The Streetlight Effect in Data-Driven Exploration

Online Appendix: Experimental Interface

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September 29, 2022

Instructions

General Information

Welcome. This is an experiment in the economics of decision-making. If you pay close attention to these instructions, you can earn a significant amount of money paid to you at the end of the experiment via Interac e-transfer.

To participate in this online experiment, you will need to use Chrome or Safari on your notebook or personal computer (other browsers and mobile phones are not supported). If you are using a browser or device that is not supported, please copy the experiment link, open one of these supported browsers on a notebook or pc and paste the link into the address bar.

Your computer screen will display useful information. Remember that the information on your computer screen is PRIVATE. To ensure best results for yourself and accurate data for the experimenters, please DO NOT COMMUNICATE or interact with other people on other media at any point during the experiment. If you have any questions, or need assistance of any kind, please call +1-647-606-6469 or use Zoom anytime during the experiment and one of the experimenters will help you privately. We expect the entire experiment to take up to 70 minutes to complete.

Following these instructions, you will be asked to make some choices. There are no correct choices. Your choices depend on your preferences and beliefs, so different participants will usually make different choices. You will be paid according to your choices, so read these instructions carefully and think before you decide.

The Basic Idea

There are 5 mountains and each of them hides one type of gem, which can only be found by exploring the mountain.

There are 3 types of gems hidden in the 5 mountains:

Diamonds Rubies Topazes

The exact values of the topazes, rubies, and diamonds vary across rounds but the diamonds are always worth more than the rubies and the rubies are always worth more than the topazes:

> >

You choose which mountains to explore and the value of the gems you find are your earnings in dollars.

Location of Gems

In each round, there are:

• 3 mountains containing topazes 

• 1 mountain containing rubies 

• 1 mountain containing diamonds 

However, which mountains contain which gems is unknown. At the beginning of each round, each type of gem is randomly assigned to a different mountain, so any gem could be hidden in any mountain. No participant has any initial information in Stage 1 on the location of gems.

How Participants Choose Mountains

In each round, participants choose which mountain to explore. The choice does not happen simultaneously, but participants choose sequentially, one after the other, according to a random order that changes every round. You can choose to explore any mountain you wish. If you choose the same mountain chosen by other participants, each of you will receive the gem's value uncovered. Similarly, if someone else chooses the same mountain that you previously chose, you will still receive the full gem's value (and so will the other participant(s) that chose it).
To repeat, no participant has any initial information in Stage 1 on the location of gems.

Each Round Has 2 Stages

A round consists of 2 stages. At the beginning of a new round, gems are randomly allocated to the five different mountains. The position of gems will **not** be reset between the two stages in a round.
In Stage 1, all participants sequentially choose one mountain to explore. Before choosing a mountain, you will see which mountains have been selected by the other participants in your group who chose before you. You can choose the same mountain or a different mountain.
At the end of Stage 1, the gems hidden in each mountain selected by all participants in Stage 1 are revealed, and you earn the value of the gem hidden in the mountain you chose.
In Stage 2, you can again choose any of the same five mountains; that is you can either choose the same mountain of Stage 1 or switch to another one. The position of gems remains the same as in Stage 1, but this time you will also see the gems located in the mountains revealed in Stage 1.
At the end of Stage 2, the gems hidden in each mountain selected by all participants in Stage 2 are revealed, and you earn the value of the gem hidden in the mountain you chose in Stage 2. You will also see your total earnings for the round which equals the sum of the value of the gem you found in Stage 1 and the value of the gem you found in Stage 2.

Game Structure

The game is divided into 4 blocks, each made of 5 rounds, with each round encompassing the two stages described above. At the beginning of each block, you will be randomly assigned to a new group of 5 participants, with whom you will play for the entire block (5 rounds in total). After the block is complete, you will be randomly assigned to a new group of 5 participants. Again, you will play for 5 rounds. This procedure will be repeated 4 times in total.
You will be reminded of this information in the top-right corner of your screen, as in the example below:

Payment

Fixed Participation Fee: You will earn a participation fee of $5.00 for participating in this experiment.

Additional Payment and Random Round: One round will be randomly selected for payment at the end of the experiment. You will be paid and your earnings in that round as described above. Any of the 20 rounds (4 blocks with 5 rounds each) could be the one selected, so you should treat each round as if it will be the one determining your payment.
This protocol of determining payments suggests that you should choose in each round as if it is the only round that determines your payment as the dollar value of the gems you select will directly translate into your earnings.

Survey and Payment: In addition to the participation fee and the payment for the randomly selected round, you will perform a small task at the very end of the experiment, and your earnings from this task will be paid to you.

You will be informed of your payment and the round chosen for payment at the end of the experiment. Finally, after completing the experiment you will be paid electronically via Interac e-transfer with the e-mail address you entered on the previous page.

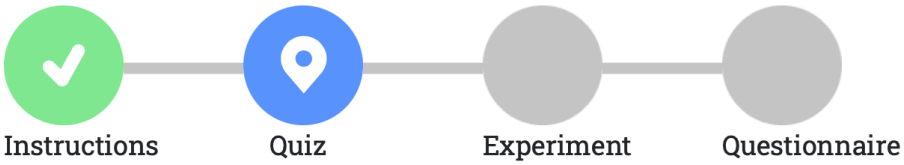
Frequently Asked Questions

Q1: Is this some kind of psychology experiment with an agenda you haven't told us?
A: No, it is an economics experiment. If we do anything deceptive or don't pay you as described, then you can complain to the University of Toronto Research Ethics Board and we will be in serious trouble. These instructions are meant to clarify how you earn money and our interest is in seeing how people make decisions.

Q2: Is there a "correct" or "wrong" choice of action? Is this kind of a test?
A: No, your optimal choice depends on your preferences and beliefs and different people may hold different beliefs.

Next

This button will be activated after 290 seconds. Please take your time to read through the instructions.



You have successfully finished reading the instructions.

The quiz, consisting of 8 questions in total, follows.

Next

Quiz Time!

Please mark the following statements as correct/incorrect:

"Q1: In each round, you will select two mountains (one in Stage 1, and one in Stage 2) and collect the gem that they hide. You can choose the same mountain in both stages, or change after Stage 1."

- Correct
- Incorrect

Read Instructions

Next

Quiz Time!

Please mark the following statements as correct/incorrect:

"Q2: If more than one player selects the same mountain, the value of the gem will be split among all the participants who chose it."

- Correct
- Incorrect

Read Instructions

Next

Quiz Time!

Please mark the following statements as correct/incorrect:

"Q3: At the beginning of a new round, the gems are reshuffled and randomly allocated to a different mountain."

- Correct
- Incorrect

Read Instructions

Next

Quiz Time!

Please mark the following statements as correct/incorrect:

"Q4: No group member has any private initial information in Stage 1 on the location of gems."

- Correct
- Incorrect

Read Instructions

Next

Quiz Time!

Please mark the following statements as correct/incorrect:

"Q5: The position of gems will not be reset between the two stages of a round."

- Correct
- Incorrect

Read Instructions

Next

Quiz Time!

Please mark the following statements as correct/incorrect:

"Q6: All group members select the mountains simultaneously."

- Correct
- Incorrect

Read Instructions

Next

Quiz Time!

Please mark the following statements as correct/incorrect:

"Q7: If another group member chose a mountain before you, you cannot choose it again."

- Correct
- Incorrect

Read Instructions

Next

Quiz Time!

Please mark the following statements as correct/incorrect:

"Q8: At the end of the experiment, one round will be randomly selected for payment."

- Correct
- Incorrect

Read Instructions

Next

You have successfully finished the quiz.

The experiment follows: When you are ready please click "Next" to start the experiment.

Next

Start of Block 1

This is Block 1 of 4 and each Block consists of 5 Rounds.

You have been randomly assigned to a **new** group of 5 participants.

Next

Start of Round 1

You are now in Round 1 of 5 and each Round consists of 2 Stages.

The computer reshuffled the gems. Each gem is randomly allocated to a different mountain.

No participant has any initial information on the location of gems.

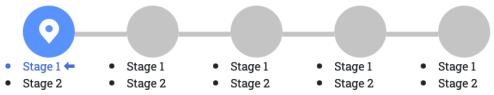
In this round, the values of the 5 gems are:

: Each Topaz is worth **$1.00**
: The Ruby is worth **$6.00**
: The Diamond is worth **$10.00**

Next

Stage 1

This is Block 1 of 4: You are in Round 1 of 5.



In this round, the values of the 5 gems are:

: Each Topaz is worth **$1.00**
: The Ruby is worth **$6.00**
: The Diamond is worth **$10.00**

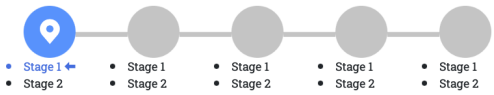
The location of gems is random and no participant has any initial information where each gem is hidden.

It is NOT your turn yet, please wait.

Read Instructions

Stage 1

This is Block 1 of 4: You are in Round 1 of 5.

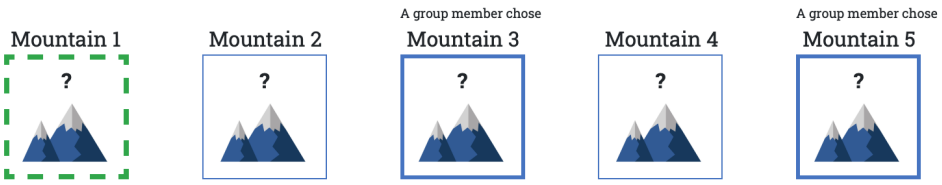


In this round, the values of the 5 gems are:

: Each Topaz is worth **$1.00**
: The Ruby is worth **$6.00**
: The Diamond is worth **$10.00**

The location of gems is random and no participant has any initial information where each gem is hidden.

Now it is YOUR TURN, please select a mountain.



Read Instructions

Confirm your mountain choice

Stage 1: Earnings

You selected Mountain 1 and found a . Thus, you earned **$1.00** from your choice.

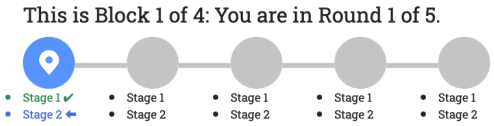
All discovered gems and their locations are highlighted below.
These will also be displayed in Stage 2 when you make your next choice.

Click "Next" to proceed to the next stage.

Read Instructions

Next

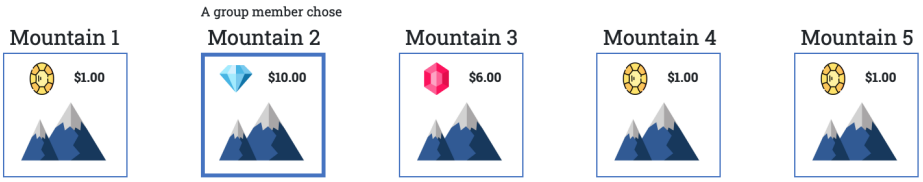
Stage 2



In this round, the values of the 5 gems are:

: Each Topaz is worth **$1.00**
: The Ruby is worth **$6.00**
: The Diamond is worth **$10.00**

Now it is YOUR TURN, please select a mountain.

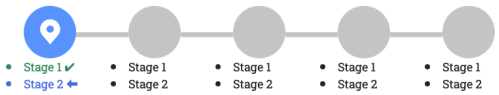


Read Instructions

Confirm your mountain choice

Stage 2

This is Block 1 of 4: You are in Round 1 of 5.



In this round, the values of the 5 gems are:

: Each Topaz is worth **$1.00**
: The Ruby is worth **$6.00**
: The Diamond is worth **$10.00**

Now it is YOUR TURN, please select a mountain.

Read Instructions

Confirm your mountain choice

Stage 2: Earnings

You selected Mountain 2 and found a . Thus, you earned **$10.00** from your choice.

Your total earnings from both stages in this round are **$1.00** + **$10.00** = **$11.00**

All discovered gems and their locations in both Stages are highlighted below.

Please click "Next" to proceed to the next round.

Read Instructions

Next

You have successfully finished the main part of the experiment.

A brief questionnaire together with a short task follows: When you are ready please click "Next" to start the experiment.

Next

Please answer the following questions

Your answers will be kept confidential and will not affect your earnings for today's experiment.

Please state your age:

Please state your gender:

Please state your student type:

Please state your country of origin:

Please state your degree and field of study:

Please briefly explain, in your own words, the rules of today's experiment:

Please briefly describe how you reached your decisions in this experiment:

Please briefly describe how, in your opinion, other participants reached their decisions in this experiment:

Next

Instructions

Thank you for your participation so far. In the last task of the experiment, you will earn an additional reward based on a set of 10 choice problems.

How does it work?

The Choice: You will be asked to choose between two options, **"Option A"** and **"Option B"** where:

- "Option A" always pays `$4.00` with probability `p` and `$3.20` otherwise.
- "Option B" always pays `$7.70` with probability `p` and `$0.20` otherwise.

Repeated Choices:

- You will be asked to make a choice between "Option A" and "Option B" not once, but **ten** times where `p` will increase from `10%` to `100%`, `10%` at a time.

  For example, the first choice will have `p=10%` and you will choose whether you prefer "Option A" (`$4.00` with a `10%` chance or `$3.20` otherwise) or "Option B" (`$7.70` with a `10%` chance or `$0.20` otherwise).

- Each successive choice will increase `p` by `10` percentage points until the last choice where "Option A" will pay `$4.00` with certainty, and "Option B" will pay `$7.70` with certainty.

Note: Once you switch from choosing "Option A" to "Option B", it makes sense that you will continue to choose "Option B" in all consecutive choice problems. For example, if you prefer "Option B" when `p=80%`, then it makes sense to prefer "Option B" when `p=90%` and when `p=100%`, since "Option B" is even more attractive in these choice problems.

Therefore, we have designed the interface so that you must either (a) **always** choose "Option A" or "Option B" for all 10 choice problems or (b) if you **switch** to "Option B" for a given probability `p`, then you must choose "Option B" for all the following choices as well.

You can adjust your choices as many times as you wish. When you are ready to submit your choices, you can click on the "Next" button at the bottom of the page.

Payment

The computer will randomly select one of the 10 choice problems and pay you according to your choice in that problem where the computer will decide the outcome based on the value of `p`.

Next

Please Choose Between "Option A" and "Option B" on Every Line

	Option A		Option B	
	**$4.00** with a chance of 10%, **$3.20** otherwise	○ ○	**$7.70** with a chance of 10%, **$0.20** otherwise	
	**$4.00** with a chance of 20%, **$3.20** otherwise	○ ○	**$7.70** with a chance of 20%, **$0.20** otherwise	
	**$4.00** with a chance of 30%, **$3.20** otherwise	○ ○	**$7.70** with a chance of 30%, **$0.20** otherwise	
	**$4.00** with a chance of 40%, **$3.20** otherwise	○ ○	**$7.70** with a chance of 40%, **$0.20** otherwise	
	**$4.00** with a chance of 50%, **$3.20** otherwise	○ ○	**$7.70** with a chance of 50%, **$0.20** otherwise	
	**$4.00** with a chance of 60%, **$3.20** otherwise	○ ○	**$7.70** with a chance of 60%, **$0.20** otherwise	
	**$4.00** with a chance of 70%, **$3.20** otherwise	○ ○	**$7.70** with a chance of 70%, **$0.20** otherwise	
	**$4.00** with a chance of 80%, **$3.20** otherwise	○ ○	**$7.70** with a chance of 80%, **$0.20** otherwise	
	**$4.00** with a chance of 90%, **$3.20** otherwise	○ ○	**$7.70** with a chance of 90%, **$0.20** otherwise	
	**$4.00** with a chance of 100%, **$3.20** otherwise	○ ○	**$7.70** with a chance of 100%, **$0.20** otherwise	

Read Instructions

Next

Thank you for participating in this experiment!

Your payoffs for this experiment are as follows:

Main Experiment:	• **Round 1** of **Block 1** was randomly selected for payment. • In Stage 1, you found a 🪙 and received **$1.00** and in Stage 2, you found a 💎 and received **$10.00** • Thus, your total payoff is $1.00 + $10.00 = **$11.00**
Last Task of Experiment:	• The following choice problem was randomly selected:

Option A		Option B
$4.00 with a probability of 60%, $3.20 otherwise	○ ◉	$7.70 with a probability of 60%, $0.20 otherwise

- As indicated above, you chose **Option B**. The computer drew a random number to determine your payoff according to the chances specified.
- Your payoff is **$7.70**

Participation Fee:	• You earned a fee of **$5.00**

In total, you earned **$11.00 + $7.70 + $5.00 = $23.70** from your choices.

You will receive your payment as an Interac e-transfer. If you encounter any problems, please contact Johannes Hoelzemann at j.hoelzemann@utoronto.ca or +1-647-606-6469.