

Magic Mirror on the Wall, Who Is the Smartest One of All?

Online Appendix: Experimental Interface

— Implementation and Main Experiment —

Yoram Halevy Johannes C. Hoelzemann Terri Kneeland

January 18, 2025

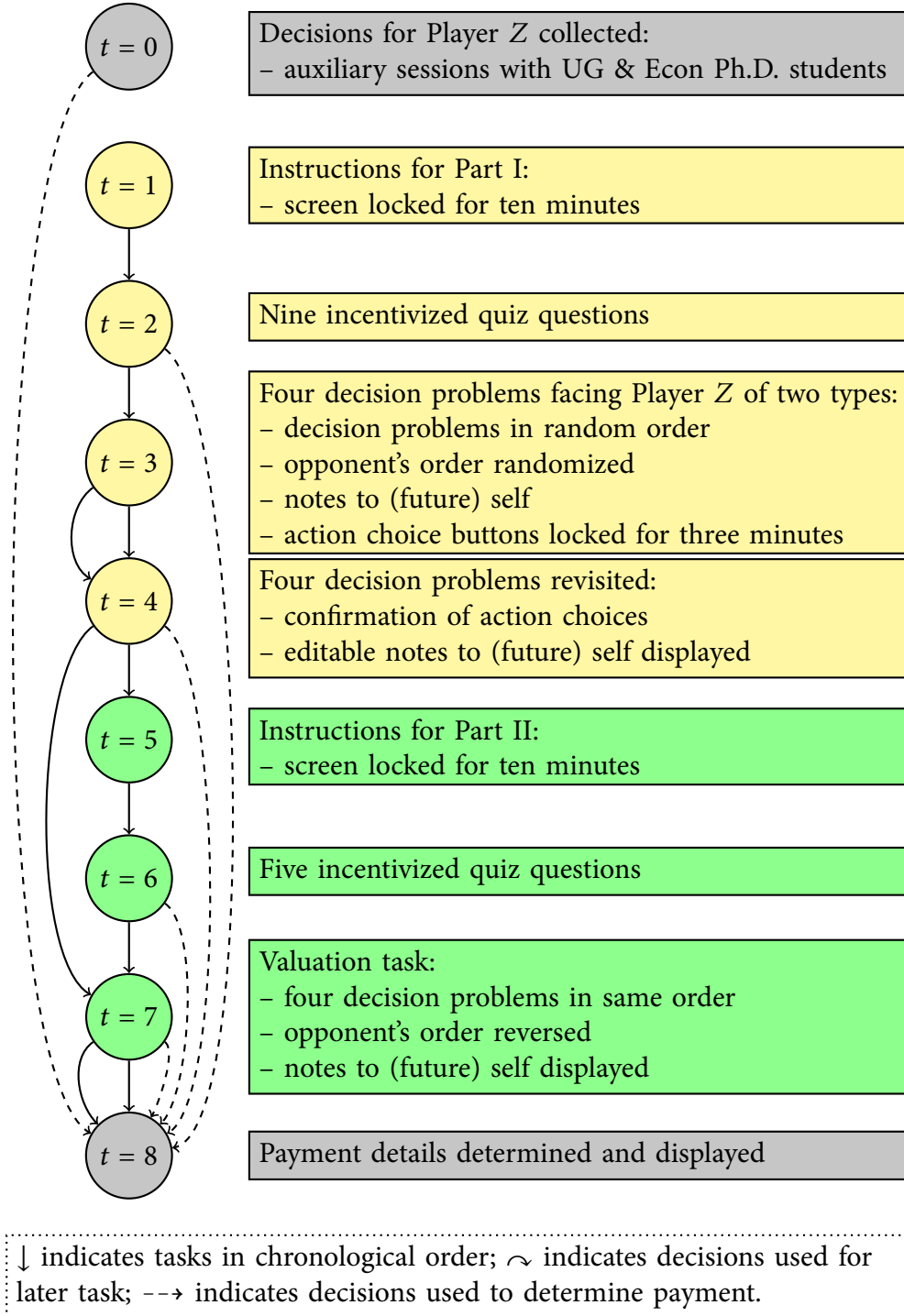


Figure 1: Timeline of the Experiment

Instructions

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 that will be 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 insure 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-XXX-ZZZZ or use Skype (j.hoelzemann@utoronto.ca) anytime from 8am to 8pm Toronto time (EST) and one of the experimenters will help you privately. We expect the experiment to take up to 90 minutes to complete, but you can take as much time as you want to finish it (until this experiment terminates at 8pm EST).

This experiment has two parts. In each part you will face four decision-making problems. During the experiment, and in order to determine your payment, you will be randomly matched with **another** participant (see below for details), who already made her/his choices in a previous session.

The other participants (Players Z and Y)

The other participant (called "Player Z") with whom you will be matched with is either an undergraduate student from any year or discipline at The University of Toronto or an Economics PhD student who took several advanced courses that are highly relevant for this experiment. You will not learn whether the other participant is an undergraduate student from any year or discipline or an Economics PhD student until the experiment concludes. Therefore, you will always be asked to make two choices: one if Player Z is an undergraduate student from any year or discipline and another if (s)he is an Economics PhD student.

Player Z participated in a previous experimental session in which (s)he was matched with another participant ("Player Y") who participated in the same session and played your role. When Player Z was an undergraduate student from any year or discipline, so was Player Y; and when Player Z was an Economics PhD student, so was Player Y.

The choices Player Z made are used to determine your earnings in the current session, but you will not be told which choices Player Z made when you make your choices. You can, however, attempt to reason about the choices Player Z made.

PART 1

The Basic Idea

This part has four different problems. In each round, you will face a different decision problem similar to the one below.

Your Earnings						Player Z's Earnings					
Your action	Player Z's action					Player Z's action	Player Y's action				
		A	B	C	D			a	b	c	d
	a	7	12	8	4		A	13	8	3	18
	b	7	1	9	10		B	16	4	13	30
	c	13	2	10	6		C	10	21	16	12
	d	3	10	11	6		D	19	5	9	21

Player Y had the same actions and earnings as you.

In order to assist you to choose an action, when you move your mouse over a row in the 'Your Earning' table on the left, the action will be highlighted in yellow in both tables: a row on the left table, and a column on the right table. By left clicking your mouse over a row it will remain highlighted, and you can unhighlight it by clicking your mouse again or clicking another row.

Similarly, when you move your mouse over a row that corresponds to an action of Player Z in the 'Player Z's Earnings' on the right, the row will be highlighted in green on the right table and the corresponding column will be highlighted in green on the left table. Clicking your mouse over the row will keep it highlighted, and clicking it again (or clicking another action) will unhighlight it.

Please try to highlight actions for you and Player Z in the earnings tables above.

Your earnings in each problem depend on your choice of action (between: a, b, c, d) and Player Z's choice of action (between A, B, C, D). Your earnings possibilities are presented in tables like the ones above. In each problem, your earnings are given by the blue numbers in the left table. Your choice of action determines the row in the 'Your Earnings' table and Player Z's choice of action determines the column in the same table. The blue number in the cell corresponding to any combination of actions (yours and Player Z's) represents your earnings.

Player Z's earnings are given in the right table. This table is important because it may help you figure out which action Player Z chose when s/he faced this decision problem. Player Z's choice of action determines the row in Player Z's earnings table, while Player Y's choice of action determines the column in this table. The number in the cell corresponding to any combination of actions (Player Z's and Player Y's) represents Player Z's earnings.

Finally, Player Y had an identical earnings table to yours (the one on the left side of the screen), and her/his earnings depended on Player Y's choice of action as well as on Player Z's (just like yours). You can therefore consult your earnings table in order to try and figure out what was Player Y's choice of action, and so forth.

In summary, your choice of action and Player Z's choice of action affect your earnings, while Players Z and Y earnings depend on both of their chosen actions. Just like you know Player Z's earnings table, Player Y knew Player Z's earnings table and Player Z knew Player Y's earnings table.

For example, if you choose action "b" and Player Z chose action "B" then your earnings would be \$1. If Player Y chose action "b" too then Player Z's earnings were \$4. If, however, Player Y chose action "d" then Player Z's earnings were \$30. If you choose action "c" and Player Z chose action "A", your earnings would be \$13. If Player Y chose action "c" too then Player Z's earnings were \$3. If, however, Player Y chose action "d" player Z's earnings were \$18. Numbers in the example are just an example and do not intend to suggest how anyone should make their choices.

Problem structure

The problems that you will face will take one of two forms. One problem will have four possible actions for both you (e.g. a, b, c or d) and Player Z (e.g. A, B, C or D) as in Example Problem 1. The other three problems will have three possible choices for both you (e.g. a, b, or c) and Player Z (e.g. A, B, or C) as in Example Problem 2. In these three problems your earnings table is always the same, while the earnings table for Player Z changes in each problem (remember that Player Y's earnings and potential actions are always identical to yours).

Example Problem 1

Your Earnings

	Player Z's action				
Your action		A	B	C	D
	a	7	12	8	4
	b	7	1	9	10
	c	13	2	10	16
	d	3	10	11	6

Player Y had the same actions and earnings as you.

Player Z's Earnings

	Player Y's action				
Player Z's action		a	b	c	d
	A	13	8	3	18
	B	16	4	13	30
	C	10	21	16	12
	D	19	5	9	21

Example Problem 2

Your Earnings

		Player Z's action		
Your action		A	B	C
	a	3	15	1
	b	8	0	4
	c	6	9	5

Player Z's Earnings

		Player Y's action		
Player Z's action		a	b	c
	A	13	5	8
	B	7	9	10
	C	10	6	12

Player Y had the same actions and earnings as you.

Notice that your earnings generally depend on Player Z's chosen action. When considering which action to choose you may consider how likely it is that Player Z chose each action. This, in turn, may depend on which action Player Z believed that Player Y (who had the same actions and earning as you) will choose. As Player Y's earnings depended on Player Z's choice too (just like yours), Player Y's chosen action may have depended how likely (s)he believed that Player Z will choose each action.

Finally, to choose an action you must click on the rectangular button around the action's name (the lowercase letter next to the row, on the margin of the left table), after it has been activated (turned blue).

The four decision problems

There will be four problems: you will face different decision problems with different earnings tables and possible actions. You will need to choose two actions in each problem: one if Player Z is an undergraduate student from any year or discipline and a second action if Player Z is an Economics PhD student (the actions could be the same or different, it is totally up to you). After you chose the two actions, you will advance to the next screen and play a new decision problem. In one of these problems each player has four possible actions and in the other three problems each player has three possible actions. In the problems with three possible actions your (and Player Y's) earnings table is always the same, while Player Z's earnings table changes in each decision problem. (Remember that Player Y's earnings and potential actions are always identical to yours.)

Note that the earnings tables in each problem are different, so you should look carefully at them before making your choice. You will be required to spend some time on each problem, after which the rectangular buttons that allow you to choose an action will be activated. You can continue and deliberate your choices after the buttons have been activated.

Once you have completed the four problems, you will have another opportunity to revisit your choices and confirm them. You will then advance to a second part of the experiment.

Payment

You will earn a participation payment of \$5.00 for participating in this experiment.

Before the actual experiment starts, you will be asked to answer several (9 in Part 1 and additional 5 in Part 2) questions. You will earn 25 cents for answering each question correctly on your first trial. If you make a mistake, you will not receive a payment for that question, but you must answer it correctly in order to move to the next question.

In addition to the participation payment and the payment for answering the quiz correctly, one decision problem that counts will be randomly selected for payment at the end of the experiment. You will be paid your earnings in that decision problem as described above or a monetary amount (that is independent of yours or Player Z's chosen actions). Any of the four problems could be the one selected, so you should treat each problem as if it will be the one determining your payment.

You will be informed of your payment, the decision problem chosen for payment, and the choices of you and Player Z only at the end of the experiment. You will not learn any other information about the choices of other participants during the experiment. The identity of Player Z will never be revealed.

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?

No. It is an economics experiment. If we do anything deceptive or don't pay you cash 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" choice of action? Is this kind of a test?

No. Your optimal action depends on your belief which action did Player Z choose. Different people may hold different beliefs.

This button will be activated after 10 minutes. Please take your time to read through the instructions.

Next

Quiz

Your Earnings

	Player Z's action			
Your action		A	B	C
	a	3	15	1
	b	8	0	4
	c	6	9	5

player Z's Earnings

	Player Y's action			
Player Z's action		a	b	c
	A	13	5	8
	B	7	9	10
	C	10	6	12

Player Y had the same actions and earnings as you.

Use the above earnings table to answer the following questions:

1. If you choose action 'a' and Player Z chose action 'C' what would your earnings be?

A \$15

B \$13

C \$1

D \$6

Quiz

Your Earnings

Your action	Player Z's action			
		A	B	C
	a	3	15	1
	b	8	0	4
	c	6	9	5

Player Z's Earnings

	Player Y's action			
Player Z's action		a	b	c
	A	13	5	8
	B	7	9	10
	C	10	6	12

Player Y had the same actions and earnings as you.

Use the above earnings table to answer the following questions:

2. If Player Z chose action 'C' and Player Y chose action 'a', what were Player Z's earnings?

- ☒ A \$13
- ☐ B \$10
- ☐ C \$1
- ☐ D \$8

Quiz

Your Earnings

	Player Z's action			
Your action		A	B	C
	a	3	15	1
	b	8	0	4
	c	6	9	5

Player Z's Earnings

	Player Y's action			
Player Z's action		a	b	c
	A	13	5	8
	B	7	9	10
	C	10	6	12

Player Y had the same actions and earnings as you.

Use the above earnings table to answer the following questions:

3. If Player Z chose action 'A', which action would give you the highest earnings?

A a

B b

C c

Quiz

Your Earnings

Your action	Player Z's action			
		A	B	C
	a	3	15	1
	b	8	0	4
	c	6	9	5

Player Y had the same actions and earnings as you.

Player Z's Earnings

Player Z's action	Player Y's action			
		a	b	c
	A	13	5	8
	B	7	9	10
	C	10	6	12

Use the above earnings table to answer the following questions:

4. If Player Y chose action 'a', which action would give Player Z the highest earnings?

A A

B B

C C

Quiz

Your Earnings

Your action	Player Z's action			
		A	B	C
	a	3	15	1
	b	8	0	4
	c	6	9	5

Player Y had the same actions and earnings as you.

Player Z's Earnings

	Player Y's action			
Player Z's action		a	b	c
	A	13	5	8
	B	7	9	10
	C	10	6	12

Use the above earnings table to answer the following questions:

5. If Player Z chose action 'B', which action would give you the highest earnings?

A a

B b

C c

Quiz

Your Earnings						Player Z's Earnings					
Your action	Player Z's action					Player Z's action	Player Y's action				
		A	B	C	D			a	b	c	d
	a	7	12	8	4		A	13	8	3	18
	b	7	1	9	10		B	16	4	13	30
	c	13	2	10	16		C	10	21	16	12
	d	3	10	11	6		D	19	5	9	21

Player Y had the same actions and earnings as you.

Use the above earnings table to answer the following questions:

6. If you choose action 'c' and the Player Z chose action 'A' what would be your earnings?

- ☐ A \$8
- ☐ B \$13
- ☐ C \$3
- ☐ D \$10

Quiz

Your Earnings						Player Z's Earnings					
Your action	Player Z's action					Player Z's action	Player Y's action				
		A	B	C	D			a	b	c	d
	a	7	12	8	4		A	13	8	3	18
	b	7	1	9	10		B	16	4	13	30
	c	13	2	10	16		C	10	21	16	12
	d	3	10	11	6		D	19	5	9	21

Player Y had the same actions and earnings as you.

Use the above earnings table to answer the following questions:

7. If Player Z chose action 'B' and Player Y chose action 'd', what were Player Z's earnings?

- ☐ A \$10
- ☐ B \$5
- ☐ C \$30
- ☐ D \$4

Quiz

Your Earnings						Player Z's Earnings					
Your action	Player Z's choice					Player Z's action	Player Y's action				
		A	B	C	D			a	b	c	d
	a	7	12	8	4		A	13	8	3	18
	b	7	1	9	10		B	16	4	13	30
	c	13	2	10	16		C	10	21	16	12
	d	3	10	11	6		D	19	5	9	21

Player Y had the same actions and earnings as you.

Use the above earnings table to answer the following questions:

8. If Player Z chose action 'D', which action would give you the highest earnings?

- ☐ A a
- ☐ B b
- ☐ C c
- ☐ D d

Quiz

Your Earnings						Player Z's Earnings					
Your action	Player Z's choice					Player Z's action	Player Y's action				
		A	B	C	D			a	b	c	d
	a	7	12	8	4		A	13	8	3	18
	b	7	1	9	10		B	16	4	13	30
	c	13	2	10	16		C	10	21	16	12
	d	3	10	11	6		D	19	5	9	21

Player Y had the same actions and earnings as you.

Use the above earnings table to answer the following questions:

9. If Player Y chose action 'a', which action would give Player Z the highest earnings?

- ☒ A A
- ☐ B B
- ☐ C C
- ☐ D D

You have successfully finished the quiz. The experiment follows.

You will face four problems: In each problem you will choose one action if Player Z is an undergraduate student from any year or discipline (red earnings table)

and a second action if Player Z is a PhD student in Economics (blue earnings table).

In one of these problems each player has four possible actions and in the other three problems each player has three possible actions.

In the problems with three possible actions your (and Player Y's) earnings table is always the same, while Player Z's earnings table changes in each decision problem.

You are encouraged to make use of "Your Notes" (including editing them) which is a box located below the decision problem. This text will be displayed later and will help you during the second part of the experiment. You can use it in any way you wish but it will be most beneficial for you if you record your reasoning that led you to choose your action.

When you are ready please click "next" to start the experiment.

Next



Problem 1 - Player Z is an **undergraduate student from any year or discipline**

Please choose an action by clicking one of the buttons that is at the margin of "Your Earnings" table. Each button will be automatically activated after 3 minutes.

Player Z is an **undergraduate student from any year or discipline**.

Instructions

Your Earnings

		Player Z's action		
Your action		A	B	C
	a	0	12	11
	b	5	13	0
	c	12	8	0

Player Y had the same actions and earnings as you.

Player Z's Earnings

		Player Y's action		
Player Z's action		a	b	c
	A	6	15	10
	B	3	8	9
	C	4	13	9

Your Notes:

In the space below you can write down the reasoning behind your choice of action. What you type will be displayed later on in the experiment and will help you when making choices in Part 2 of the experiment.

column A of player Z has highest possible outcome regardless of which letter I choose. I'm assuming they'll choose column A and for this reason i chose column c.



Problem 1 - Player Z is a PhD student in Economics

Please choose an action by clicking one of the buttons that is at the margin of "Your Earnings" table. Each button will be automatically activated after 3 minutes.

Player Z is a **PhD student in Economics**.

Instructions

Your Earnings

		Player Z's action		
		A	B	C
Your action	a	0	12	11
	b	5	13	0
	c	12	8	0

Player Y had the same actions and earnings as you.

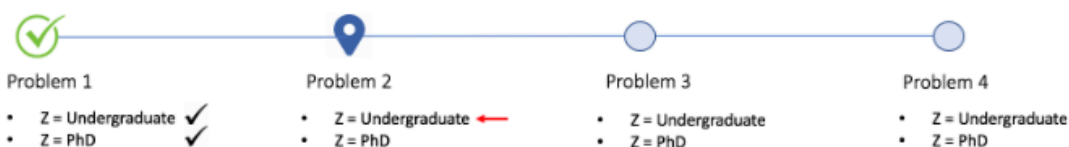
Player Z's Earnings

		Player Y's action		
		a	b	c
Player Z's action	A	6	15	10
	B	3	8	9
	C	4	13	9

Your Notes:

In the space below you can write down the reasoning behind your choice of action. What you type will be displayed later on in the experiment and will help you when making choices in Part 2 of the experiment.

Z will always choose A, so I choose C



Problem 2 - Player Z is an **undergraduate student from any year or discipline**

Please choose an action by clicking one of the buttons that is at the margin of "Your Earnings" table. Each button will be automatically activated after 3 minutes.

Player Z is an **undergraduate student from any year or discipline**.

Instructions

Your Earnings

		Player Z's action		
Your action		A	B	C
	a	0	12	11
	b	5	13	0
	c	12	8	0

Player Y had the same actions and earnings as you.

Player Z's Earnings

		Player Y's action		
Player Z's action		a	b	c
	A	6	16	9
	B	10	3	8
	C	8	10	10

Your Notes:

In the space below you can write down the reasoning behind your choice of action. What you type will be displayed later on in the experiment and will help you when making choices in Part 2 of the experiment.

I think Player Z would choose C because it has the most consistent earning. If Player Z chose C, I would only earn something if I chose A. I'm choosing A in hopes that Player Z will not also choose A



Problem 2 - Player Z is a PhD student in Economics

Please choose an action by clicking one of the buttons that is at the margin of "Your Earnings" table. Each button will be automatically activated after 3 minutes.

Player Z is a **PhD student in Economics**.

Instructions

Your Earnings

		Player Z's action		
		A	B	C
Your action	a	0	12	11
	b	5	13	0
	c	12	8	0

Player Y had the same actions and earnings as you.

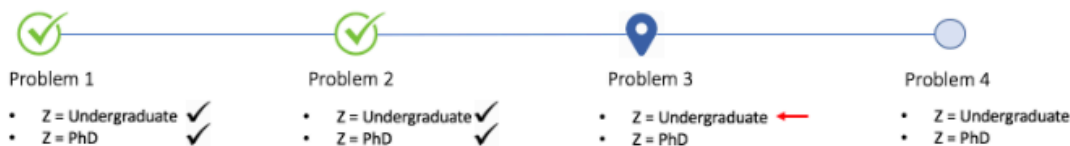
Player Z's Earnings

		Player Y's action		
		a	b	c
Player Z's action	A	6	16	9
	B	10	3	8
	C	8	10	10

Your Notes:

In the space below you can write down the reasoning behind your choice of action. What you type will be displayed later on in the experiment and will help you when making choices in Part 2 of the experiment.

I think a PhD student would know the optimal earning for both assuming that both parties are cooperative. I think they would assume I go with A, for them, the best return would be B. So I'm sticking with A.



Problem 3 - Player Z is an **undergraduate student from any year or discipline**

Please choose an action by clicking one of the buttons that is at the margin of "Your Earnings" table. Each button will be automatically activated after 3 minutes.

Player Z is an **undergraduate student from any year or discipline**.

Instructions

Your Earnings

		Player Z's action			
Your action		A	B	C	D
	a	0	12	13	11
	b	4	14	0	6
	c	10	0	11	12
	d	13	8	0	0

Player Y had the same actions and earnings as you.

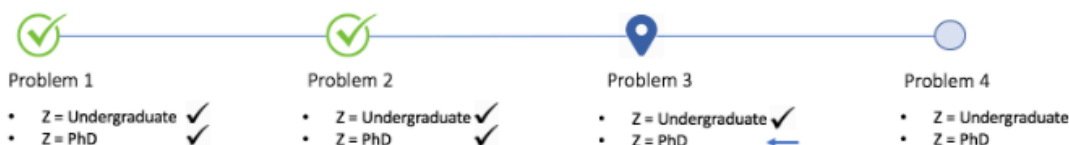
Player Z's Earnings

		Player Y's action			
Player Z's action		a	b	c	d
	A	12	0	16	7
	B	14	0	5	11
	C	12	16	0	10
	D	8	4	0	12

Your Notes:

In the space below you can write down the reasoning behind your choice of action. What you type will be displayed later on in the experiment and will help you when making choices in Part 2 of the experiment.

oh four! Okay so new 0s. Lets start with what I've been doing... For Z: A: max=16, min=0, range=16 (DAMN, high risk) B: max=14, min HWM, all have 0s, so all have high risk. Same with Y's. So looks like range isn't the best measure here.
*remember! This is an undergrad. Let's go with the strategy of maximizing for both. (maybe PhDs would try to maximize both too. That distinction might be a red herring. Why would they not? That's how contracts are signed anyway) (would



Problem 3 - Player Z is a PhD student in Economics

Please choose an action by clicking one of the buttons that is at the margin of "Your Earnings" table. Each button will be automatically activated after 3 minutes.

Player Z is a **PhD student in Economics**.

Instructions

Your Earnings

		Player Z's action			
Your action		A	B	C	D
	a	0	12	13	11
	b	4	14	0	6
	c	10	0	11	12
	d	13	8	6	0

Player Y had the same actions and earnings as you.

Player Z's Earnings

		Player Y's action			
Player Z's action		a	b	c	d
	A	12	0	16	7
	B	14	0	5	11
	C	12	16	0	10
	D	8	4	0	12

Your Notes:

In the space below you can write down the reasoning behind your choice of action. What you type will be displayed later on in the experiment and will help you when making choices in Part 2 of the experiment.

yeah I really think they'd do the same thing, make it good for everyone. Maybe this is testing how people think about phd students in economics hahaha. No but really, the avgs of C and a are the best for the respective peoples. So on that alone, this should be good.



Problem 1

- Z = Undergraduate ✓
- Z = PhD ✓



Problem 2

- Z = Undergraduate ✓
- Z = PhD ✓



Problem 3

- Z = Undergraduate ✓
- Z = PhD ✓



Problem 4

- Z = Undergraduate ←
- Z = PhD

Problem 4 - Player Z is an **undergraduate student from any year or discipline**

Please choose an action by clicking one of the buttons that is at the margin of "Your Earnings" table. Each button will be automatically activated after 3 minutes.

Player Z is an **undergraduate student from any year or discipline**.

Instructions

Your Earnings

		Player Z's action		
Your action		A	B	C
	a	0	12	11
	b	5	13	0
	c	12	8	0

Player Y had the same actions and earnings as you.

Player Z's Earnings

		Player Y's action		
Player Z's action		a	b	c
	A	13	5	10
	B	14	3	9
	C	6	16	9

Your Notes:

In the space below you can write down the reasoning behind your choice of action. What you type will be displayed later on in the experiment and will help you when making choices in Part 2 of the experiment.

As this is an undergrad student, i assume they will straight away go to their highest earning column (c w/ 16) but as they can see if i chose to get the best outcome for them i would end up getting zero, so then i went to the second best option (b w/14) however the biggest earning for me was in row b but for them it was just 3, so I chose option a so they can get their highest reward but also decided to go with option a as each of the rows have a chance of getting zero but this row has the



Problem 1

- Z = Undergraduate ✓
- Z = PhD ✓



Problem 2

- Z = Undergraduate ✓
- Z = PhD ✓



Problem 3

- Z = Undergraduate ✓
- Z = PhD ✓



Problem 4

- Z = Undergraduate ✓
- Z = PhD ←

Problem 4 - Player Z is a PhD student in Economics

Please choose an action by clicking one of the buttons that is at the margin of "Your Earnings" table. Each button will be automatically activated after 3 minutes.

Player Z is a **PhD student in Economics**.

Instructions

Your Earnings

	Player Z's action			
Your action		A	B	C
	a	0	12	11
	b	5	13	0
	c	12	8	0

Player Y had the same actions and earnings as you.

Player Z's Earnings

		Player Y's action		
Player Z's action		a	b	c
	A	13	5	10
	B	14	3	9
	C	6	16	9

Your Notes:

In the space below you can write down the reasoning behind your choice of action. What you type will be displayed later on in the experiment and will help you when making choices in Part 2 of the experiment.

I have a better chance of earning more with the \$12 and \$11 in option a, so if player Z chooses option A in predicting I will choose A so they will get \$13, I chose C so I will get \$12



You have completed the four problems. Now you have the opportunity to revisit your choices.

You have completed the four problems: In each problem you chose one action if Player Z is an undergraduate student from any year or discipline (red earnings table) and a second action if Player Z is an Economics PhD student (blue earnings table).

In one of these problems each player had four possible actions and in the other three problems each player had three possible actions.

In the problems with three possible actions your (and Player Y's) earnings table was always the same, while Player Z's earnings table changed in each decision problem.

You will have the opportunity to revisit your choices and confirm them. You are encouraged to make use of "Your Notes" (including editing them) which is a box located below the decision problem. This text will be displayed later and will help you during the second part of the experiment. You can use it in any way you wish but it will be most beneficial for you if you record your reasoning that led you to choose your action.

When you are ready please click "next" to revisit your choices and confirm them.

Next



Problem 1 - Player Z is an undergraduate student from any year or discipline:

Please confirm your choice of action

You chose action **c**.

You have a final opportunity to confirm or revise your choice of action in the decision problem below. In order to proceed to the next screen please click on your final choice of action in the table below.

Player Z is an **undergraduate student from any year or discipline**.

[Instructions](#)

Your Earnings

		Player Z's action		
		A	B	C
Your action	a	0	12	11
	b	5	13	0
	c	12	8	0

Player Y had the same actions and earnings as you.

Player Z's Earnings

		Player Y's action		
		a	b	c
Player Z's action	A	6	15	10
	B	3	8	9
	C	4	13	9

Your Notes:

In the space below you can write down the reasoning behind your choice of action. What you type will be displayed later on in the experiment and will help you when making choices in Part 2 of the experiment.

column A of player Z has highest possible outcome regardless of which letter I choose. I'm assuming they'll choose column A and for this reason i chose column c.



Problem 1 - Player Z is a **PhD student in Economics**:

Please confirm your choice of action

You chose action **c**.

You have a final opportunity to confirm or revise your choice of action in the decision problem below. In order to proceed to the next screen please click on your final choice of action in the table below.

Player Z is a **PhD student in Economics**.

Instructions

Your Earnings

		Player Z's action		
Your action		A	B	C
	a	0	12	11
	b	5	13	0
	c	12	8	0

Player Y had the same actions and earnings as you.

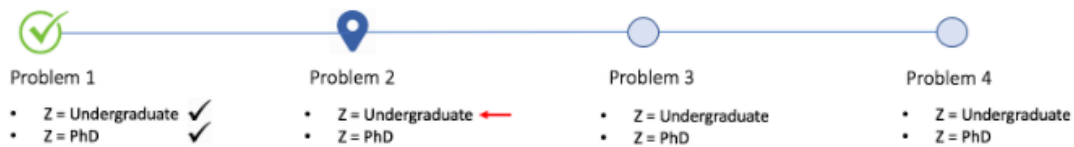
Player Z's Earnings

		Player Y's action		
Player Z's action		a	b	c
	A	6	15	10
	B	3	8	9
	C	4	13	9

Your Notes:

In the space below you can write down the reasoning behind your choice of action. What you type will be displayed later on in the experiment and will help you when making choices in Part 2 of the experiment.

Z will always choose A, so I choose C



Problem 2 - Player Z is an **undergraduate student from any year or discipline:**

Please confirm your choice of action

Player Z is an **undergraduate student from any year or discipline.**

You chose action **a**.

You have a final opportunity to confirm or revise your choice of action in the decision problem below. In order to proceed to the next screen please click on your final choice of action in the table below.

Instructions

Your Earnings

		Player Z's action		
Your action		A	B	C
	a	0	12	11
	b	5	13	0
	c	12	8	0

Player Y had the same actions and earnings as you.

Player Z's Earnings

		Player Y's action		
Player Z's action		a	b	c
	A	6	16	9
	B	10	3	8
	C	8	10	10

Your Notes:

In the space below you can write down the reasoning behind your choice of action. What you type will be displayed later on in the experiment and will help you when making choices in Part 2 of the experiment.

I think Player Z would choose C because it has the most consistent earning. If Player Z chose C, I would only earn something if I chose A. I'm choosing A in hopes that Player Z will not also choose A



Problem 2 - Player Z is a PhD student in Economics:

Please confirm your choice of action

Player Z is a PhD student in Economics.

You chose action a.

You have a final opportunity to confirm or revise your choice of action in the decision problem below. In order to proceed to the next screen please click on your final choice of action in the table below.

Instructions

Your Earnings

		Player Z's action		
		A	B	C
Your action	a	0	12	11
	b	5	13	0
	c	12	8	0

Player Y had the same actions and earnings as you.

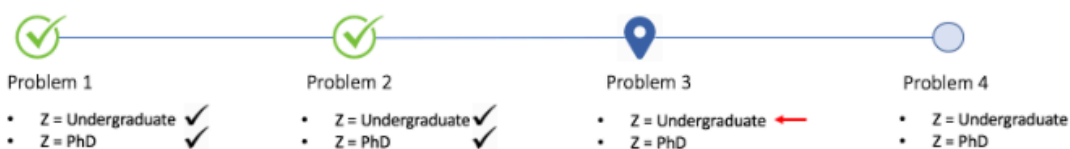
Player Z's Earnings

		Player Y's action		
		a	b	c
Player Z's action	A	6	16	9
	B	10	3	8
	C	8	10	10

Your Notes:

In the space below you can write down the reasoning behind your choice of action. What you type will be displayed later on in the experiment and will help you when making choices in Part 2 of the experiment.

I think a PhD student would know the optimal earning for both assuming that both parties are cooperative. I think they would assume I go with A, for them, the best return would be B. So I'm sticking with A.



Problem 3 - Player Z is an **undergraduate student from any year or discipline:**

Please confirm your choice of action

Player Z is an **undergraduate student from any year or discipline.**

You chose action **a**.

You have a final opportunity to confirm or revise your choice of action in the decision problem below. In order to proceed to the next screen please click on your final choice of action in the table below.

Instructions

Your Earnings

		Player Z's action			
Your action		A	B	C	D
	a	0	12	13	11
	b	4	14	0	6
	c	10	0	11	12
	d	13	8	6	0

Player Y had the same actions and earnings as you.

Player Z's Earnings

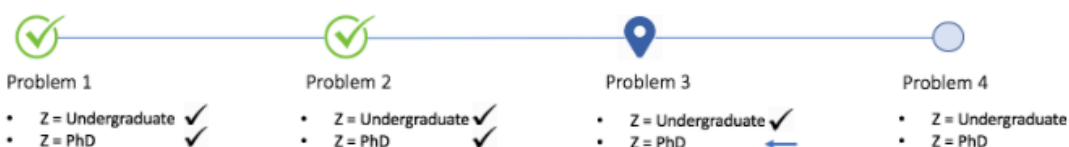
		Player Y's action			
Player Z's action		a	b	c	d
	A	12	0	16	7
	B	14	0	5	11
	C	12	16	0	10
	D	8	4	0	12

Your Notes:

In the space below you can write down the reasoning behind your choice of action. What you type will be displayed later on in the experiment and will help you when making choices in Part 2 of the experiment.

oh four! Okay so new 0s. Lets start with what I've been doing... For Z: A: max=16, min=0, range=16 (DAMN, high risk) B: max=14, min HWM, all have 0s, so all have high risk. Same with Y's. So looks like range isn't the best measure here.

*remember! This is an undergrad. Let's go with the strategy of maximizing for both. (maybe PhDs would try to maximize both too. That distinction might be a red herring. Why would they not? That's how contracts are signed anyway) (would



Problem 3 - Player Z is a **PhD student in Economics**:

Please confirm your choice of action

Player Z is a **PhD student in Economics**.

You chose action **a**.

You have a final opportunity to confirm or revise your choice of action in the decision problem below. In order to proceed to the next screen please click on your final choice of action in the table below.

Instructions

Your Earnings

		Player Z's action			
		A	B	C	D
Your action	a	0	12	13	11
	b	4	14	0	6
	c	10	0	11	12
	d	13	8	0	0

Player Y had the same actions and earnings as you.

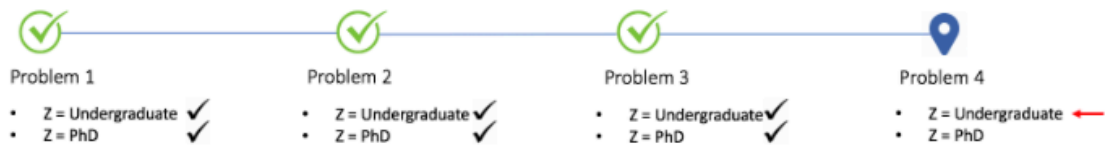
Player Z's Earnings

		Player Y's action			
		a	b	c	d
Player Z's action	A	12	0	16	7
	B	14	0	5	11
	C	12	16	0	10
	D	8	4	0	12

Your Notes:

In the space below you can write down the reasoning behind your choice of action. What you type will be displayed later on in the experiment and will help you when making choices in Part 2 of the experiment.

yeah I really think they'd do the same thing, make it good for everyone. Maybe this is testing how people think about phd students in economics hahaha. No but really, the avgs of C and a are the best for the respective peoples. So on that alone, this should be good.



Problem 4 - Player Z is an **undergraduate student from any year or discipline:**

Please confirm your choice of action

Player Z is an **undergraduate student from any year or discipline.**

You chose action **a**.

You have a final opportunity to confirm or revise your choice of action in the decision problem below. In order to proceed to the next screen please click on your final choice of action in the table below.

Instructions

Your Earnings

		Player Z's action		
		A	B	C
Your action	a	0	12	11
	b	5	13	0
	c	12	8	0

Player Y had the same actions and earnings as you.

Player Z's Earnings

		Player Y's action		
		a	b	c
Player Z's action	A	13	5	10
	B	14	3	9
	C	6	16	9

Your Notes:

In the space below you can write down the reasoning behind your choice of action. What you type will be displayed later on in the experiment and will help you when making choices in Part 2 of the experiment.

As this is an undergrad student, i assume they will straight away go to their highest earning column (c w/ 16) but as they can see if i chose to get the best outcome for them i would end up getting zero, so then i went to the second best option (b w/14) however the biggest earning for me was in row b but for them it was just 3, so I chose option a so they can get their highest reward but also decided to go with option a as each of the rows have a chance of getting zero but this row has the



Problem 4 - Player Z is a **PhD student in Economics**:

Please confirm your choice of action

Player Z is a **PhD student in Economics**.

You chose action **c**.

You have a final opportunity to confirm or revise your choice of action in the decision problem below. In order to proceed to the next screen please click on your final choice of action in the table below.

Instructions

Your Earnings

		Player Z's action		
		A	B	C
Your action	a	0	12	11
	b	5	13	0
	c	12	8	0

Player Y had the same actions and earnings as you.

Player Z's Earnings

		Player Y's action		
		a	b	c
Player Z's action	A	13	5	10
	B	14	3	9
	C	6	16	9

Your Notes:

In the space below you can write down the reasoning behind your choice of action. What you type will be displayed later on in the experiment and will help you when making choices in Part 2 of the experiment.

I have a better chance of earning more with the #12 and \$11 in option a, so if player Z chooses option A in predicting I will choose A so they will get \$13, I chose C so I will get \$12

Instructions

PART 2

The Basic Idea

In this part of the experiment, you will be asked to make a sequence of choices between playing the four decision problems (against an undergraduate student from any year or discipline and against an Economics PhD student) in Part 1 and sure amounts. 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.

Example of Choice Problems

In all the choice problems you will face in this part you will be asked to choose between payments from the decision problems you made in Part 1 and sure amounts. All choice problems will be organized in lists that share a simple structure, which is explained below. The following example illustrates, but is not directly related to the choice problems that determine your payment.

Suppose you have \$5.50, and are asked to make a series of choices between keeping the \$5.50 and receiving money amounts that vary from \$0 to \$10. As long as you like to have more money to less, this is how you would fill in this list of choices.

Choice Problem	A	B	Choose A or B
0	\$5.50	\$0	A
1	\$5.50	\$1	A
2	\$5.50	\$2	A
3	\$5.50	\$3	A
4	\$5.50	\$4	A
5	\$5.50	\$5	A
6	\$5.50	\$6	B
7	\$5.50	\$7	B
8	\$5.50	\$8	B
9	\$5.50	\$9	B
10	\$5.50	\$10	B

Notice the structure:

- Option A (in this case, keeping your \$5.50) is the same on every line of the list, but option B improves as you go down the list
- There is a unique choice problem in which you switch from A to B. In the example above, it is choice problem 6.

Suppose now that Option A would be more valuable. For example, suppose it is \$7.50 instead of \$5.50. How would it affect your choices?

Instead of switching from A to B in choice problem 6, you would switch in choice problem 8. This has a general lesson:

- The more valuable Option A is, the later you would switch from A to B.

One can replace Option A with an amount that may depend on Player Z's action. For example, consider the following Option A: Suppose Player Z can choose between Left and Right.

	Player Z chose Left	Player Z chose Right
Option A	\$5.50	\$5.50

In this case your payment is independent of the action chosen by Player Z, as in either case you will earn \$5.50. Therefore, this option is identical to the first Option A discussed above and you will switch from A to B in choice problem 6.

Consider, however, the following Option A:

	Player Z chose Left	Player Z chose Right
Option A	\$8.50	\$0

The value of this option depends on how likely you think Player Z chose Left.

If you are sure that (s)he chose Left, then the value is \$8.50 and you will switch from A to B in choice problem 9 in the list.

If, however, you believe that Player Z may have chosen Right, then the value of Option A would fall, and you will switch to B in an earlier choice problem. Moreover, the more likely you believe (s)he chose Right -- the lower would be the value of Option A for you, and you would switch from A to B in an earlier choice problem.

The Protocol

The following choice problems are organized in 4 pairs (8 lists), where Option A changes across lists and represents your earnings from each of the 4 decision problems from Part 1 against the two potential Player Z (undergraduate students from any year or discipline and Economics PhD students).

For example, suppose that in Part 1 you faced the following decision problem and chose action 'c' when Player Z is an undergraduate student from any year or discipline:

Your Earnings					Player Z's Earnings				
Your action	Player Z's action				Player Z's action	Player Y's action			
		A	B	C			a	b	c
	a	3	15	1		A	13	5	8
	b	8	0	4		B	7	9	10
	c	6	9	5		C	10	6	12

Player Y had the same actions and earnings as you.

In the choice problems you will be asked to choose between Option A (you choose 'c' and being paid from this Part 1 decision problem, when the payment depends on the action chosen by Player Z), and sure amounts, as above. In other words, you can think of Option A as:

	Player Z chose 'A'	Player Z chose 'B'	Player Z chose 'C'
Option A	\$6	\$9	\$5

Obviously, when deciding how much you value this Option A, you need to consider how likely it is that Player Z will choose actions A, B or C. The more likely you think Player Z chose 'B' the closer would be the value to 9, and the more likely you think that Player Z chose 'C', the closer it would be to 5. In determining these likelihoods, you need to consult Player Z's earnings table, and possibly Player Y's earnings table (that is identical to yours) – as it may affect how likely Player Z believed Player Y chose each action and therefore Player Z's earnings.

If you want you can fill in the choice list by clicking the lowest line you wish to choose Option A, then automatically all the lines above the one you chose will be marked as Option A too. In addition, by clicking on the first line you wish to choose Option B, then all lower lines will automatically be marked as Option B. You can adjust your choices as many times as you wish. When you are ready to proceed, you can click on the "Next" button at the bottom of the page.

You will see each list exactly once and there will not be a screen asking you to confirm your choices as in Part 1 of the experiment.

Payment

One of the choice problems in one of the lists will be randomly selected by the computer, and your choice in that choice problem will determine your payment.

Your choice (A or B) in the randomly-selected choice problem will determine your payment in the whole experiment. If you chose B, you will get the payment specified in B on that choice problem. If you chose A, your payment will depend on the action you chose in the decision problem in Part 1, if your Player Z is an undergraduate student from any year or discipline or an Economics PhD student, and on the action chosen by Player Z.

So, in order to determine the value of each Option A (the choice problem in which you will switch from A to B in the list), you need to consider how likely it is that Player Z chose each action in the specific decision problem.

This protocol of determining payments suggests that you should choose in each choice problem as if it is the only problem that determines your payment.

This button will be activated after 10 minutes. Please take your time to read through the instructions.

Next

Quiz

Your Earnings					player Z's Earnings				
Your action	Player Z's action				Player Z's action	Player Y's action			
		A	B	C			a	b	c
	a	3	15	1		A	13	5	8
	b	8	0	4		B	7	9	10
	c	6	9	5		C	10	6	12

Player Y had the same actions and earnings as you.

Suppose that in Part 1 you faced the above decision problem and chose action 'c' when Player Z is an undergraduate student from any year or discipline. (To highlight row 'c' please click on that row.) Refer to the list below to answer the following questions.

Choice Problem	A	B	Choose A or B
0	Earnings from the decision problem	\$0	
1	Earnings from the decision problem	\$2	
2	Earnings from the decision problem	\$4	
3	Earnings from the decision problem	\$5	
4	Earnings from the decision problem	\$6	
5	Earnings from the decision problem	\$7	
6	Earnings from the decision problem	\$8	
7	Earnings from the decision problem	\$9	

8	Earnings from the decision problem	\$10	
9	Earnings from the decision problem	\$10.50	
10	Earnings from the decision problem	\$11	
11	Earnings from the decision problem	\$11.50	
12	Earnings from the decision problem	\$12	
13	Earnings from the decision problem	\$12.50	
14	Earnings from the decision problem	\$13	
15	Earnings from the decision problem	\$14	
16	Earnings from the decision problem	\$15	
17	Earnings from the decision problem	\$16	
18	Earnings from the decision problem	\$18	
19	Earnings from the decision problem	\$20	
20	Earnings from the decision problem	\$22	
21	Earnings from the decision problem	\$24	

Use the above earnings tables to answer the following questions:

1. What is Option 'A'?

- A** \$3 if Player Z chose 'A'; \$15 if Player Z chose 'B'; \$1 if Player Z chose 'C'
- B** \$8 if Player Z chose 'A'; \$0 if Player Z chose 'B'; \$4 if Player Z chose 'C'
- C** \$6 if Player Z chose 'A'; \$9 if Player Z chose 'B'; \$5 if Player Z chose 'C'

Quiz

Your Earnings					player Z's Earnings				
Your action	Player Z's action				Player Z's action	Player Y's action			
		A	B	C			a	b	c
	a	3	15	1		A	13	5	8
	b	8	0	4		B	7	9	10
	c	6	9	5		C	10	6	12

Player Y had the same actions and earnings as you.

Suppose that in Part 1 you faced the above decision problem and chose action 'c' when Player Z is an undergraduate student from any year or discipline. (To highlight row 'c' please click on that row.) Refer to the list below to answer the following questions.

Choice Problem	A	B	Choose A or B
0	Earnings from the decision problem	\$0	
1	Earnings from the decision problem	\$2	
2	Earnings from the decision problem	\$4	
3	Earnings from the decision problem	\$5	
4	Earnings from the decision problem	\$6	
5	Earnings from the decision problem	\$7	
6	Earnings from the decision problem	\$8	
7	Earnings from the decision problem	\$9	

8	Earnings from the decision problem	\$10	
9	Earnings from the decision problem	\$10.50	
10	Earnings from the decision problem	\$11	
11	Earnings from the decision problem	\$11.50	
12	Earnings from the decision problem	\$12	
13	Earnings from the decision problem	\$12.50	
14	Earnings from the decision problem	\$13	
15	Earnings from the decision problem	\$14	
16	Earnings from the decision problem	\$15	
17	Earnings from the decision problem	\$16	
18	Earnings from the decision problem	\$18	
19	Earnings from the decision problem	\$20	
20	Earnings from the decision problem	\$22	
21	Earnings from the decision problem	\$24	

Use the above earnings tables to answer the following questions:

2. What option gives you more money in Choice 2?

☐ A A

☐ B B

Quiz

Your Earnings					player Z's Earnings				
Your action	Player Z's action				Player Z's action	Player Y's action			
		A	B	C			a	b	c
	a	3	15	1		A	13	5	8
	b	8	0	4		B	7	9	10
	c	6	9	5		C	10	6	12

Player Y had the same actions and earnings as you.

Suppose that in Part 1 you faced the above decision problem and chose action 'c' when Player Z is an undergraduate student from any year or discipline. (To highlight row 'c' please click on that row.) Refer to the list below to answer the following questions.

Choice Problem	A	B	Choose A or B
0	Earnings from the decision problem	\$0	
1	Earnings from the decision problem	\$2	
2	Earnings from the decision problem	\$4	
3	Earnings from the decision problem	\$5	
4	Earnings from the decision problem	\$6	
5	Earnings from the decision problem	\$7	
6	Earnings from the decision problem	\$8	
7	Earnings from the decision problem	\$9	

8	Earnings from the decision problem	\$10	
9	Earnings from the decision problem	\$10.50	
10	Earnings from the decision problem	\$11	
11	Earnings from the decision problem	\$11.50	
12	Earnings from the decision problem	\$12	
13	Earnings from the decision problem	\$12.50	
14	Earnings from the decision problem	\$13	
15	Earnings from the decision problem	\$14	
16	Earnings from the decision problem	\$15	
17	Earnings from the decision problem	\$16	
18	Earnings from the decision problem	\$18	
19	Earnings from the decision problem	\$20	
20	Earnings from the decision problem	\$22	
21	Earnings from the decision problem	\$24	

Use the above earnings tables to answer the following questions:

3. What option gives you more money in Choice Problem 8?

☒ A A

☐ B B

Quiz

Your Earnings					player Z's Earnings				
Your action	Player Z's action				Player Z's action	Player Y's action			
		A	B	C			a	b	c
	a	3	15	1		A	13	5	8
	b	8	0	4		B	7	9	10
	c	6	9	5		C	10	6	12

Player Y had the same actions and earnings as you.

Suppose that in Part 1 you faced the above decision problem and chose action 'c' when Player Z is an Economics PhD student. (To highlight row 'c' please click on that row.) Refer to the list below to answer the following questions.

Choice Problem	A	B	Choose A or B
0	Earnings from the decision problem	\$0	
1	Earnings from the decision problem	\$2	
2	Earnings from the decision problem	\$4	
3	Earnings from the decision problem	\$5	
4	Earnings from the decision problem	\$6	
5	Earnings from the decision problem	\$7	
6	Earnings from the decision problem	\$8	
7	Earnings from the decision problem	\$9	

8	Earnings from the decision problem	\$10	
9	Earnings from the decision problem	\$10.50	
10	Earnings from the decision problem	\$11	
11	Earnings from the decision problem	\$11.50	
12	Earnings from the decision problem	\$12	
13	Earnings from the decision problem	\$12.50	
14	Earnings from the decision problem	\$13	
15	Earnings from the decision problem	\$14	
16	Earnings from the decision problem	\$15	
17	Earnings from the decision problem	\$16	
18	Earnings from the decision problem	\$18	
19	Earnings from the decision problem	\$20	
20	Earnings from the decision problem	\$22	
21	Earnings from the decision problem	\$24	

Use the above earnings tables to answer the following questions:

4. Suppose that you are sure that Player Z chose action 'C'. What option gives you more money in Choice Problems 2 and 4, respectively?

- ☐ A A & A
- ☐ B A & B
- ☐ C B & A
- ☐ D B & B

Quiz

Your Earnings					player Z's Earnings				
Your action	Player Z's action				Player Z's action	Player Y's action			
		A	B	C			a	b	c
	a	3	15	1		A	13	5	8
	b	8	0	4		B	7	9	10
	c	6	9	5		C	10	6	12

Player Y had the same actions and earnings as you.

Suppose that in Part 1 you faced the above decision problem and chose action 'c' when Player Z is an Economics PhD student. (To highlight row 'c' please click on that row.) Refer to the list below to answer the following questions.

Choice Problem	A	B	Choose A or B
0	Earnings from the decision problem	\$0	
1	Earnings from the decision problem	\$2	
2	Earnings from the decision problem	\$4	
3	Earnings from the decision problem	\$5	
4	Earnings from the decision problem	\$6	
5	Earnings from the decision problem	\$7	
6	Earnings from the decision problem	\$8	
7	Earnings from the decision problem	\$9	

8	Earnings from the decision problem	\$10	
9	Earnings from the decision problem	\$10.50	
10	Earnings from the decision problem	\$11	
11	Earnings from the decision problem	\$11.50	
12	Earnings from the decision problem	\$12	
13	Earnings from the decision problem	\$12.50	
14	Earnings from the decision problem	\$13	
15	Earnings from the decision problem	\$14	
16	Earnings from the decision problem	\$15	
17	Earnings from the decision problem	\$16	
18	Earnings from the decision problem	\$18	
19	Earnings from the decision problem	\$20	
20	Earnings from the decision problem	\$22	
21	Earnings from the decision problem	\$24	

Use the above earnings tables to answer the following questions:

5. Suppose that you are sure that Player Z chose action 'C'. What option gives you more money in Choice Problem 5

☒ A A

☐ B B

You have finished the quiz. Part 2 of the experiment follows.

You will see each list exactly once and there will not be a screen asking you to confirm your choices as in Part 1 of the experiment.

You will be able to consult your notes from Part 1 of the experiment.

When you are ready please click "next" to start Part 2 of the experiment.

Next



List 1 - Player Z is a PhD student in Economics

In Part 1 you chose action **c**. Therefore, if you choose Option A below you will play action **c** and be paid **\$12, \$8, or \$0** depending on the action chosen by Player Z who is a **PhD student in Economics**.

(Note that you can still use the highlighting tool like in Part 1 of the experiment, but you cannot change your action.)

Option A: the earnings from the game when Player Z is a **PhD student in Economics**.

Instructions

Your Earnings

		Player Z's action		
Your action		A	B	C
	a	0	12	11
	b	5	13	0
	c	12	8	0

Player Z's Earnings

		Player Y's action		
Player Z's action		a	b	c
	A	6	15	10
	B	3	8	9
	C	4	13	9

Player Y had the same actions and earnings as you.

Your Notes:

Z will always choose A, so I choose C.

Your Decision:

	Option A	Option B
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$8.00
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$8.25
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	.
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$13.75
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$14.00

Next



List 1 - Player Z is an **undergraduate student from any year or discipline**

In Part 1 you chose action **c**. Therefore, if you choose Option A below you will play action **c** and be paid **\$12, \$8, or \$0** depending on the action chosen by Player Z who is an **undergraduate student from any year or discipline**.

(Note that you can still use the highlighting tool like in Part 1 of the experiment, but you cannot change your action.)

Option A: the earnings from the game when Player Z is an **undergraduate student from any year or discipline**.

Instructions

Your Earnings

		Player Z's action		
		A	B	C
Your action	a	0	12	11
	b	5	13	0
	c	12	8	0

Player Y had the same actions and earnings as you.

Player Z's Earnings

	Player Y's action			
Player Z's action		a	b	c
	A	6	15	10
	B	3	8	9
	C	4	13	9

Your Notes:

column A of player Z has highest possible outcome regardless of which letter I choose. I'm assuming they'll choose column A and for this reason i chose column c..

Your Decision:

	Option A	Option B
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$8.00
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$8.25
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	⋮
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$13.75
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$14.00

Next



List 2 - Player Z is a PhD student in Economics

In Part 1 you chose action **a**. Therefore, if you choose Option A below you will play action **a** and be paid **\$0, \$12, or \$11** depending on the action chosen by Player Z who is a **PhD student in Economics**.

(Note that you can still use the highlighting tool like in Part 1 of the experiment, but you cannot change your action.)

Option A: the earnings from the game when Player Z is a **PhD student in Economics**.

Instructions

Your Earnings

		Player Z's action		
		A	B	C
Your action	a	0	12	11
	b	5	13	0
	c	12	8	0

Player Y had the same actions and earnings as you.

Player Z's Earnings

		Player Y's action		
		a	b	c
Player Z's action	A	6	16	9
	B	10	3	8
	C	8	10	10

Your Notes:

I think a PhD student would know the optimal earning for both assuming that both parties are cooperative. I think they would assume I go with A, for them, the best return would be B. So I'm sticking with A..

Your Decision:

	Option A	Option B
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$8.00
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$8.25
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	⋮
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$13.75
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$14.00

Next



List 2 - Player Z is an undergraduate student from any year or discipline

In Part 1 you chose action **a**. Therefore, if you choose Option A below you will play action **a** and be paid **\$0, \$12, or \$11** depending on the action chosen by Player Z who is an **undergraduate student from any year or discipline**.

(Note that you can still use the highlighting tool like in Part 1 of the experiment, but you cannot change your action.)

Option A: the earnings from the game when Player Z is an **undergraduate student from any year or discipline**.

Instructions

Your Earnings

	Player Z's action			
		A	B	C
	a	0	12	11
	b	5	13	0

Player Y had the same actions and earnings as you.

Player Z's Earnings

	Player Y's action			
		a	b	c
	A	6	16	9
	B	10	3	8

Your Notes:

I think Player Z would choose C because it has the most consistent earning. If Player Z chose C, I would only earn something if I chose A. I'm choosing A in hopes that Player Z will not also choose A.

Your Decision:

	Option A	Option B
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$8.00
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$8.25
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	.
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$13.75
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$14.00

Next



List 3 - Player Z is a PhD student in Economics

In Part 1 you chose action **a**. Therefore, if you choose Option A below you will play action **a** and be paid **\$0, \$12, \$13, or \$11** depending on the action chosen by Player Z who is a **PhD student in Economics**.

(Note that you can still use the highlighting tool like in Part 1 of the experiment, but you cannot change your action.)

Option A: the earnings from the game when Player Z is a **PhD student in Economics**.

Instructions

Your Earnings

		Player Z's action			
		A	B	C	D
Your action	a	0	12	13	11
	b	4	14	0	6
	c	10	0	11	12
	d	13	8	6	0

Player Z's Earnings

		Player Y's action			
		a	b	c	d
Player Z's action	A	12	0	16	7
	B	14	0	5	11
	C	12	16	0	10
	D	8	4	0	12
	E	10	10	10	10

Player Y had the same actions and earnings as you.

Your Notes:

yeah I really think they'd do the same thing, make it good for everyone. Maybe this is testing how people think about phd students in economics hahaha. No but really, the avgs of C and a are the best for the respective peoples. So on that alone, this should be good..

Your Decision:

	Option A	Option B
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$8.00
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$8.25
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	⋮
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$13.75
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$14.00

Next



List 3 - Player Z is an undergraduate student from any year or discipline

In Part 1 you chose action **a**. Therefore, if you choose Option A below you will play action **a** and be paid **\$0, \$12, \$13, or \$11** depending on the action chosen by Player Z who is an **undergraduate student from any year or discipline**.

(Note that you can still use the highlighting tool like in Part 1 of the experiment, but you cannot change your action.)

Option A: the earnings from the game when Player Z is an **undergraduate student from any year or discipline**.

Instructions

Your Earnings

		Player Z's action			
		A	B	C	D
Your action					
	a	0	12	13	11
	b	4	14	0	6
	c	10	0	11	12
	d	13	8	6	0

Player Y had the same actions and earnings as you.

Player Z's Earnings

		Player Y's action			
Player Z's action		a	b	c	d
	A	12	0	16	7
	B	14	0	5	11
	C	12	16	0	10
	D	8	4	0	12

Your Notes:

oh four! Okay so new 0s. Lets start with what I've been doing... For Z: A: max=16, min=0, range=16 (DAMN, high risk) B: max=14, min HWM, all have 0s, so all have high risk. Same with Y's. So looks like range isn't the best measure here. *remember! This is an undergrad. Let's go with the strategy of maximizing for both. (maybe PhDs would try to maximize both too. That distinction might be a red herring. Why would they not? That's how contracts are signed anyway) (would Undergrad's? Why would they not, they'd be stupid to just choose the highest one for themselves without considering Z) A: avg=8.75 B: avg=7.5 C: 9.5 D: 6 ~~~~ aaah I see. Yeah see? The highest value for both are 0 for the respective player ou tricky stuff. Z has two max 16s. But C is the best in terms of avg. Lets look at Y now too a: 9 (dang that's good too!) b: 6 c: 8.23 d: 6.75 so a is best for Y. Yeah, I can see Ca being one. Ca: Z=12 Y=13 Cc: Z=16 Y=10 Ba: Z=14 Y=12 (not as good as Ca) Dangerous for Y, is there any chance Z would choose A? Well, avg of C is better, and both have the max 16, so probably not?.

Your Decision:

	Option A	Option B
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$8.00
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$8.25
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	⋮
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$13.75
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$14.00

Next



List 4 - Player Z is a PhD student in Economics

In Part 1 you chose action **c**. Therefore, if you choose Option A below you will play action **c** and be paid **\$12, \$8, or \$0** depending on the action chosen by Player Z who is a **PhD student in Economics**.

(Note that you can still use the highlighting tool like in Part 1 of the experiment, but you cannot change your action.)

Option A: the earnings from the game when Player Z is a **PhD student in Economics**.

Instructions

Your Earnings

		Player Z's action		
		A	B	C
Your action	a	0	12	11
	b	5	13	0
	c	12	8	0

Player Y had the same actions and earnings as you.

Player Z's Earnings

		Player Y's action		
		a	b	c
Player Z's action	A	13	5	10
	B	14	3	9
	C	6	16	9

Your Notes:

I have a better chance of earning more with the #12 and \$11 in option a, so if player Z chooses option A in predicting I will choose A so they will get \$13, I chose C so I will get \$12.

Your Decision:

	Option A	Option B
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$8.00
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$8.25
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	.
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$13.75
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$14.00

Next



List 4 - Player Z is an **undergraduate student from any year or discipline**

In Part 1 you chose action **a**. Therefore, if you choose Option A below you will play action **a** and be paid **\$0, \$12, or \$11** depending on the action chosen by Player Z who is an **undergraduate student from any year or discipline**.

(Note that you can still use the highlighting tool like in Part 1 of the experiment, but you cannot change your action.)

Option A: the earnings from the game when Player Z is an **undergraduate student from any year or discipline**.

Instructions

Your Earnings

		Player Z's action		
		A	B	C
Your action	a	0	12	11
	b	5	13	0
	c	12	8	0

Player Y had the same actions and earnings as you.

Player Z's Earnings

		Player Y's action		
		a	b	c
Player Z's action	A	13	5	10
	B	14	3	9
	C	6	16	9

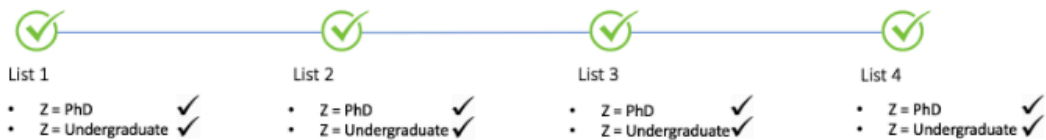
Your Notes:

As this is an undergrad student, i assume they will straight away go to their highest earning column (c w/ 16) but as they can see if i chose to get the best outcome for them i would end up getting zero, so then i went to the second best option (b w/14) however the biggest earning for me was in row b but for them it was just 3, so i chose option a so they can get their highest reward but also decided to go with option a as each of the rows have a chance of getting zero but this row has the highest other two earnings and i think it is unlikely for them to choose a in the end..

Your Decision:

	Option A	Option B
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$8.00
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$8.25
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	⋮
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$13.75
Your earnings from the decision problem	<input type="radio"/> <input type="radio"/>	\$14.00

Next



This is the end of the experiment.

Your payment is being calculated. Please click "Next" to go to next page to learn your payment for this experiment.

Next

Thank you for participating in this experiment!

Choice Problem **24** in **List 1 - Player Z is a PhD student in Economics** was randomly selected for payment.

You chose action **c** and your opponent chose action **A**.

		Other participant's action		
Your action		A	B	C
	a	0	12	11
	b	5	13	0
	c	12	8	0

In that choice problem you selected option **B**.

You earned **\$3.50** from the quiz and **\$13.75** from your choice.

In addition, you will receive a participation fee of **\$5.00**.

As a result, your total earnings are **\$22.25**.

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 647-YYY-ZZZZ.

Magic Mirror on the Wall, Who Is the Smartest One of All?

Online Appendix: Experimental Interface

— Auxiliary Experiment —

Yoram Halevy Johannes Hoelzemann Terri Kneeland

January 18, 2025

Instructions

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 that will be paid to you at the end of the experiment via interac e-transfer.

Your computer screen will display useful information. Remember that the information on your computer screen is PRIVATE. To insure 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-XXX-ZZZZ or use Skype (j.hoelzemann@utoronto.ca) anytime from 8am to 8pm Toronto time and one of the experimenters will help you privately.

In this experiment, you will face four rounds of decision-making problems. During the experiment, and in order to determine your payment, you will be randomly matched with another participant in this session.

The Basic Idea

There will be four different rounds. In each round, you will be presented with an interactive decision problem similar to the one below.

Your Earnings						Other Participant's Earnings					
Your action	Other participant's action					Other's action	Your action				
		A	B	C	D			a	b	c	d
	a	7	12	8	4		A	13	8	3	18
	b	7	1	9	10		B	16	4	13	30
	c	13	2	10	6		C	10	21	16	12
	d	3	10	11	6		D	19	5	9	21

Your earnings in each problem depend on your choice of action (between: a, b, c, d) and the other participant's choice of action (between A, B, C, D). Your earnings possibilities are presented in tables like the ones above. In each problem, your earnings are given by the blue numbers in the left table, labelled 'Your Earnings'. The other participant's earnings are given in the right table, labelled 'Other Participant's Earnings'. Your choice of action determines the row in the 'Your Earnings' table and the other participant's choice of action determines the column in the same table. The blue number in the cell corresponding to any combination of actions (yours and the other participant's) represent your earnings. Similarly, the other participant's choice of action determines the row in the 'Other Participant's Earnings' table, while your choice of action determines the column in this table. The number in the cell corresponding to any combination of actions (yours and the other participant's) represents the other participant's earnings. In summary, your choice of action AND the other participant's choice of action affect both your earnings and the other participant's earnings.

For example, if you choose action "b" and the other participant chooses action "B" your earnings would be \$1 and the other participant's earnings would be \$4. If you choose action "c" and the other participant chooses action "A", your earnings would be \$13 and the other participant's earnings would be \$3. Numbers in the example are just an example and do not intend to suggest how anyone should make their choices.

Problems

The problems that you will face will take one of two forms. The problem will either have four possible actions for both you (e.g. a, b, c or d) and the other participant (e.g. A, B, C or D) as in Example Problem 1. Or, the problem will have three possible choices for both you (e.g. a, b, or c) and the other participant (e.g. A, B, or C) as in Example Problem 2.

Example Problem 1

Your Earnings

Your action	Other participant's action				
		A	B	C	D
	a	7	12	8	4
	b	7	1	9	10
	c	13	2	10	16
	d	3	10	11	6

Other Participant's Earnings

Other's action	Your action				
		a	b	c	d
	A	13	8	3	18
	B	16	4	13	30
	C	10	21	16	12
	D	19	5	9	21

Example Problem 2

Your Earnings

	Other Participant's action			
Your action		A	B	C
	a	3	15	1
	b	8	0	4
	c	6	9	5

Other Participant's Earnings

Other participant's action	Your action			
		a	b	c
	A	13	5	8
	B	7	9	10
	C	10	6	12

In order to assist you to choose an action, when you move your mouse over a row in the 'Your Earning' table on the left, the action will be highlighted in yellow in both tables: a row on the left table, and a column on the right table. By left clicking your mouse over a row it will remain highlighted, and you can unhighlight it by clicking your mouse again or clicking another row. Similarly, when you move your mouse over a row that corresponds to an action of the other participant in the 'Other participant's Earnings' on the right, the row will be highlighted in green on the right table and the corresponding column will be highlighted in green on the left table. Clicking your mouse over the row will keep it highlighted, and clicking it again (or clicking another action) will unhighlight it.

Please try to highlight actions for you and the other participant in Problems 1 and 2 above.

Finally, to choose an action you must click on the radio button around the action name (the lowercase letter next to the row, on the margin of the left table), after it has been activated (turned blue).

The Rounds

There will be four rounds. You will need to choose an action in each round, as described above. After you have confirmed your choice of action you will advance to the next screen and play a new round.

The earnings tables in each round are different, so you should look carefully at them before making your choice. You will be required to spend at least 5 minutes on each round. You may spend more than 5 minutes on each round if you wish.

The Other Participants

At the beginning of the experiment, you will be randomly matched with another participant with whom you will be matched for all four rounds. Your match is participating in this session. You do not know which actions the other participant chooses when you make your choices of actions. You can, however, attempt to reason about the actions the other participant will choose.

Payment

You will earn a participation payment of \$5.00 for participating in this experiment.

In addition to the participation payment, one round will be randomly selected for payment at the end of the experiment. You will be paid your earnings in that round as described above. Any of the four rounds could be the one selected. So you should treat each round like it will be the one determining your payment.

Before the actual experiment starts, you will be asked to answer 6 questions. You will earn 50 cents for answering each question correctly on your first trial. If you make a mistake, you will not receive a payment for that question, but you must answer it correctly in order to move to the next question.

You will be informed of your payment, the round chosen for payment, and the choices of you and of the other participant only at the end of the experiment. You will not learn any other information about the choices of other participants during the experiment. The identity of the other participants to which you will be matched will never be revealed.

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? Answer. No. It is an economics experiment. If we do anything deceptive or don't pay you cash as described, then you can complain to 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" choice of action? Is this kind of a test? No. Your optimal action depends on your belief which actions will other participants choose. Different people may hold different beliefs.

This button will be activated after 10 minutes. Please take your time to read through the instructions.

Next

Quiz

Your Earnings					Other Participant's Earnings				
Your action	Other participant's action				Other's action	Your action			
		A	B	C			a	b	c
	a	3	15	1		A	13	5	8
	b	8	0	4		B	7	9	10
	c	6	9	5		C	10	6	12

Use the above earnings table to answer the following questions:

1. If you choose action 'a' and the other participant chose action 'C' what would your earnings be?

- ☐ A \$15
- ☐ B \$13
- ☐ C \$1
- ☐ D \$6

Quiz

Your Earnings					Other Participant's Earnings				
Your action	Other participant's action				Other's action	Your action			
		A	B	C			a	b	c
	a	3	15	1		A	13	5	8
	b	8	0	4		B	7	9	10
	c	6	9	5		C	10	6	12

Use the above earnings table to answer the following questions:

2. If you choose action 'a' and the other participant chose action 'C' what would the other participant's earnings be?

- ☐ A \$13
- ☐ B \$10
- ☐ C \$1
- ☐ D \$8

Quiz

Your Earnings					Other Participant's Earnings				
Your action	Other participant's action				Other's action	Your action			
		A	B	C			a	b	c
	a	3	15	1		A	13	5	8
	b	8	0	4		B	7	9	10
	c	6	9	5		C	10	6	12

Use the above earnings table to answer the following questions:

3. If the other participant chose action 'A', which action would give you the highest earnings?

A a

B b

C c

Quiz

Your Earnings						Other Participant's Earnings					
Your action	Other participant's action					Other's action	Your action				
		A	B	C	D			a	b	c	d
	a	7	12	8	4		A	13	8	3	18
	b	7	1	9	10		B	16	4	13	30
	c	13	2	10	16		C	10	21	16	12
	d	3	10	11	6		D	19	5	9	21

Use the above earnings table to answer the following questions:

4. If you choose action 'c' and the other participant chose action 'A' what would be your earnings?

- ☐ A \$8
- ☐ B \$13
- ☐ C \$3
- ☐ D \$10

Quiz

Your Earnings						Other Participant's Earnings					
Your action	Other participant's action					Other's action	Your action				
		A	B	C	D			a	b	c	d
	a	7	12	8	4		A	13	8	3	18
	b	7	1	9	10		B	16	4	13	30
	c	13	2	10	16		C	10	21	16	12
	d	3	10	11	6		D	19	5	9	21

Use the above earnings table to answer the following questions:

5. If you choose action 'd' and the other participant chose action 'B' what would be the other participant's earnings?

- ☐ A \$10
- ☐ B \$5
- ☐ C \$30
- ☐ D \$4

Quiz

Your Earnings						Other Participant's Earnings					
Your action	Other participant's choice					Other's action	Your action				
		A	B	C	D			a	b	c	d
	a	7	12	8	4		A	13	8	3	18
	b	7	1	9	10		B	16	4	13	30
	c	13	2	10	16		C	10	21	16	12
	d	3	10	11	6		D	19	5	9	21

Use the above earnings table to answer the following questions:

6. If the other participant chose action 'D', which action would give you the highest earnings?

- ☐ A a
- ☐ B b
- ☐ C c
- ☐ D d

Round 1

Please choose one action from below. Each button will be automatically activated after 3 minutes.

Instructions

Your Earnings

		Other participant's action		
Your action		A	B	C
	a	0	12	11
	b	5	13	0
	c	12	8	0

Other Participant's Earnings

		Your action		
Other's action		a	b	c
	A	13	5	10
	B	14	3	9
	C	6	16	9

Round 2

Please choose one action from below. Each button will be automatically activated after 3 minutes.

Instructions

Your Earnings

		Other's action			
Your action		A	B	C	D
	a	0	12	13	11
	b	4	14	0	6
	c	10	0	11	12
	d	12	8	6	0

Other Participant's Earnings

		Your action			
Other's action		a	b	c	d
	A	12	0	16	7
	B	14	0	5	11
	C	12	16	0	10
	D	8	4	0	12

Round 3

Please choose one action from below. Each button will be automatically activated after 3 minutes.

Instructions

Your Earnings

		Other participant's action		
Your action		A	B	C
	a	0	12	11
	b	5	13	0
	c	12	8	0

Other Participant's Earnings

		Your action		
Other's action		a	b	c
	A	6	16	9
	B	10	3	8
	C	8	10	10

Round 4

Please choose one action from below. Each button will be automatically activated after 3 minutes.

Instructions

Your Earnings

		Other participant's action		
Your action		A	B	C
	a	0	12	11
	b	5	13	0
	c	12	8	0

Other Participant's Earnings

		Your action		
Other's action		a	b	c
	A	6	15	10
	B	3	8	9
	C	4	13	9