C.
  - How much each option pays depends on how a randomly selected number between 1 and 100 (each with equal chance) compares to X. We will not tell you the value of X.
  - Whether Option 1 pays \$A, \$B or \$C depends on the random number as well as on how many people in the group vote for Option 1. Option 1 pays \$B for sure if there is only one vote for Option 1. If there are two votes for Option 1, then the payment is \$B if the random number is smaller than or equal to X, \$A if the random number is from X+1 to X+10, and \$C if the random number is greater than X+10."
  - Whether Option 2 pays \$A, \$B or \$C depends only on the random number. The payment is \$A if the random number is smaller than or equal to X-2, \$B if the random number is X-1 or X, and \$C if the random number is greater than X."
  - Which option is implemented for you depends on your vote and the computer player's vote. If any of you vote for Option 1, then Option 1 will be implemented. That is, Option 2 will be implemented if and only if both of you vote for Option 2. Unlike you, the computer player knows the random number, but we will not tell you whether or how the computer player's vote depends on the random number.

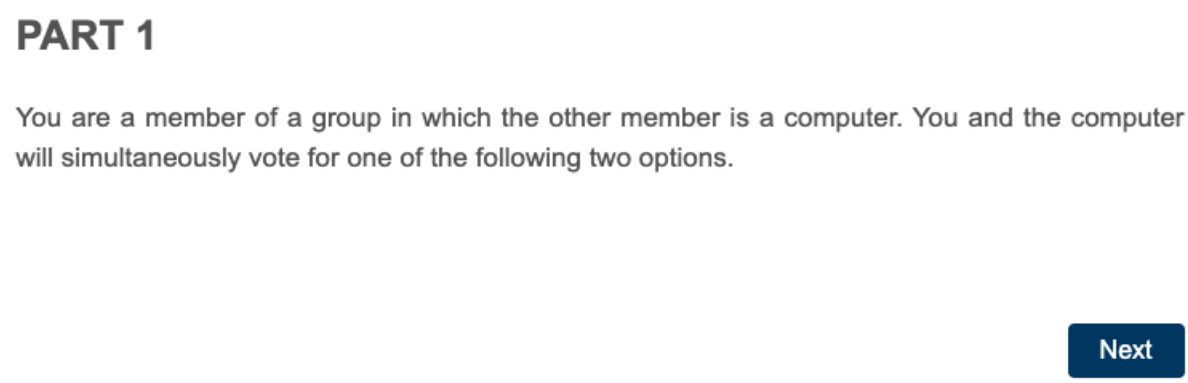
Subsequently, participants have to answer two questions on the screen, shown in Screenshots 63 and 64. The understanding questions are identical in all treatments. Once they have answered questions correctly, they can submit their choice for Part 1. The decision is shown in Screenshot 65. Screenshot 66 shows the question on confidence.

Part 2 proceeds in the same manner in all treatments. The progression of instructions is shown on Screenshots 67 to 69. Participants have to answer a question on understanding, shown on

Screenshot 70. Once they answer correctly, there are provided feedback for Round 1, as shown on Screenshot 71. Screenshot 72 shows where they make the decisions from Round 2 onward. At any point they can click on "here" and re-read instructions. They can modify their vote and the move on to the next round by clicking Next at the bottom right. Data will be collected in the table, and Screenshot 73 illustrates the table after two rounds of feedback.



Screenshot 58



Screenshot 59

PART 1

You are a member of a group in which the other member is a computer. You and the computer will simultaneously vote for one of the following two options.

Option 1 pays $6.
Option 2 pays either $0 or $10.

Next

Screenshot 60

PART 1

You are a member of a group in which the other member is a computer. You and the computer will simultaneously vote for one of the following two options.

Option 1 pays $6.
Option 2 pays either $0 or $10.

Whether Option 2 pays $0 or $10 depends on a randomly selected number between 1 and 100 (each with equal chance). If the number is greater than X, the payment is $10, otherwise it is $0. X is equal to 60.

Next

Screenshot 61

PART 1

You are a member of a group in which the other member is a computer. You and the computer will simultaneously vote for one of the following two options.

Option 1 pays $6.
Option 2 pays either $0 or $10.

Whether Option 2 pays $0 or $10 depends on a randomly selected number between 1 and 100 (each with equal chance). If the number is greater than X, the payment is $10, otherwise it is $0. X is equal to 60.

Which option is implemented for you depends on your vote and the computer player's vote. If any of you vote for Option 1, then Option 1 will be implemented. That is, Option 2 will be implemented if and only if both of you vote for Option 2. Unlike you, the computer player knows the random number and is programmed to vote for Option 2 whenever the random number is higher than 60.

Next

Screenshot 62

PART 1

You are a member of a group in which the other member is a computer. You and the computer will simultaneously vote for one of the following two options.

Option 1 pays $6.
Option 2 pays either $0 or $10.

Whether Option 2 pays $0 or $10 depends on a randomly selected number between 1 and 100 (each with equal chance). If the number is greater than X, the payment is $10, otherwise it is $0. X is equal to 60.

Which option is implemented for you depends on your vote and the computer player's vote. If any of you vote for Option 1, then Option 1 will be implemented. That is, Option 2 will be implemented if and only if both of you vote for Option 2. Unlike you, the computer player knows the random number and is programmed to vote for Option 2 whenever the random number is higher than 60.

Which of the following statements are correct? (select all that are correct):

- The option which is implemented depends on your vote and the computer player's vote.
- If any vote (yours or the computer player's) is for Option 1, then Option 1 is implemented.
- If both you and the computer player vote for Option 2, then Option 2 is implemented.
- None

Next

Screenshot 63

PART 1

You are a member of a group in which the other member is a computer. You and the computer will simultaneously vote for one of the following two options.

Option 1 pays $6.
Option 2 pays either $0 or $10.

Whether Option 2 pays $0 or $10 depends on a randomly selected number between 1 and 100 (each with equal chance). If the number is greater than X, the payment is $10, otherwise it is $0. X is equal to 60.

Which option is implemented for you depends on your vote and the computer player's vote. If any of you vote for Option 1, then Option 1 will be implemented. That is, Option 2 will be implemented if and only if both of you vote for Option 2. Unlike you, the computer player knows the random number and is programmed to vote for Option 2 whenever the random number is higher than 60.

Which of the following statements is correct?

The computer player follows a voting rule and you know how the voting rule depends on the random number.

The computer player follows a voting rule and you do not know how or whether the voting rule depends on the random number.

Next

Screenshot 64

PART 1

You are a member of a group in which the other member is a computer. You and the computer will simultaneously vote for one of the following two options.

Option 1 pays $6.
Option 2 pays either $0 or $10.

Whether Option 2 pays $0 or $10 depends on a randomly selected number between 1 and 100 (each with equal chance). If the number is greater than X, the payment is $10, otherwise it is $0. X is equal to 60.

Which option is implemented for you depends on your vote and the computer player's vote. If any of you vote for Option 1, then Option 1 will be implemented. That is, Option 2 will be implemented if and only if both of you vote for Option 2. Unlike you, the computer player knows the random number and is programmed to vote for Option 2 whenever the random number is higher than 60.

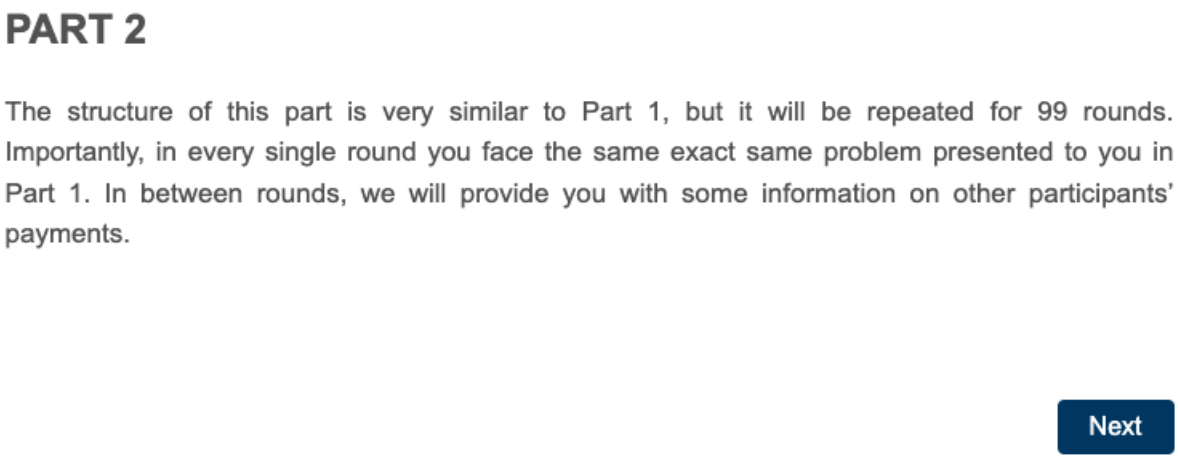
Make a choice now:

Vote for Option 1 | Vote for Option 2

Next

Screenshot 65

Screenshot 66



Screenshot 67

PART 2

The structure of this part is very similar to Part 1, but it will be repeated for 99 rounds. Importantly, in every single round you face the same exact same problem presented to you in Part 1. In between rounds, we will provide you with some information on other participants' payments.

Once again, the problem is the same in every single round and identical to what was presented to you in Part 1, meaning that the options you face and the computer's strategy is the same. The randomly selected number (relevant for Option 2) will be determined independently in every round. If it helps, you can think of each number as being represented by a ball in a 100-ball jar. Whenever a ball with a certain number is randomly selected in one round, the ball is then returned to the jar at the end of the round. So that the numbers selected in previous rounds will have no impact on the number selected in the current round.

Next

Screenshot 68

PART 2

The structure of this part is very similar to Part 1, but it will be repeated for 99 rounds. Importantly, in every single round you face the same exact same problem presented to you in Part 1. In between rounds, we will provide you with some information on other participants' payments.

Once again, the problem is the same in every single round and identical to what was presented to you in Part 1, meaning that the options you face and the computer's strategy is the same. The randomly selected number (relevant for Option 2) will be determined independently in every round. If it helps, you can think of each number as being represented by a ball in a 100-ball jar. Whenever a ball with a certain number is randomly selected in one round, the ball is then returned to the jar at the end of the round. So that the numbers selected in previous rounds will have no impact on the number selected in the current round.

We will refer to Part 1 choice as your choice for Round 1 of Part 2. At the end of every round, we will show you the payment received by a random other participant in the experiment. In odd rounds, we will show you the payment received by a random other participant who voted for Option 1. In even rounds, we will show you the payment received by a random participant who voted for Option 2. The information you observe about others will appear on the table at the bottom of your screen. The table will show how the participant voted and how much payment they received.

Next

Screenshot 69

What information will be provided to you in between rounds?

No Information

Information about the payment received by a random other participant in the experiment.

Next

Screenshot 70

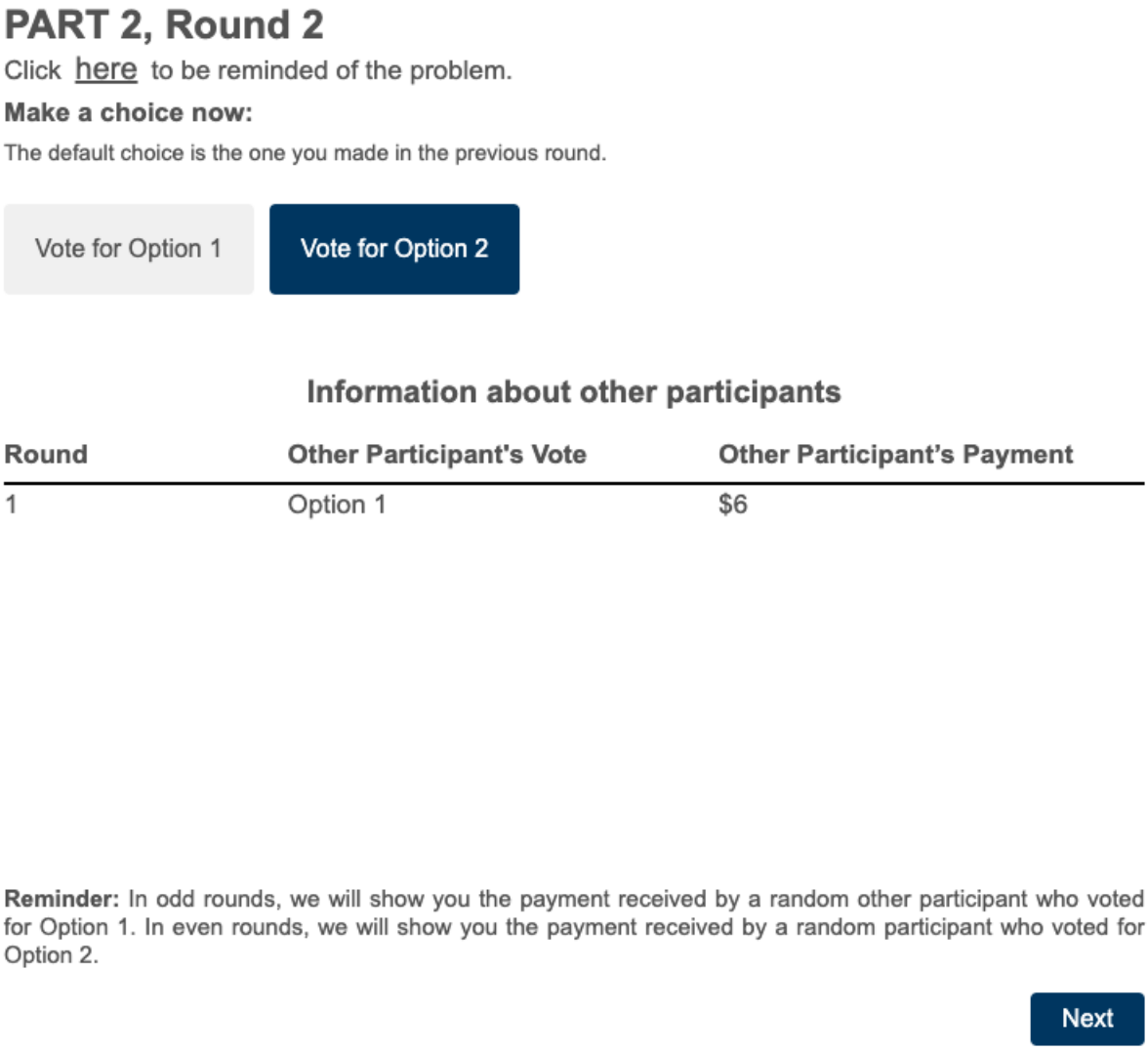
PART 2, Round 1

You voted for Option 2.

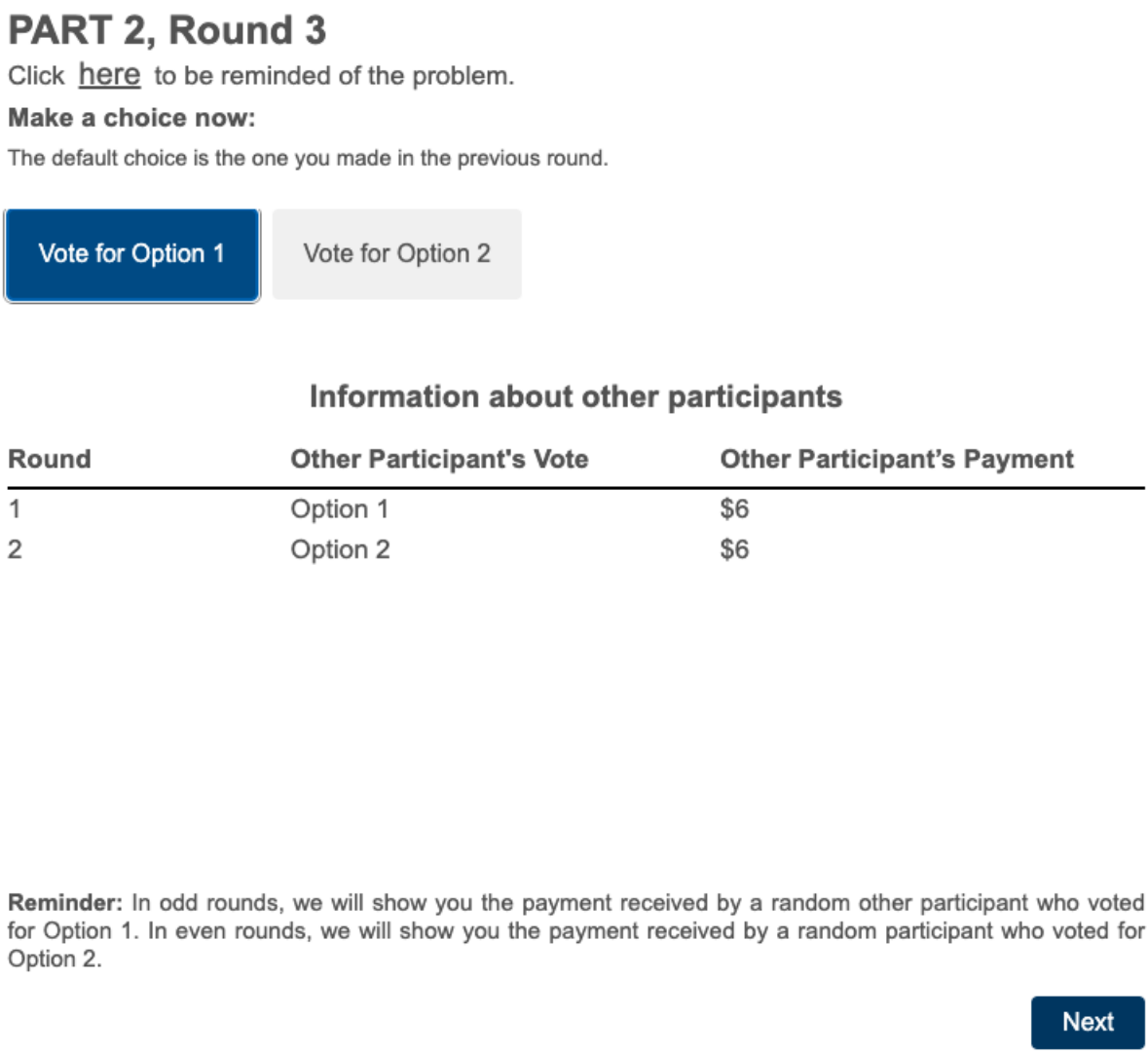
The randomly selected other participant voted for Option 1 and received $6.

Next

Screenshot 71



Screenshot 72



Screenshot 73