

Appendix

Instruction

For those who will participate in the experiment

The experiment we are about to conduct will be used as academic material to analyze your choice behavior. You will be asked to make choices according to the following rules. Through those choices, you will earn points. All the points you earn will be converted to cash at a rate of 1.3 yen per point, which will be paid to you at the end of the experiment. All instructions for making the choices will be shown on the computer screen in front of you. The experiment is divided into four parts.

Part 1

Explanation of the experiment

Once the experiment begins, the computer will first randomly choose half of the participants as selectors. In Part 1, only these selectors will make choices. There is nothing for those who were not chosen as a selector to do in Part 1 of the experiment; if you were not chosen, please wait until Part 2 begins.

Those who were chosen as selectors will be asked to make six rounds of selections, as explained below. First, a selector will be paired with an individual who was not chosen as a selector. A selector will not be paired with another selector. Likewise, individuals who were not chosen as selectors will not be paired together. The individual you are going to be paired with will be randomly determined by the computer for each round of selection.

The selector will choose one of four options, A, B, C, and D. Based on the choice made by the selector, points are determined for you (the selector) and your counterpart (an individual who was not chosen as a selector).

Options	Your Points	Points for Your Counterpart
A	Numerical value a	Numerical value b
B	Numerical value c	Numerical value d
C	Numerical value e	Numerical value f
D	Numerical value g	Numerical value h

The table above shows the four options and their corresponding points for you and your counterpart. During the experiment, a through h will have specific numerical values and will change in each round.

For example, when, as the selector, you choose B, you will receive points shown for the numerical value c , while your counterpart (an individual who was not chosen as a selector) will receive the points shown for numerical value d .

Formulae to Derive Points

Points for you (the selector) and your counterpart (an individual who was not chosen as a selector) are calculated according to the following formulae.

$$\text{Your points} = 100 \times M \times N + 60 \times (1 - M) + s \times (1 - N)$$

$$\text{Points for your counterpart} = 100 \times M \times N + 60 \times (1 - N) + t \times (1 - M)$$

M and N will each have a value of either 0 or 1; their combinations correspond to the options as follows:

Option A in the table above: $M = 0$ and $N = 0$

Option B in the table above: $M = 0$ and $N = 1$

Option C in the table above: $M = 1$ and $N = 0$

Option D in the table above: $M = 1$ and $N = 1$

The values of s and t are different and change in each round.

Numerical Value Example 1

Let us say the value of s is 30 and the value of t is 100. In this case, points will be given as follows:

When you choose Option A ($M = 0, N = 0$),

$$\text{Your points} = 100 \times 0 \times 0 + 60 \times (1 - 0) + 30 \times (1 - 0) = 90$$

$$\text{Points for your counterpart} = 100 \times 0 \times 0 + 60 \times (1 - 0) + 100 \times (1 - 0) = 160.$$

When you choose Option B ($M = 0, N = 1$),

$$\text{Your points} = 100 \times 0 \times 1 + 60 \times (1 - 0) + 30 \times (1 - 1) = 60$$

$$\text{Points for your counterpart} = 100 \times 0 \times 1 + 60 \times (1 - 1) + 100 \times (1 - 0) = 100.$$

When you choose Option C ($M = 1, N = 0$),

$$\text{Your points} = 100 \times 1 \times 0 + 60 \times (1 - 1) + 30 \times (1 - 0) = 30$$

$$\text{Points for your counterpart} = 100 \times 1 \times 0 + 60 \times (1 - 0) + 100 \times (1 - 1) = 60.$$

When you choose Option D ($M = 1, N = 1$),

$$\text{Your points} = 100 \times 1 \times 1 + 60 \times (1 - 1) + 30 \times (1 - 1) = 100$$

$$\text{Points for your counterpart} = 100 \times 1 \times 1 + 60 \times (1 - 1) + 100 \times (1 - 1) = 100.$$

In other words, the point table in this example will be as follows.

Options	Your Points	Points for Your Counterpart
A	90	160
B	60	100
C	30	60
D	100	100

Numerical Value Example 2

Let's say the value of s is 140 and the value of t is 55. In this case, the points will be as follows:

When you choose Option A ($M = 0, N = 0$),

$$\text{Your points} = 100 \times 0 \times 0 + 60 \times (1 - 0) + 140 \times (1 - 0) = 200$$

$$\text{Points for your counterpart} = 100 \times 0 \times 0 + 60 \times (1 - 0) + 55 \times (1 - 0) = 115.$$

When you choose Option B ($M = 0, N = 1$),

$$\text{Your points} = 100 \times 0 \times 1 + 60 \times (1 - 0) + 140 \times (1 - 1) = 60$$

$$\text{Points for your counterpart} = 100 \times 0 \times 1 + 60 \times (1 - 1) + 55 \times (1 - 0) = 55.$$

When you choose Option C ($M = 1, N = 0$),

$$\text{Your points} = 100 \times 1 \times 0 + 60 \times (1 - 1) + 140 \times (1 - 0) = 140$$

$$\text{Points for your counterpart} = 100 \times 1 \times 0 + 60 \times (1 - 0) + 55 \times (1 - 1) = 60.$$

When you choose Option D ($M = 1, N = 1$),

$$\text{Your points} = 100 \times 1 \times 1 + 60 \times (1 - 1) + 140 \times (1 - 1) = 100$$

$$\text{Points for your counterpart} = 100 \times 1 \times 1 + 60 \times (1 - 1) + 55 \times (1 - 1) = 100.$$

The point table in this example will be as follows.

Options	Your Points	Points for Your Counterpart
A	200	115
B	60	55
C	140	60
D	100	100

Explanation of the Computer Screens and Tasks to Be Performed During the Experiment

Screen for the selector

Round 1 / 6

Options	Your Points	Points for Your Counterpart
A	Numerical value	Numerical value
B	Numerical value	Numerical value
C	Numerical value	Numerical value
D	Numerical value	Numerical value

Value of s
Value of t

Numerical value

Numerical value

Please choose one of the above Options A, B, C, and D.

A

B

C

D

The above screen will be displayed for those who are chosen as selectors. The selection round is shown at the top of the screen. In the above example, the round is the first of six.

Four options and their corresponding points for you and your counterpart are shown in the center of the screen. These points will change each round. Below that, you will find the values of s and t that are used in the formulae to derive the points. Below that are the selection buttons.

First, please choose one option from A, B, C, and D and write it under “Your Choice” on the record sheet. Please also write why you made that choice in the “Reasons for Your Choice” section.

When you’ve finished writing, please click on the button for the option you wrote in “Your Choice.”

Once all selectors click on an option button, the next round will begin. This completes one round of selection. This is repeated six times.

Screen for those who were not chosen as a selector



The above screen will be displayed for those who were not chosen as selectors. Please wait until Part 2 begins, as you will not make choices in Part 1 of the experiment.

You will now have three minutes to review the details of the experiment. If you have a question, please raise your hand quietly and the experimenter will answer you one-to-one. Please note that you are not allowed to communicate with the other participants.

Part 2

Explanation of the Experiment Details

Everyone will be asked to make choices starting in Part 2. You will make six rounds of selections as explained below. First, you will be paired with another participant. The individual you are paired with will be randomly chosen by the computer for each round of selection.

You will choose one of two options, X and Y. The points for you and your counterpart will be determined on the basis of the choices you and your counterpart make.

		Choice of Your Counterpart	
		X	Y
Your Choice	X	Numerical value a , Numerical value b	Numerical value c , Numerical value d
	Y	Numerical value e , Numerical value b	Numerical value g , Numerical value h

The X and Y on the left side represent your choice and the X and Y on the top represent the choice of your counterpart. The two numerical values in each cell represent the points for you and your counterpart corresponding to each combination of choices. The value on the left in each cell is your points and the value on the right is the points for your counterpart. During the experiment, numerical points a through h will have specific values and will change in each round.

For example, when your choice is X and the choice of your counterpart is Y, you will receive the points shown by numerical value c and your counterpart will receive the points shown by numerical value d .

Formulae to Derive Points

Your choices are 0 (X) and 1 (Y). Points for you and your counterpart are calculated according to the following formulae.

$$\begin{aligned} \text{Your points} = & 100 \times (\text{your choice}) \times (\text{choice of your counterpart}) \\ & + 60 \times (1 - \text{your choice}) + s \times (1 - \text{choice of your counterpart}) \end{aligned}$$

$$\begin{aligned} \text{Points for your counterpart} = & 100 \times (\text{your choice}) \times (\text{choice of your counterpart}) \\ & + 60 \times (1 - \text{choice of your counterpart}) + t \times (1 - \text{your choice}) \end{aligned}$$

The values of s and t are different and change in each round.

Numerical Value Example 1

Let us say the value of s is 30 and the value of t is 100. In this case, the points will be as follows:

When you choose 0 (X) and your counterpart chooses 0 (X),

$$\text{Your points} = 100 \times 0 \times 0 + 60 \times (1 - 0) + 30 \times (1 - 0) = 90$$

$$\text{Points for your counterpart} = 100 \times 0 \times 0 + 60 \times (1 - 0) + 100 \times (1 - 0) = 160$$

When you choose 0 (X) and your counterpart chooses 1 (Y),

$$\text{Your points} = 100 \times 0 \times 1 + 60 \times (1 - 0) + 30 \times (1 - 1) = 60$$

$$\text{Points for your counterpart} = 100 \times 0 \times 1 + 60 \times (1 - 1) + 100 \times (1 - 0) = 100$$

When you choose 1 (Y) and your counterpart chooses 0 (X),

$$\text{Your points} = 100 \times 1 \times 0 + 60 \times (1 - 1) + 30 \times (1 - 0) = 30$$

$$\text{Points for your counterpart} = 100 \times 1 \times 0 + 60 \times (1 - 0) + 100 \times (1 - 1) = 60$$

When you choose 1 (Y) and your counterpart chooses 1 (Y),

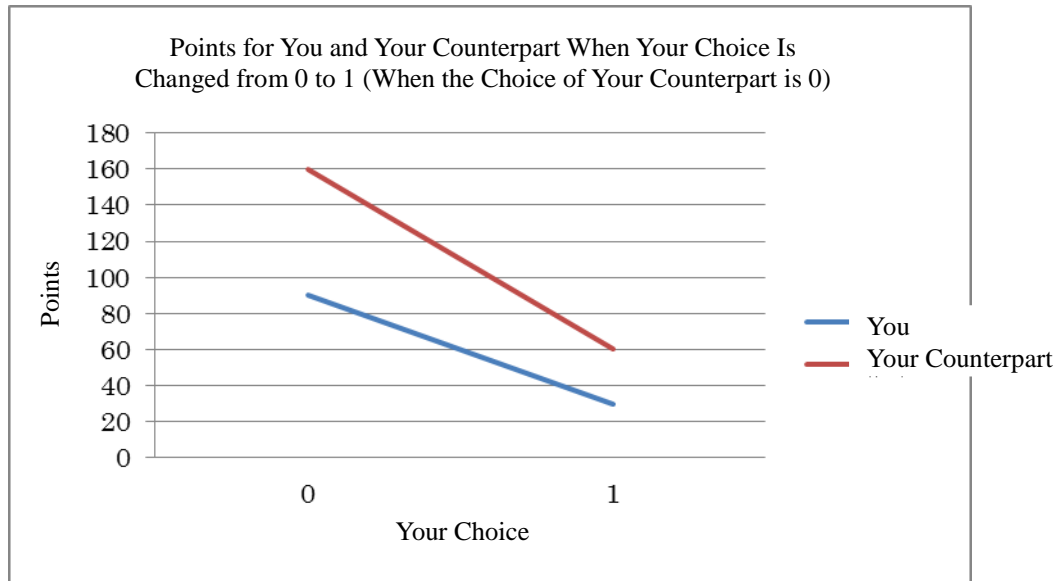
$$\text{Your points} = 100 \times 1 \times 1 + 60 \times (1 - 1) + 30 \times (1 - 1) = 100$$

$$\text{Points for your counterpart} = 100 \times 1 \times 1 + 60 \times (1 - 1) + 100 \times (1 - 1) = 100$$

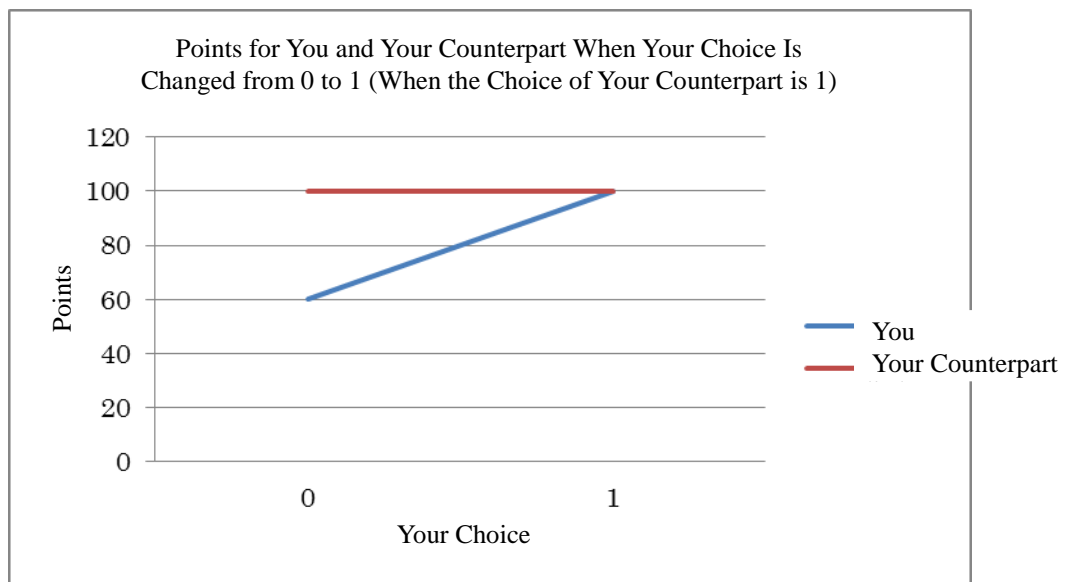
The point table in this example will be as follows.

		Choice of Your Counterpart	
		X	Y
Your Choice	X	90, 160	60, 100
	Y	30, 60	100, 100

When the choice of your counterpart is 0 (X) and your choice is changed from 0 to 1, the points for you and your counterpart can be graphed as follows.



When the choice of your counterpart is 1 (Y) and your choice is changed from 0 (X) to 1 (Y), the points for you and your counterpart can be graphed as follows.



Numerical Value Example 2

Let us say the value of s is 140 and the value of t is 55. In this case, the points will be as follows:

When you choose 0 (X) and your counterpart chooses 0 (X),

$$\text{Your points} = 100 \times 0 \times 0 + 60 \times (1 - 0) + 140 \times (1 - 0) = 200$$

$$\text{Points for your counterpart} = 100 \times 0 \times 0 + 60 \times (1 - 0) + 55 \times (1 - 0) = 115$$

When you choose 0 (X) and your counterpart chooses 1 (Y),

$$\text{Your points} = 100 \times 0 \times 1 + 60 \times (1 - 0) + 140 \times (1 - 1) = 60$$

$$\text{Points for your counterpart} = 100 \times 0 \times 1 + 60 \times (1 - 1) + 55 \times (1 - 0) = 55$$

When you choose 1 (Y) and your counterpart chooses 0 (X),

$$\text{Your points} = 100 \times 1 \times 0 + 60 \times (1 - 1) + 140 \times (1 - 0) = 140$$

$$\text{Points for your counterpart} = 100 \times 1 \times 0 + 60 \times (1 - 0) + 55 \times (1 - 1) = 60$$

When you choose 1 (Y) and your counterpart chooses 1 (Y),

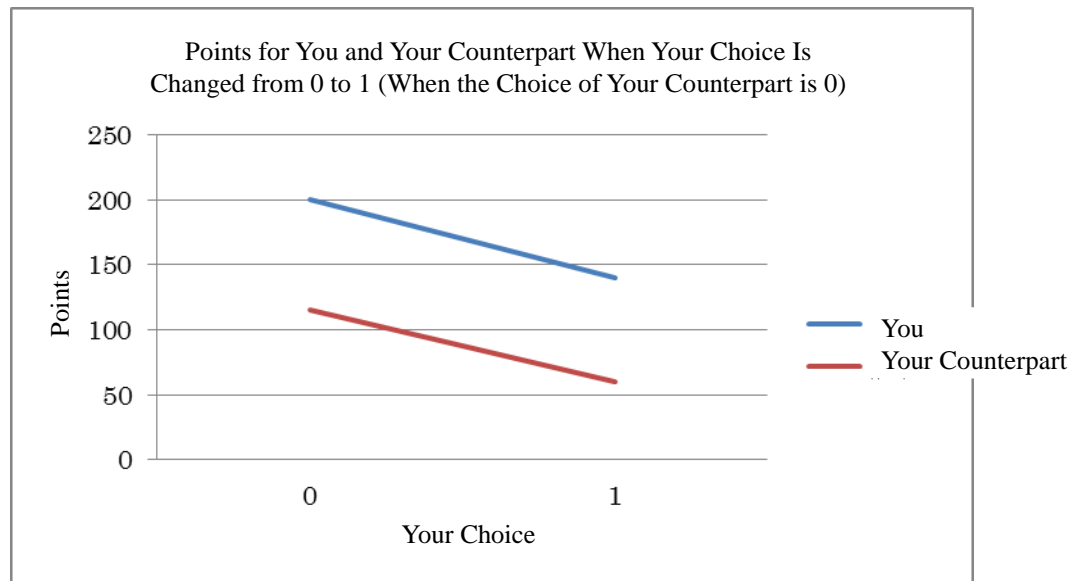
$$\text{Your points} = 100 \times 1 \times 1 + 60 \times (1 - 1) + 140 \times (1 - 1) = 100$$

$$\text{Points for your counterpart} = 100 \times 1 \times 1 + 60 \times (1 - 1) + 55 \times (1 - 1) = 100$$

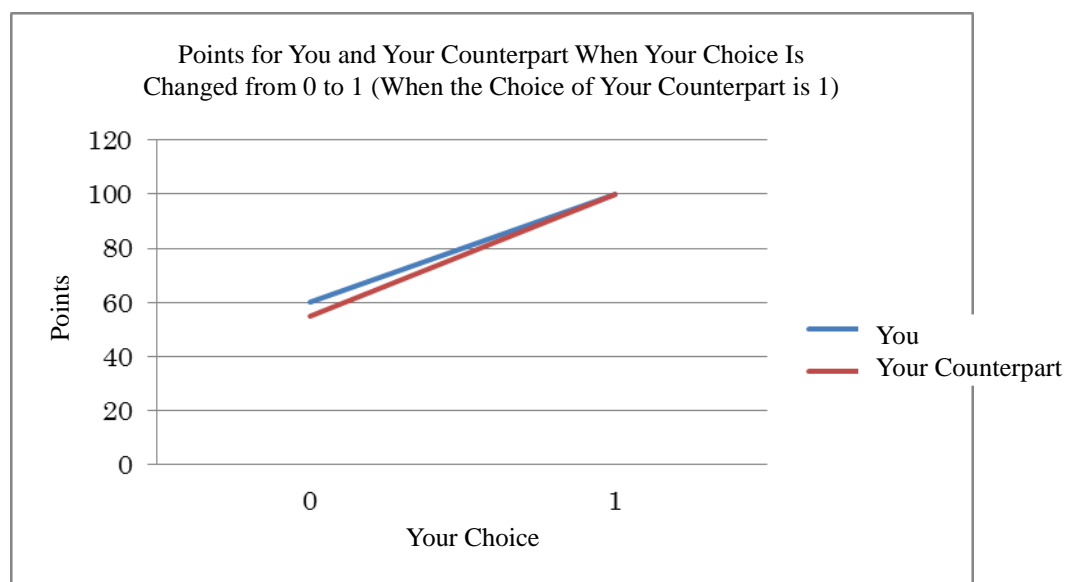
In other words, the point table in this example will be as follows.

		Choice of Your Counterpart	
		X	Y
Your Choice	X	200, 115	60, 55
	Y	140, 60	100, 100

When the choice of your counterpart is 0 (X) and your choice is changed from 0 to 1, the points for you and your counterpart can be graphed as follows.



When the choice of your counterpart is 1 (Y) and your choice is changed from 0 (X) to 1 (Y), the points for you and your counterpart can be graphed as follows.



Explanation of the Computer Screen and the Tasks to Be Performed during the Experiment

Selection screen

Round

1 / 6

Choice of Your
Counterpart

	X	Y
X	Numerical value	Numerical value
Y	Numerical value	Numerical value

Value of s Numerical value

Value of t Numerical value

Please choose X or Y.

X

Y

The selection screen will display the above. The point table is displayed in the center of the screen. Below it, you will find the values of s and t that are used in the formulae to derive the points. Below that are the selection buttons.

First, please choose X or Y and write it under “Your Choice” on the record sheet. Please also write why you made that choice in the “Reasons for Your Choice” section.

When you finish writing, please click on the button for the option you wrote in “Your Choice.”

Once everyone clicks a selection button, the next round will begin.

Results screen

Round												
1 / 6												
<div style="margin-bottom: 10px;">Choice of Your Counterpart</div> <table style="margin: auto; border-collapse: collapse;"> <tr> <td colspan="2"></td> <td style="text-align: center; padding: 5px;">X</td> <td style="text-align: center; padding: 5px;">Y</td> </tr> <tr> <td rowspan="2" style="vertical-align: middle; padding: 10px;">Your Choice</td> <td style="text-align: center; padding: 5px;">X</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">Numerical value</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">Numerical value</td> </tr> <tr> <td style="text-align: center; padding: 5px;">Y</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">Numerical value</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">Numerical value</td> </tr> </table>				X	Y	Your Choice	X	Numerical value	Numerical value	Y	Numerical value	Numerical value
		X	Y									
Your Choice	X	Numerical value	Numerical value									
	Y	Numerical value	Numerical value									
Value of s	Numerical value											
Value of t	Numerical value											
Your choice	Y											
Choice of your counterpart	X											
Your points	Numerical value											
Points for your counterpart	Numerical value											
<div style="border: 1px solid black; padding: 5px 20px; display: inline-block;">Next</div>												

The results screen will display the above. The values of s and t that are used in the formulae to derive the points, your choice, the choice of your counterpart, your points, and the points for your counterpart are displayed below the center of the screen.

First, please write the choice of your counterpart displayed on the screen under “Choice of Your Counterpart” on the record sheet. Please also write your points displayed on the screen in the “Your Points” section.

When you finish writing, please click on the Next button at the lower right of the screen.

Once all subjects click the Next button, the next round will begin. This will complete the first round of selection. This process is repeated six times.

You will now have three minutes to review the details of the experiment. If you have a question, please raise your hand quietly and the experimenter will answer you one-to-one. Please note that you are not allowed to communicate with the other participants.

Part 3

Explanation of the Experiment Details

You will make six rounds of selections as explained below. First, you will be paired with another participant. The individual you are paired with will be randomly chosen by the computer for each round of selection. This part is composed of two stages.

Stage 1

You will choose one of two options, X and Y. The points for you and your counterpart will be determined on the basis of the choices you and your counterpart make.

		Choice of Your Counterpart	
		X	Y
Your Choice	X	Numerical value a , Numerical value b	Numerical value c , Numerical value d
	Y	Numerical value e , Numerical value f	Numerical value g , Numerical value h

This point table is read the same way as the previous one. Points a through h will each have a specific numerical value during the experiment and will change in each round. The numerical values in the point table are derived by the method explained in Part 2.

Stage 2

After verifying each other's choice and points in Stage 1, you will have an opportunity to give some of your points to your counterpart.

For example, let us say that your choice was X and the choice of your counterpart was Y in Stage 1 and that you and your counterpart earned c points and d points, respectively. Furthermore, let us say that you and your counterpart decided to give 10 points and 15 points to each other, respectively, in Stage 2. In this case, your final points will be $c - 10 + 15$, while the points for your counterpart will be $d - 15 + 10$.

Note: please choose an integer of 0 or larger that is smaller than the number of points you earned in Stage 1 to give to your counterpart.

Explanation of the Computer Screen and the Tasks to Be Performed during the Experiment

Selection screen in Stage 1

Round 1 / 6

Choice of Your Counterpart

		X	Y
Your Choice	X	Numerical value	Numerical value
	Y	Numerical value	Numerical value

Value of s Numerical value
Value of t Numerical value

Please choose X or Y.

X
 Y

The selection screen in Stage 1 will display the above. The point table is displayed in the center of the screen. Below it, you will find the values of s and t that are used in the formulae to derive the points. Below that are the selection buttons.

First, please choose X or Y and write it under “Your Choice in Stage 1” on the record sheet. Please also write why you made that choice in the “Reasons for Your Choice in Stage 1” section.

When you finish writing, please click on the button for the option you wrote in “Your Choice in Stage 1.”

Once all subjects click on a selection button, you will proceed to the selection screen in Stage 2.

Selection screen in Stage 2

Round 1 / 6

Choice of Your Counterpart

		X	Y
Your Choice	X	<input type="text" value="Numerical value"/> <input type="text" value="Numerical value"/>	<input type="text" value="Numerical value"/> <input type="text" value="Numerical value"/>
	Y	<input type="text" value="Numerical value"/> <input type="text" value="Numerical value"/>	<input type="text" value="Numerical value"/> <input type="text" value="Numerical value"/>

Value of s

Value of t

Your choice Y

Choice of your counterpart X

Please choose the number of points to give to your counterpart (within the range of 0 and

OK

The selection screen in Stage 2 will display the above. The values of s and t that are used in the formulae to derive the points as well as your choice and the choice of your counterpart in Stage 1 are displayed in the center of the screen. Below that is the selection box.

First, please write the choice of your counterpart displayed on the screen under “Choice of Your Counterpart in Stage 1” on the record sheet.

Next, please write the number of points you are giving to your counterpart under “Your Choice in Stage 2” on the record sheet. For the number of points to give, please choose an integer that is 0 or larger that does not exceed the number of points you earned in Stage 1. Please also write why you made that choice in the “Reasons for Your Choice in Stage 2” section.

When you finish writing, please enter the numerical value you wrote in “Your Choice in Stage 2” and click the OK button on the lower right.

Once all subjects click on the OK button, you will proceed to the results screen.

Results screen

Round		Choice of Your Counterpart			
1 / 6		X		Y	
Your Choice	X	Numerical value	Numerical value	Numerical value	Numerical value
	Y	Numerical value	Numerical value	Numerical value	Numerical value
		Value of s		Numerical value	
		Value of t		Numerical value	
Points you gave to your counterpart				Numerical value	
Points you received from your counterpart				Numerical value	
Your final points				Numerical value	
Final points for your counterpart				Numerical value	
<div style="border: 1px solid black; padding: 5px 15px; display: inline-block;">Next</div>					

The results screen will display the above. The values of s and t that are used in the formulae to derive the points as well as points you gave to your counterpart, points you received from your counterpart, your final points, and the final points for your counterpart are displayed in the center of the screen.

First, please write the points you received from your counterpart as displayed on the screen under “Choice of Your Counterpart in Stage 2” on the record sheet. Please also write your final points displayed on the screen in the “Your Point” section in the record sheet.

When you finish writing, please click the Next button on the lower right of the screen.

Once all subjects click on the Next button, the next round will begin. This will complete the first round of selection. This process is repeated six times.

You will now have three minutes to review the details of the experiment. If you have a question, please raise your hand quietly and the experimenter will answer you one-to-one. Please note that you are not allowed to communicate with the other participants.