Economics Bulletin

Appendix and Supplemental material not intended for publication-Round 3

Submission Number:EB-12-00490

A sample of the instructions in the experiment (attention cost case).

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Appendix. Instructions

Experiment 1

In this experiemnt, you are paired with another participant to form a group and then make a decision. The pairs are randomly formed, and you cannot know who is your partner in your group.

The outcome of your decision making depends on your choice and your partner's choice. Each member in a group will be designated as either Player 1 or Player 2, who play different roles in the decision making.

In the experiment, you will play either Game X or Y shown in the Table in your Recording Sheet. <u>You will play Game X with probability 80% and Y with probability 20%. Which game to be played is only known to Player 1. Player 2 cannot know which game they actually play.</u>

In both games, each player independently chooses A or B. The point each player obtains differs depending on the choices of both players.

For example, in Game X, if both players choose A, each obtains 8 points. If both players choose B, each obtains 6 points. But if Player 1 chooses A and Player 2 chooses B, Player 1 gets 7 and Player 2 gets 3. Finally, if Player 1 chooses B and Player 2 choose A, Player 1 gets 3 and Player 2 gets 7.

In Game Y, if both players choose A, each obtains 6 points. If both players choose B, each obtains 8 points. But if Player 1 chooses A and Player 2 choose B, Player 1 gets 7 and Player 2 gets 3. Finally, if Player 1 chooses B and Player 2 chooses A, Player 1 gets 3 and Player 2 gets 7.

In Experiment 1, you are to choose either A or B under the condition that <u>only Player 1 knows which game is being played, while Player 2 knows only that Games X and Y are chosen with probabilities 80% and 20% respectively</u>.

Please record your decision in your Recording Sheet. Decisions are made before you know which game is being played. So if you are Player 1, you should specify your choices for both Game X and Game Y imagining both cases.

After your decision is made, experimenter will collect your Recording Sheet, and then decides the points for both players according to your choices and the Game actually chosen.

This is the end of the experiment. Your reward is ten times as much as your points in cash.

If you have any questions, please raise your hand.

OK, let's begin the experiment.

Recording sheet 1 (for Player 1)

ID: ________________

In each table, Player 1 chooses A or B in the row, and Player 2 chooses A or B in the column. Both Players earn the points written in the cell where their choices intersect. For example, in Game X, if Player 1 chooses A and Player 2 choose B, Player 1 gets 7 points and Player 2 gets 3 points.

2 / 1	A		B	
A	**1's score**	**2's score**	**1's score**	**2's score**
	8	8	7	3
B	**1's score**	**2's score**	**1's score**	**2's score**
	3	7	6	6

Game X (with probability 80%)

2 / 1	A		B	
A	**1's score**	**2's score**	**1's score**	**2's score**
	6	6	7	3
B	**1's score**	**2's score**	**1's score**	**2's score**
	3	7	8	8

Game Y (with probability 20%)

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(1) Your choice :

For Game X: **A or B**

For Game Y: **A or B**

Recording sheet 1 (for Player 2)

ID: ________________

In each table, Player 1 chooses A or B in the row, and Player 2 chooses A or B in the column. Both Players earn the points written in the cell where their choices intersect. For example, in Game X, if Player 1 chooses A and Player 2 choose B, Player 1 gets 7 points and Player 2 gets 3 points.

2 / 1	A		B	
A	**1's score**	**2's score**	**1's score**	**2's score**
	8	8	7	3
B	**1's score**	**2's score**	**1's score**	**2's score**
	3	7	6	6

Game X (with probability 80%)

2 / 1	A		B	
A	**1's score**	**2's score**	**1's score**	**2's score**
	6	6	7	3
B	**1's score**	**2's score**	**1's score**	**2's score**
	3	7	8	8

Game Y (with probability 20%)

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(1) Your choice： **A or B**

Experiment 2

In this experiment, the situation is basically the same as in Experiment 1.

You are paired with another participant and then make a decision. The pair is randomly formed, and you cannot know who is your partner in your group. Moreover, you are not paired with the same partner as in Experiment 1.

As in Experiment 1, You will play Game X with probability 80% and Y with probability 20%, and choose either A or B independently of your partner.

In this experiment, both Players know which game is being played. However, decisions are made before you know which game is being played. So please record your choices for both games in your Recording Sheet imagining both cases.

After your decision is made, experimenter will collect your Recording Sheet, and then decides the points for both players according to your choices and the Game actually chosen.

This is the end of the experiment. Your reward is ten times as much as your points in cash.

If you have any questions, please raise your hand.

OK, let's begin the experiment.

(Recording sheets for both Players are exactly same as the one for Player 1 in Experiemnt 1)

Experiment 3

In this experiment, the situation is basically the same as in Experiment 1.

You are paired with another participant and then make a decision. The pair is randomlyy formed, and you cannot know who is your partner in your group. Moreover, you are not paired with the same partner as in Experiment 1 or 2.

As in Experiment 1, You will play Game X with probability 80% and Y with probability 20%, and choose A or B independently of your partner.

In this experiment, which game is being played is only known to Player 1. Player 2 cannot know which game they are actually playing.

When the game to be played is determined, only if Game Y is chosen, Player 1's computer automatically sends a message "Game Y is chosen" to Player 2's computer. Player 1 has no way to stop it, and cannot send any other messages.

When the message from Player 1 is received, Player 2's computer automatically sends a confirmation message "Your message is received" to Player 1's computer. Player 2 has no way to stop it, and cannot send any other messages.

When the message from Player 2 is received, Player 1's computer automatically sends a confirmation message "Your message is received" to Player 2's computer. Player 1 has no way to stop it, and cannot send any other messages.

Again, when the message from Player 1 is received, Player 2's computer automatically sends a confirmation message "Your message is received" to the Player 1's computer. Player 2 has no way to stop it, and cannot send any other messages.

Such message exchanges continue likewise, until the message is lost accidentally with probability 10%. If both Player's computers receive nothing for a few minutes, message exchnage process will be terminated.

The top Figure in the Appendix shows this message exchange process and the combinations of the number of messages that both Player may possibly receive. The bottom Table in the Appendix shows the probabilities for combinations of the number of messages that both Player may possibly receive. For example, the probability that 1 received 0 message and 2 received 1 message is 0.0180 (1.8%).

From this Table, you can see the following.

First of all, the case that Player 2 receives no message occurs either when Game is X (with probablity 0.8), or when Game is Y but the message from Player 1 is accidentaly lost (with probability 0.2). From this, the probability of Game X conditional on Player 2's receiving 0 message is 0.8 / (0.8+0.02)=0.9756, and the conditional probability of Game Y is 0.02 / (0.8+0.02)=0.0244.

Next, the case that Player 1 receives no message occurs either when Game is Y and the message from Player 1 is accidentaly lost (with probability 0.2) ,or when the message from Player 1 was successfully received but Player 2's reply was accidentaly lost (with probability 0.018). From this, the probability that Player 2 has received no messge conditional on Player 1 receiving no message is 0.02 / (0.02+0.018)=0.5263, and the conditional probability that Player 2 received 1 messge is 0.018 / (0.02+0.018)=0.4236.

Likewise, the case that 2 has received 1 message occurs either when Game is Y and the message from Player 1 was successfully received but Player 2's reply is accidentaly lost (with probability 0.018) or Player 2's reply is successfully received but Player 1's reply is accidentaly lost (with probability 0.0162). From this, the probability that 1 received no message conditional on Player 2's receiving 1 message is 0.018/ (0.018+0.0162)=0.5263, and the conditional probability that Player 1 received 1 messge is 0.0162 / (0.018+0.0162)=0.4737.

Thus, given the number of messages you have received, the probability that the number of your partner's received messages is less than the number of your received messages is always higher than the probability that the number of your partner's received message is the same as yours.

In this experiment, <u>only if you pay some costs</u>, you can know the number of messages your computer finally has received after the message exchange process was terminated. You cannot know the number of messages that your partner's computer has actually received. To be more specific, before the play, you should specify <u>the maximum number of the messages, M</u>, that you would like to check. As long as the number of messages that you actually received is less than ot eqaul to M, you can know the exact numbr of the messages. <u>If the number of messages that you have actually received is greater than M, you are only informed that the number of messages is greater than M. You have to pay 0.1 times M from your points in the game</u>.

After that, each Player chooses A or B independently of each other.

In this experiment, you have to choose A or B, <u>before knowing which Game is being played and how many number of message your computer has received</u>.

Player 1 chooses A or B in Game X. In Game Y, both Players specify their decision conditional on the number of messages that they have actually received. Please record your choice in your Recording Sheet. Then, experimenter will collect your Recording Sheet.

Then, experimenter will announce <u>the number of messages that your computer has actually received</u>. Please note that you have to pay 0.1*M independent of the actual number of messages.

Finally, your choice, A or B, is determined conditional on the number of messages that you have actually received.

You receive points according to your choices and the Game actually chosen. Your final score is the points you get in the game minus the message checking cost, 0.1M.

This is the end of the experiment. Your reward is ten times as much as your points in cash.

If you have any questions, please raise your hand.

OK, let’s begin the experiment.

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Recording sheet 3 (for Player 1)

ID:__________________

In each table, Player 1 chooses A or B in the row, and Player 2 chooses A or B in the column. Both Players earn the points written in the cell where their choices intersect. For example, in Game X, if Player 1 chooses A while Player 2 choose B, Player 1 gets 7 points and Player 2 gets 3 points.

2 / 1	**A**		**B**	
A	**1's score**	**2's score**	**1's score**	**2's score**
	8	8	7	3
B	**1's score**	**2's score**	**1's score**	**2's score**
	3	7	6	6

Game X (with probability 80%)

2 / 1	**A**		**B**	
A	**1's score**	**2's score**	**1's score**	**2's score**
	6	6	7	3
B	**1's score**	**2's score**	**1's score**	**2's score**
	3	7	8	8

Game Y (with probability 20%)

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(1) The maximum number of the messages you would like to check: M = __________

(2) Your choice

In Game X: **A or B**

In Game Y:

(a) Choose A irrespectively of the number of received messages.

(b) Choose B irrespectively of the number of received messages.

(c) If the number of received messages is less than_________, choose A, other wise B.

(d) If the number of received messages is less than_________,

choose A, other wise B.

Recording sheet 3 (for Player 2)

ID:__________________

In each table, Player 1 chooses A or B in the row, and Player 2 chooses A or B in the column. Both Players earn the points written in the cell where their choices intersect. For example, in Game X, if Player 1 chooses A while Player 2 choose B, Player 1 gets 7 points and Player 2 gets 3 points.

1 \ 2	A		B	
A	**1's score**	**2's score**	**1's score**	**2's score**
	8	8	7	3
B	**1's score**	**2's score**	**1's score**	**2's score**
	3	7	6	6

Game X (with probability 80%)

1 \ 2	A		B	
A	**1's score**	**2's score**	**1's score**	**2's score**
	6	6	7	3
B	**1's score**	**2's score**	**1's score**	**2's score**
	3	7	8	8

Game Y (with probability 20%)

----

(1) The maximum number of the messages you would like to check: M =__________

(2) Your choice

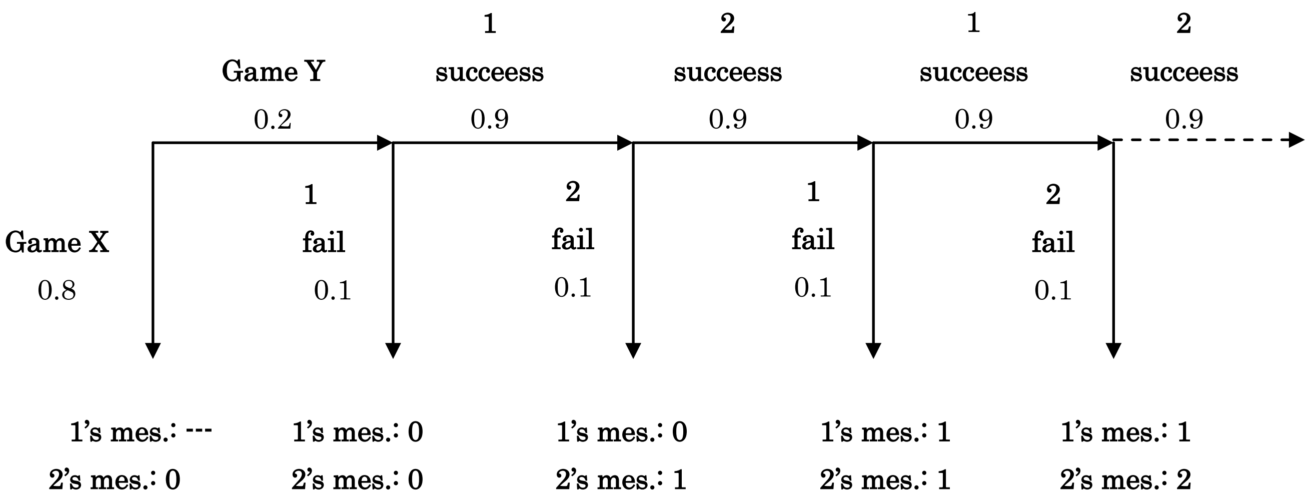
(a) Choose A irrespectively of the number of received messages.

(b) Choose B irrespectively of the number of received messages.

(c) If the number of received messages is less than_________, choose A, other wise B.

(d) If the number of received messages is less than_________, choose A, other wise B.

Appendix



Game	Total #	1’s mes.	2’s mes	Probability
X	0	---	0	0.8000
Y	0	0	0	0.0200
Y	1	0	1	0.0180
Y	2	1	1	0.0162
Y	3	1	2	0.0146
Y	4	2	2	0.0131
Y	5	2	3	0.0118
Y	6	3	3	0.0106
Y	7	3	4	0.0096
Y	8	4	4	0.0086
Y	9	4	5	0.0077