

On Prior Confidence and Belief Updating Supplementary Materials

Kenneth Chan, Gary Charness, Chetan Dave, J. Lucas Reddinger

December 13, 2024

1 Interface

Figures 1 to 3 show the experimental interface and comprehension checks.

2 Instruments

Figures 4 to 26 show the slides that we personally presented to subjects using a projector. Subjects also retained a printed copy (two slides per page) for reference during the experiment.

Comprehension Check

Does the proportion of success and failure of projects vary across tasks?

- Yes
- No

Select all the statement(s) that is/are true about a test with 80% reliability?

- The test result will be Positive with 80% chance when the project is a success.
- The test result will be Positive with 80% chance when the project is a failure.
- The test result will be Negative with 80% chance when the project is a success.
- The test result will be Negative with 80% chance when the project is a failure.

Suppose a test has 80% reliability. After seeing a positive test result, the selected project is more likely to be a _____.

- Success
- Failure
- Not possible to tell

The more confident I am of my guess being within 3 percentage points of the actual value, I should

- Report a higher level of confidence
- Report a lower level of confidence
- What I report does not matter

----- Page Break -----

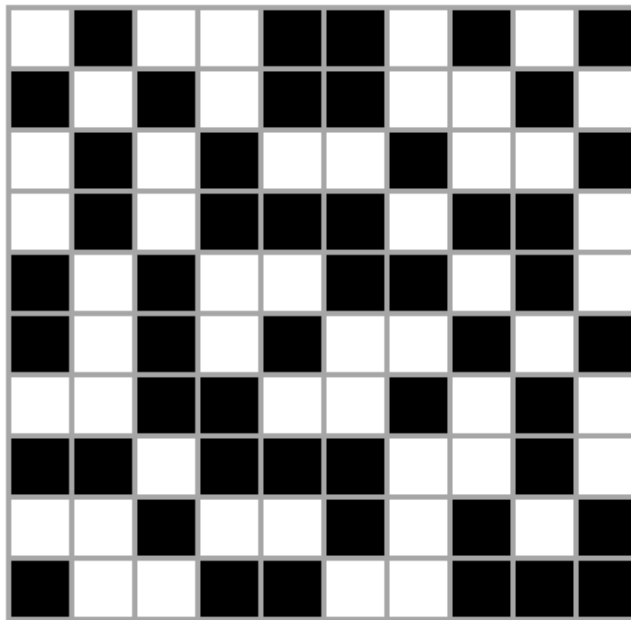
Figure 1: Interface, part 1 of 3

There are 100 projects arranged on a 10 by 10 grid.

- White Square = Success
- Black Square = Failure

Click the next button for the grid to appear on your screen.

----- Page Break -----



----- Page Break -----

One of the 100 projects is randomly selected for you to evaluate (with all projects having an equal chance of being selected). What is the chance that the selected project is a Success (white boxes)? Please input a number between 0-100 indicating the percentage of the project being a Success.

----- Page Break -----

Figure 2: Interface, part 2 of 3

You guessed that the chance of the randomly selected project is a success (white boxes) is _____%.

Please indicate the level of confidence, as a percentage between 0-100, you have that your guess is within 3 percentage points of the actual value.

----- Page Break -----

Your guess that the randomly selected project is a success: _____%.

To further aid your assessment, the computer will run a test on the selected project. The test has a reliability of 80%, so it will be correct four times out of five.

- If the selected project is a Success, the test result will be Positive with 80% chance (four times out of five) and the test result will be Negative with 20% chance (one time out of five).
- If the selected project is a Failure, the test result will be Positive with 20% chance (one time out of five) and the test result will be Negative with 80% chance (four times out of five).

Test result: **Positive**

After seeing the test result, what is the chance that the selected project is a Success? Please input a number between **0-100** indicating the percentage of the project being a Success.

----- Page Break -----

After seeing the test result, you guessed that the chance of the randomly selected project is a success (white boxes) is _____%.

Please indicate the level of confidence, as a percentage between 0-100, you have that your guess is within 3 percentage points of the statistical process.

Figure 3: Interface, part 3 of 3

WELCOME

- Welcome and thank you for participating in today's experiment.
- Please place all your personal belongings away so that we can have your complete attention.
- Please do not socialize or talk during the experiment.
- Please use the computers as instructed. Please do not attempt to browse the web or use programs unrelated to the experiment.
- You will be paid in private and with Venmo or Zelle at the end of the experiment.
- **The amount that you ultimately earn in the experiment depends on your decisions and chance.**

Figure 4: Slide 1 of 23

TODAY'S EXPERIMENT IS ABOUT EVALUATING THE SUCCESS OF A PROJECT

- In this experiment, you are playing the role of a manager evaluating the chances of a selected project being a success.
- There are a total of 22 tasks with 4 different parts each, comprising of 2 guesses and 2 choices in the following order
 1. Guess
 2. Choice
 3. Guess
 4. Choice
- For every part, one of the tasks will be randomly selected for your payment. For example, you can be paid for your response in task 6 part 1, task 20 part 2 and so on.

Figure 5: Slide 2 of 23

1ST GUESS

- In every task, there are 100 projects, some of these projects are successes and others are failures.
- The proportion of success and failures will vary across tasks.
- The 100 projects are arranged on a 10 by 10 grid.
- Each project is represented by a square on the grid.
- The color of the square determines if the project is a success or a failure.
- White Square = Success
- Black Square = Failure
- For the first 11 tasks, the grid will be flashed on the screen for 0.25 seconds.

Figure 6: Slide 3 of 23

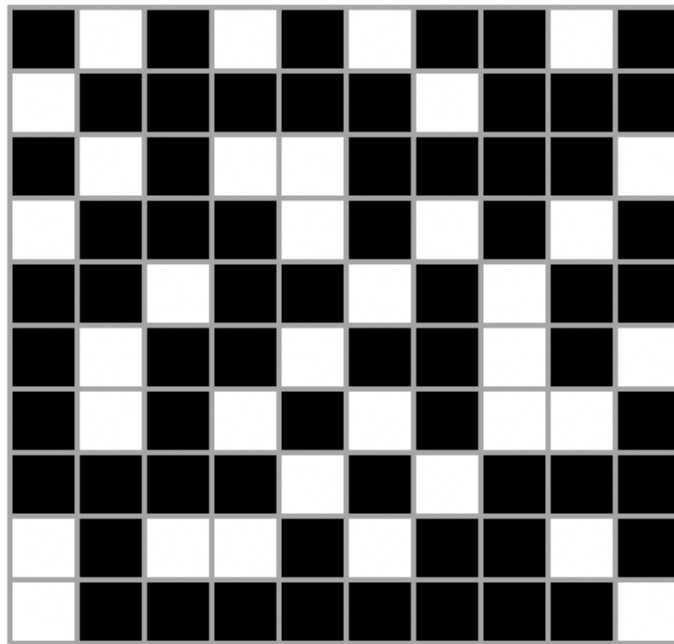


Figure 7: Slide 4 of 23

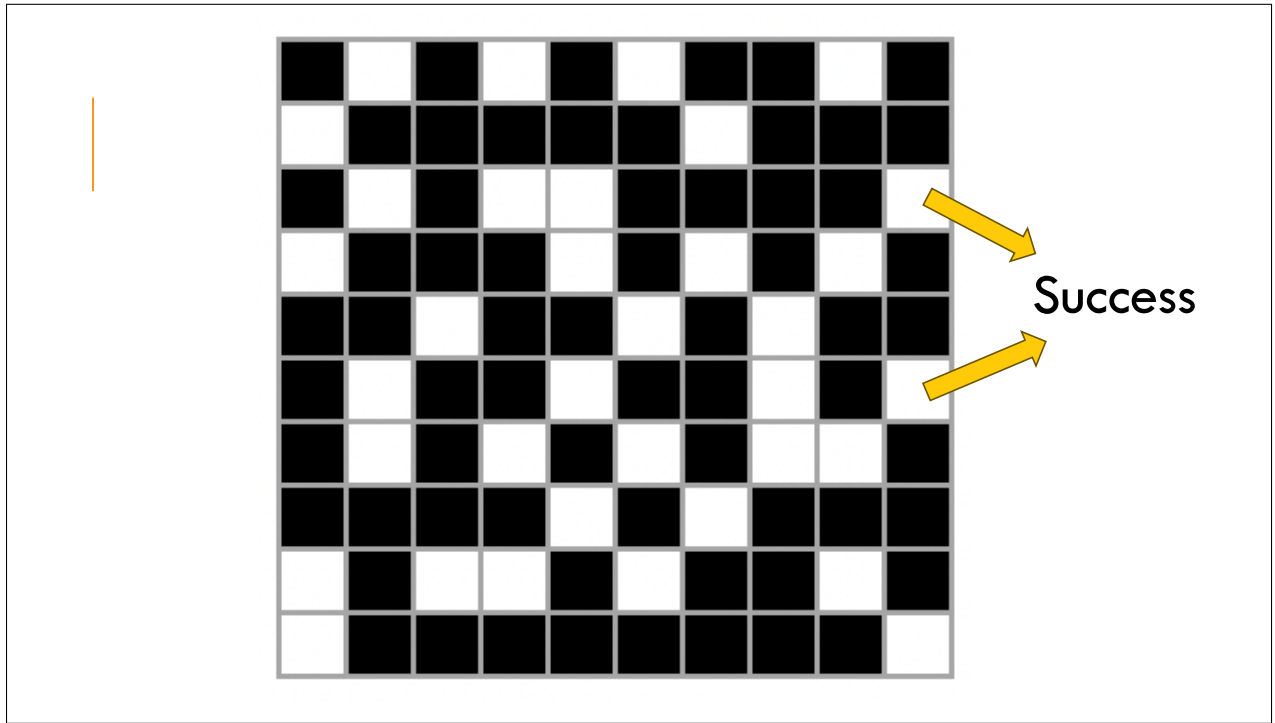


Figure 8: Slide 5 of 23

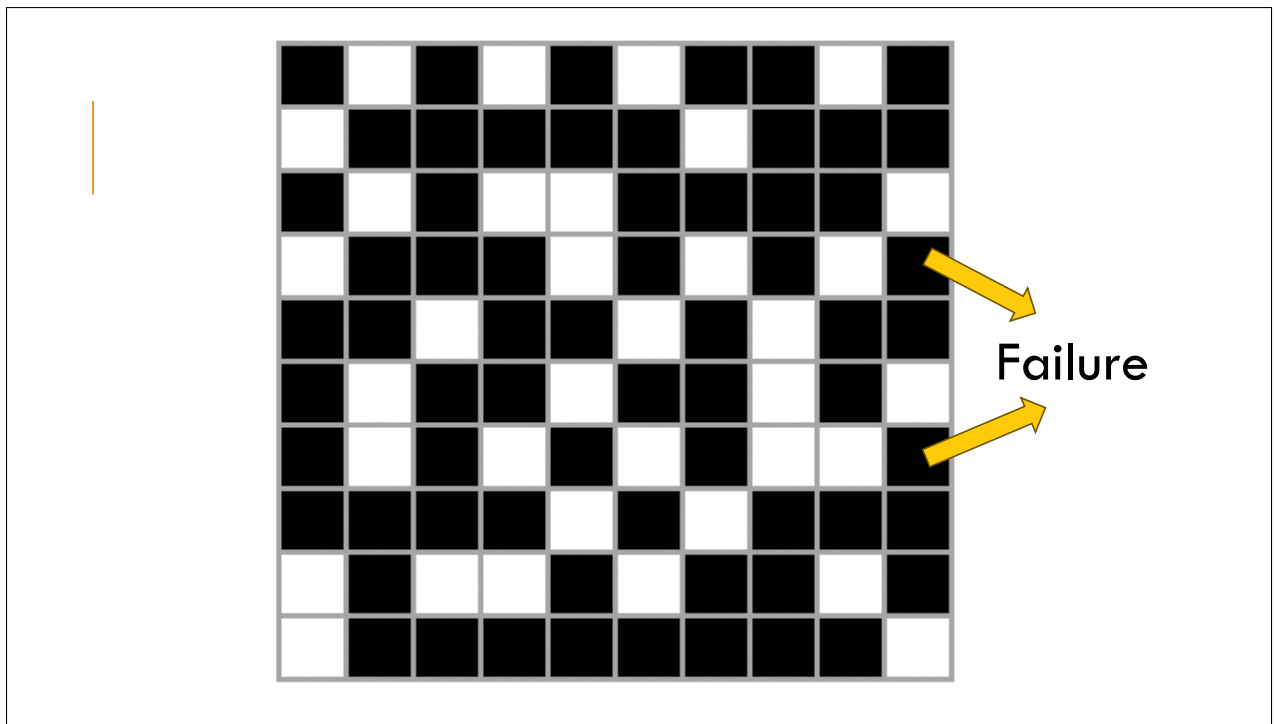


Figure 9: Slide 6 of 23

1ST GUESS

- One of the 100 projects from that grid is randomly selected for you to evaluate.
- With all projects having an **equal** chance of being selected.
- You will not know which specific project is selected.
- You will be asked to report the chance of the selected project being a success.

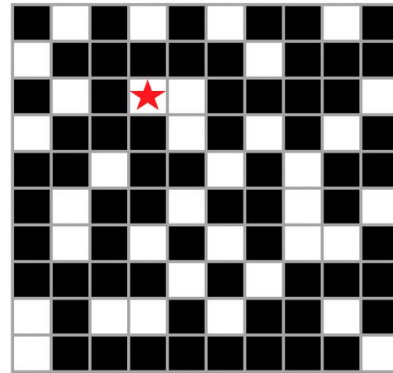


Figure 10: Slide 7 of 23

1ST GUESS

- For example, if you think there are 40 white squares
- This would mean 40% of the projects are successful (since there are 100 squares).
- There is a 40% chance that the randomly selected project is a success.
- You are not paid for whether the project is a success or a failure, but for how accurate you guess the chance of the selected project being a success.

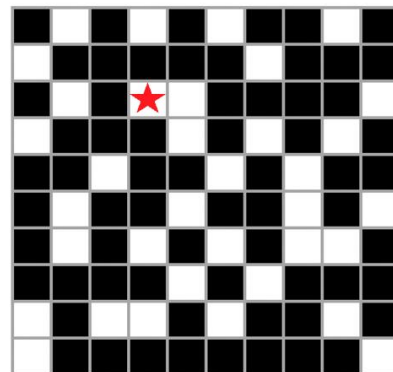


Figure 11: Slide 8 of 23

1ST GUESS

- For this part of each task, your earnings will be determined in the following manner:
- If your guess is **no more than 3 percentage points** from the actual value, you will **earn a bonus of \$3** for this part.
- For example, if the actual value is 50%, you will earn a bonus of \$3 if your response is between 47% and 53%, inclusive.

Figure 12: Slide 9 of 23

2ND GUESS

- To further aid your assessment on whether the selected project is a success or a failure:
- We will provide you with a computer test that has a reliability of 80% [60%].
- This test is not perfect. In 4 [3] out of 5 times, the computer will correctly predict whether the project is a success or a failure

Figure 13: Slide 10 of 23

2ND GUESS

- If the selected project is a Success, the test result will be Positive with 80% [60%] chance (four [three] times out of five) and the test result will be Negative with 20% [40%] chance (one [two] time out of five).
- If the selected project is a Failure, the test result will be Positive with 20% [40%] chance (one [two] time out of five) and the test result will be Negative with 80% [60%] chance (four [three] times out of five).
- You will be asked to report the chance of the selected project being a success after seeing the test result.

Figure 14: Slide 11 of 23

2ND GUESS

- For this part of each task, your earnings will be determined in the following manner:
- If your guess is **no more than 3 percentage points** from the value computed from a statistical process (we can show you this process after the experiment if you like), you will **earn a bonus of \$3** for this part.
- For example, if the value computed from the statistical process is 50%, you will earn a bonus of \$3 if your response is between 47% and 53%, inclusive.

Figure 15: Slide 12 of 23

CHOICES

- We will now explain how the choices that follow each guess works.
- After you have submitted your guess, you will have the opportunity to win another \$3 with the following choice you make:
- You will state your level of confidence (in percentage) that your guess is within 3 percentage points of the actual value or the statistical process.

Figure 16: Slide 13 of 23

CHOICES

- We are going to ask you the following list of questions:

Qn #		Option A		Option B
1	Would you rather have:	Stick to your guess	or	0% chance of \$3
2	Would you rather have:	Stick to your guess	or	1% chance of \$3
3	Would you rather have:	Stick to your guess	or	2% chance of \$3
⋮	⋮	⋮	⋮	⋮
100	Would you rather have:	Stick to your guess	or	99% chance of \$3
101	Would you rather have:	Stick to your guess	or	100% chance of \$3

Figure 17: Slide 14 of 23

CHOICES

- If you choose Option A we will pay you **\$3** for the choice if **your guess is within 3 percentage points** of the actual value/statistical process.
- If you choose Option B, you will be given a **lottery that pays \$3** with the **stated chance** and nothing otherwise.

Qn #		Option A		Option B
1	Would you rather have:	Stick to your guess	or	0% chance of \$3
2	Would you rather have:	Stick to your guess	or	1% chance of \$3
3	Would you rather have:	Stick to your guess	or	2% chance of \$3
⋮	⋮	⋮	⋮	⋮
100	Would you rather have:	Stick to your guess	or	99% chance of \$3
101	Would you rather have:	Stick to your guess	or	100% chance of \$3

Figure 18: Slide 15 of 23

CHOICES

- After you answer all 101 questions, we will randomly pick one question and pay you the option you chose on that one question. Each question is equally likely to be chosen for payment.

Qn #		Option A		Option B
1	Would you rather have:	Stick to your guess	or	0% chance of \$3
2	Would you rather have:	Stick to your guess	or	1% chance of \$3
3	Would you rather have:	Stick to your guess	or	2% chance of \$3
⋮	⋮	⋮	⋮	⋮
100	Would you rather have:	Stick to your guess	or	99% chance of \$3
101	Would you rather have:	Stick to your guess	or	100% chance of \$3

Figure 19: Slide 16 of 23

CHOICES

- We suspect that you may choose Option A in at least the first few questions, but at some point will switch to choosing Option B.
- So, to save time, just tell us at which point you'd switch. We can then 'fill out' your answers to all 101 questions based on your switch point

Qn #		Option A		Option B
1	Would you rather have:	Stick to your guess	or	0% chance of \$3
2	Would you rather have:	Stick to your guess	or	1% chance of \$3
3	Would you rather have:	Stick to your guess	or	2% chance of \$3
⋮	⋮	⋮	⋮	⋮
100	Would you rather have:	Stick to your guess	or	99% chance of \$3
101	Would you rather have:	Stick to your guess	or	100% chance of \$3

Figure 20: Slide 17 of 23

CHOICES

- Suppose your switch point is 75
- We will choose option A for all the rows before 76
- We will choose option B for row 76 and any rows that come after

Qn #		Option A		Option B
1	Would you rather have:	Stick to your guess	or	0% chance of \$3
2	Would you rather have:	Stick to your guess	or	1% chance of \$3
⋮	⋮	⋮	⋮	⋮
76	Would you rather have:	Stick to your guess	or	75% chance of \$3
⋮	⋮	⋮	⋮	⋮
101	Would you rather have:	Stick to your guess	or	100% chance of \$3

Figure 21: Slide 18 of 23

CHOICES

- This switch point is your level of confidence that your guess is within 3 percentage points of the actual value.

Qn #		Option A		Option B
1	Would you rather have:	Stick to your guess	or	0% chance of \$3
2	Would you rather have:	Stick to your guess	or	1% chance of \$3
⋮	⋮	⋮	⋮	⋮
76	Would you rather have:	Stick to your guess	or	75% chance of \$3
⋮	⋮	⋮	⋮	⋮
101	Would you rather have:	Stick to your guess	or	100% chance of \$3

Figure 22: Slide 19 of 23

CHOICES

- If you are 75% confident that your guess is within 3 percentage points of the actual value, you should only be willing to accept lotteries that pay \$3 at least 75% of the time.
- Reporting you are 75% confident will ensure you only get lotteries that pays \$3 at least 75% of the time.

Qn #		Option A		Option B
1	Would you rather have:	Stick to your guess	or	0% chance of \$3
2	Would you rather have:	Stick to your guess	or	1% chance of \$3
⋮	⋮	⋮	⋮	⋮
76	Would you rather have:	Stick to your guess	or	75% chance of \$3
⋮	⋮	⋮	⋮	⋮
101	Would you rather have:	Stick to your guess	or	100% chance of \$3

Figure 23: Slide 20 of 23

SUMMARY

- In summary, each task has 4 decisions that you will have to make in the following order:
 1. Guess the chance that the selected project is a success after seeing the grid
 2. State your confidence level for the earlier guess.
 3. Guess the chance that the selected project is a success after seeing a test result
 4. State your confidence level for the earlier guess.
- There are a total of 22 tasks in this experiment with 4 different parts each.
- For every part, one of the tasks will be randomly selected for your payment. For example, you can be paid for your response in task 6 part 1, task 20 part 2 and so on.

Figure 24: Slide 21 of 23

SUMMARY

- For the first 11 tasks, the grid will be flashed on your screen for 0.25 seconds
- We will provide more information about the last 11 tasks later in the experiment

Figure 25: Slide 22 of 23

EARNINGS FROM EXPERIMENT



- You have already earned \$7 for showing up on time.
- You will also receive earnings (in \$) depending on the responses you have provided in this experiment.

If there are no further questions, we will begin the experiment!

Figure 26: Slide 23 of 23