

## Instructions for Control Treatment (N=4)

This is an experiment in decision-making. Purdue University and other institutions have provided funds for this research. You can earn money based on how well you follow the instructions and on the decisions you make in the experiment. Please turn off your cell-phones, do not talk to others and do not look at their screens. These instructions are a detailed description of the procedures we will follow.

### How do you earn money?

You will earn points that will be converted into dollars. You will receive 3 cents (\$.03) for every point you earn. All earnings will be paid to you in cash at the end of the experiment.

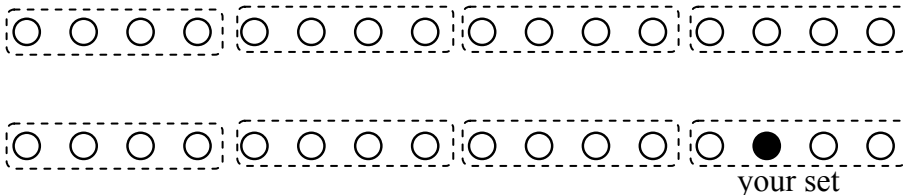
The experiment is composed of **many periods**. In each period you will be in a pair with another person selected at random, called your “**match**.” In every pair, one participant will be **red** and the other **blue**:

- If you are **red**, then you can choose to execute either **outcome Y** or **Z**:
  - By choosing to execute outcome **Y**, you earn **8** points and your **blue** match earns **8** points.
  - By choosing to execute outcome **Z**, you earn **2** points and your **blue** match earns **20** points.
- If you are **blue**, then you simply wait for **red** to make a choice.

You can expect to be **red** 50% of the periods and **blue** the other 50%.

### Who will be your match in the pair?

There are thirty-two participants seated in two labs on the seventh floor of the Krannert building. Regardless of location, each participant will be assigned to a **set** composed of four persons:



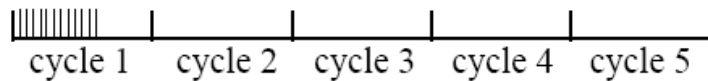
There are eight sets. Your match is a person **chosen at random from your set**. The computer program selects with equal probability one of the three other persons in your set. So, there is one chance out of three that your match is any of the other three persons in your set.

Although there is a possibility that you interact with the same participant more than once, you will not know if it happens. Your match will be unknown to you because you will not see his or her experimental ID number.

In every period, after your match is selected, the computer randomly selects your color. In every period you have a 50% chance to be **red** and 50% chance to be **blue**. Your randomly selected match is always of a different color than yours. Hence in every set of four, two persons are **red** and the other two are **blue**. Since the color assignment is random, you may or may not switch color from period to period.

### How many periods will the experiment last?

The experiment consists of **five cycles**. Each cycle involves many **periods** ||||| :



The number of periods in a cycle is **random** and so it is **unknown** to all of us. A cycle will have at least three periods. From period three on, at the end of each period, the computer program randomly selects an integer number between 1 and 100. Each number is equally likely to be selected. This random number is the same for every participant in today's session.

The cycle ends only if the random number selected is greater than 93. This means that:

- None of us will ever know which period will be the last in a cycle.
- A cycle has three periods for sure. From period three on, after each period, there is a 93% chance that the cycle continues and a 7% chance that the cycle ends.
- Some cycles may be long and others may be short, but none of us will know this in advance.

The computer will select the random number in the same way a ball is drawn from a container of one-hundred balls, numbered 1 to 100. It is as if, after each draw, the ball is placed back into the container. Hence, the chance that a cycle will end, say, after period 5, is 7%, which is exactly the same as the chance that the cycle will end after, say, period 25.

When a **cycle ends**, all thirty-two participants are divided into new sets in such a way that you will face different participants. **You will never interact with the same participants in future cycles, except in cycle 5.** In cycle 5, there will be one set of thirty-two participants.

### **What exactly do you need to do in each period?**

Each **period** has the following timeline:

1. You are randomly paired to a participant from your set.
2. You are randomly assigned a color (**red** or **blue**).
3. You may be called to make a choice (see below).
4. You and your match see the outcome of your choices.
5. The cycle may continue or may end.

Now, look at the Figures below. They illustrate how you make choices in each period.

You will have a unique experimental ID, shown on the top left corner of the screen. Your choices depend on your color, **red** (Figure A) or **blue** (Figure B). Remember that if you are **red**, then your match is **blue** (and vice versa), and that you and your match make simultaneous choices.

Your  
experimental  
ID

### **Figure A: Choice screen for red**

Your ID: 6      Cycle: 1      Period: 5      4 persons in your set : ID6 (you), ID5, ID7, ID8

This period you are RED

OUTCOMES	EARNINGS
Y	BLUE gets 8 points You get 8 points
Z	BLUE gets 20 points You get 2 points

Please make a choice:

Execute Y

Execute Z

Period	Your Color	Outcome	Your Earnings	Outcome in the other pair
4	RED	Y	8	Y= 0 — Z=1
3	RED	Z	2	Y= 0 — Z=1
2	RED	Y	8	Y= 1 — Z=0
1	RED	Z	2	Y= 1 — Z=0

**Figure B: Choice screen for blue**

Your ID: 7      Cycle: 1      Period: 5      4 persons in your set : ID7 (you), ID5, ID6, ID8

This period you are BLUE

OUTCOMES	EARNINGS
Y	RED gets 8 points You get 8 points
Z	RED gets 2 points You get 20 points

Period	Your Color	Outcome	Your Earnings	Outcome in the other pair
4	BLUE	Y	8	Y= 0 — Z=1
3	BLUE	Z	20	Y= 0 — Z=1
2	RED	Y	8	Y= 1 — Z=0
1	BLUE	Z	20	Y= 1 — Z=0

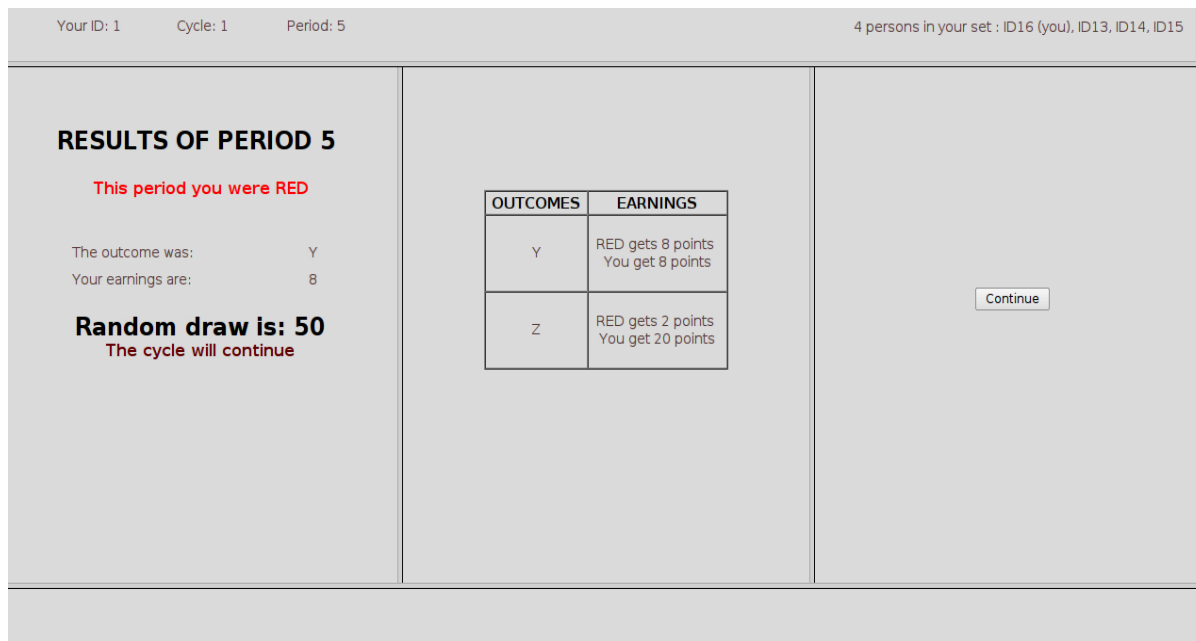
- If you are **red**, then you can select one of the following options (**Figure A**):
  1. **Execute Y**: you and your match earn 8 points each.
  2. **Execute Z**: you earn 2 points and your **blue** match earns 20 points.
- If you are **blue** then you simply wait (**Figure B**).

To make your choice, select one of the options given and then click the “Submit” button.

Now look at the lower part of Figure A or B. There is a Table listing the results in previous periods of the cycle. This Summary Table may help you in making your choices. Each line of the Summary Table refers to the results of a past period. It includes your color, the outcome **Y** or **Z** in your pair, your earnings, and **the outcome in the other pair of your set**. In cycle 5 you will see the outcome in the other fifteen pairs in your set.

You will see the results for the period, after all participants in your set have made their choice. The results screen is in **Figure C**. It displays your earnings for the period and the outcome **Y** or **Z**. On your desk there is a Record Sheet. You need to fill in your record sheet in each period.

**Figure C: Result Screen**



**Reminder on the duration of the experiment**

There will be five cycles of unknown duration. The duration of each cycle will be random. At the end of each period after three, the computer program will randomly select an integer number between 1 and 100, and show it on your screen. If you look at Figure C, you will find it under “Random Draw is:.”

- If the Random Draw is 1, 2,..., or 93, then the cycle will continue.
- If the Random Draw is 94, 95,..., or 100, then the cycle will end.

Therefore, **after any period beyond period three** there is always a 93% chance that the cycle will **continue**. There will be three periods for sure. From period three on, no matter what period you have reached, the **expected number of additional periods is about 13**. The number of past periods does not influence the chance that a cycle will end because the random procedure is exactly the same in every period.

When a cycle ends, you will be notified in a new screen. The rules in each cycle are the same. We have constructed sets in such a way that in cycles 1 through 4 you interact with different persons in each cycle. After each cycle, new sets of persons will be formed. **You will never interact with another participant for more than one cycle, with the exception of cycle 5.** In cycle 5 there will be one set of thirty-two participants.

### **Final Comments**

- Do not talk to others and do not look at their screens.
- In every period you have a 50% chance to be **red** and 50% chance to be **blue**.
- If you are **red**, then you can choose to execute either outcome **Y** or **Z**. If you are **blue**, then you simply wait. Earned points will be redeemed for dollars.
- Your match is a random person in your set. Therefore, your match in the following period may be a different person than your previous match.
- In cycles 1 through 4, you have one chance out of three of being matched with the same person in two consecutive periods. In cycle 5 you have one chance out of thirty-one of being matched with the same person in two consecutive periods.
- Each cycle has at least three periods. From period three on there is a 93% chance of an additional period in the cycle, and a 7% chance that the cycle ends. These probabilities are constant across periods and across cycles.
- The rules are the same in all five cycles. After a cycle, you will never interact with the same participants with the exception of cycle 5. The size of a set will be different in cycle 5.

**Questions?** Now it is time for questions. Do you have any questions before we begin?

## Instructions for Tokens treatment (N=4)

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### How do you earn money?

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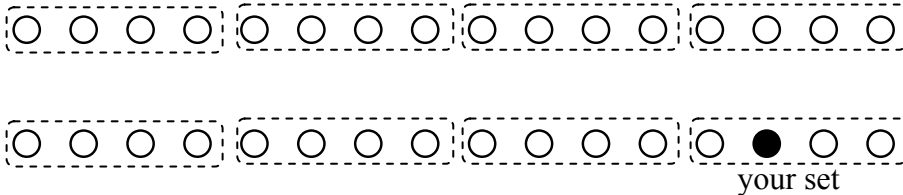
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  - By choosing to execute outcome **Z**, you earn **2** points and your **blue** match earns **20** points.
- If you are **blue**, then you may choose whether to give a “**ticket**” to your **red** match, as discussed below.

You can expect to be **red** 50% of the periods and **blue** the other 50%.

### Who will be your match in the pair?

There are thirty-two participants seated in two labs on the seventh floor of the Krannert building. Regardless of location, each participant will be assigned to a **set** composed of four persons:



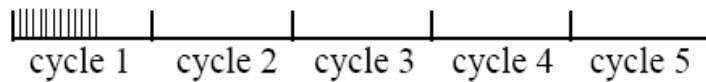
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Although there is a possibility that you interact with the same participant more than once, you will not know if it happens. Your match will be unknown to you because you will not see his or her experimental ID number.

In every period, after your match is selected, the computer randomly selects your color. In every period you have a 50% chance to be **red** and 50% chance to be **blue**. Your randomly selected match is always of a different color than yours. Hence in every set of four, two persons are **red** and the other two are **blue**. Since the color assignment is random, you may or may not switch color from period to period.

## How many periods will the experiment last?

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The number of periods in a cycle is **random** and so it is **unknown** to all of us. A cycle will have at least three periods. From period three on, at the end of each period, the computer program randomly selects an integer number between 1 and 100. Each number is equally likely to be selected. This random number is the same for every participant in today's session.

The cycle ends only if the random number selected is greater than 93. This means that:

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When a **cycle ends**, all thirty-two participants are divided into new sets in such a way that you will face different participants. **You will never interact with the same participants in future cycles, except in cycle 5.** In cycle 5, there will be a single set including all thirty-two participants.

At the beginning of each cycle every participant who is **blue** will receive **two tickets**. Participants can exchange tickets in any cycle. When a cycle is complete, tickets cannot be redeemed for dollars.

## What exactly do you need to do in each period?

Each **period** has the following timeline:

6. You are randomly paired to a participant from your set.
7. You are randomly assigned a color (**red** or **blue**).
8. You may have the option to purchase a ticket (see below)
9. You may be called to make a choice (see below).
10. You and your match see the outcome of your choices.
11. The cycle may continue or may end.

Now, look at the Figures below. They illustrate how you make choices in each period.

You will have a unique experimental ID, shown on the top left corner of the screen. Your choices depend on your color, **red** (Figure A) or **blue** (Figure B), and on the number of tickets you have. Remember that if you are **red**, then your match is **blue** (and vice versa), and that you and your match make simultaneous choices.

Your experimental ID →

**Figure A: Choice screen for red**

Your ID: 1    Cycle: 1    Period: 3    4 persons in your set : ID1 (you), ID2, ID3, ID4

This period you are RED

You now have 0 tickets

You have met a BLUE with some tickets

OUTCOMES	EARNINGS
Y	BLUE gets 8 points You get 8 points
Z	BLUE gets 20 points You get 2 points

Please make a choice:

Execute Y

Execute Z

Execute Z only if BLUE gives me a ticket

Submit

Period	Your Color	Outcome	Ticket Transfer	Ticket Trading	Your Earnings	Outcome in the other pair
2	BLUE	Z	YES	BOUGHT	12	Y=0 — Z=1
1	BLUE	Z	YES	—	20	Y=0 — Z=1

**Figure B: Choice screen for blue**

Your ID: 3    Cycle: 1    Period: 3    4 persons in your set : ID3 (you), ID1, ID2, ID4

This period you are BLUE

You now have 1 ticket

You have met a RED with less than 2 tickets

OUTCOMES	EARNINGS
Y	RED gets 8 points You get 8 points
Z	RED gets 2 points You get 20 points

Please make a choice:

Keep your ticket(s)

Give a ticket to RED

Give a ticket to RED only if RED executes Z

Submit

Period	Your Color	Outcome	Ticket Transfer	Ticket Trading	Your Earnings	Outcome in the other pair
2	RED	Z	YES	SOLD	10	Y=0 — Z=1
1	RED	Z	YES	—	2	Y=0 — Z=1

- If you are **red**, then you can select one of the following options (**Figure A**):

3. **Execute Y**: you and your match earn **8** points each.
4. **Execute Z**: you earn **2** points and your **blue** match earns **20** points.



5. **Execute Z only if blue gives me a ticket:** If your **blue** match transfers a ticket to you, then the outcome is **Z**. Otherwise, the outcome is **Y**.

**Note:** You can hold at most two tickets. So, if you already have two tickets, then you may not ask for another one; hence the last choice will not appear on your screen.

- If you are **blue and do not have a ticket**, then you simply wait.  
If you have some tickets, then you can select one of the following options (**Figure B**):
  1. **Keep your ticket(s)**
  2. **Give a ticket to red**
  3. **Give a ticket to red only if red executes Z.**

To make your choice, select one of the options given and then click the “Submit” button.

Now look at the lower part of Figure A or B. There is a Table listing the results in previous periods of the cycle. We will come back to this Summary Table later as it may help you in making your choices.

You will see the results for the period, after all participants in your set have made their choice. The results screen is in **Figure C**. It displays your earnings for the period, the outcome **Y** or **Z**, and if there was a ticket transfer in the pair, i.e., if a ticket was given or received. On your desk there is a Record Sheet. You need to fill in your record sheet in each period.

**Figure C: Result Screen**

The screenshot shows a user interface for a game. At the top, it displays 'Your ID: 1', 'Cycle: 2', 'Period: 4', and '4 persons in your set : ID1 (you), ID2, ID3, ID4'. The main content is divided into three vertical sections. The left section, titled 'RESULTS OF PERIOD 4', states 'This period you were RED' and 'You met a BLUE with some tickets'. It lists: 'You started with: 0 tickets', 'The outcome was: Z', 'Your earnings are: 2', and 'You now have: 1 ticket'. Below this, it says 'Random draw is: 14' and 'The cycle will continue'. The middle section contains a table with two columns: 'OUTCOMES' and 'EARNINGS'. The table has two rows: one for outcome 'Y' where 'BLUE gets 8 points' and 'You get 8 points', and one for outcome 'Z' where 'BLUE gets 20 points' and 'You get 2 points'. The right section is mostly empty with a 'Continue' button at the bottom.

OUTCOMES	EARNINGS
Y	BLUE gets 8 points You get 8 points
Z	BLUE gets 20 points You get 2 points

**Option to buy a ticket**

In the result screen, you may have an additional choice to make. Look at Figure D below. You may have the option to **buy a ticket for 8 points**. You have this option only if (1) you have zero tickets,

and (2) the color selected for you **in the following period** is **blue**. In this case you will be notified of your future color and prompted to select either NO or YES. If you select NO and click “Continue,” then you do not buy a ticket. If you select YES and click “Continue,” then you buy a ticket at a cost of 8 points. This cost will be shown under “your earnings” at the end of the following period.

All requests to buy a ticket will be fulfilled because when someone requests to buy a ticket, **someone else in the set will automatically sell it**. If you have one ticket, your ticket will never be sold. If you have two tickets, one may be automatically sold. You cannot refuse to sell a ticket. If you automatically sell a ticket, then you will be notified and credited 8 points. This ticket trading will be recorded in the Summary Table.

Look back at the lower part of Figures A or B. Each line of the Summary Table refers to the results of a past period. It includes your color, the outcome **Y** or **Z** in your pair, ticket transfer in your pair, ticket trading, your earnings, and **the outcome in the other pair of your set**. In cycle 5 you will see the outcome in the other fifteen pairs in your set. Ticket transfer reports YES when a ticket was given or received in your pair and NO otherwise. Ticket trading reports BOUGHT when you buy a ticket for 8 points from someone in your set, SOLD when you sell it for 8 points to someone in your set, and reports a -- (dash) otherwise.

**Figure D: Result Screen with the option to buy a ticket**

Your ID: 4
Cycle: 2
Period: 4
4 persons in your set : ID4 (you), ID1, ID2, ID3

**RESULTS OF PERIOD 4**

This period you were BLUE

**You met a RED with no tickets**

You started with: 1 ticket  
 The outcome was: Z  
 Your earnings are: 20  
 You now have: 0 tickets

**Random draw is: 14**  
 The cycle will continue

OUTCOMES	EARNINGS
Y	RED gets 8 points You get 8 points
Z	RED gets 2 points You get 20 points

**Next period you will be BLUE**

Do you want to purchase a ticket at the price of 8 points?

NO    YES

**Reminder on the duration of the experiment**

There will be five cycles of unknown duration. The duration of each cycle will be random. At the end of each period after three, the computer program will randomly select an integer number between 1 and 100, and show it on your screen. If you look at Figure C, you will find it under “Random Draw is:.”

- If the Random Draw is 1, 2,..., or 93, then the cycle will continue.
- If the Random Draw is 94, 95,..., or 100, then the cycle will end.

Therefore, **after any period beyond period three** there is always a 93% chance that the cycle will **continue**. There will be three periods for sure. From period three on, no matter what period you have reached, the **expected number of additional periods is about 13**. The number of past periods does not influence the chance that a cycle will end because the random procedure is exactly the same in every period.

When a cycle ends, you will be notified in a new screen. The rules in each cycle are the same. We have constructed sets in such a way that in cycles 1 through 4 you interact with different persons in each cycle. After each cycle, new sets of persons will be formed. **You will never interact with another participant for more than one cycle, with the exception of cycle 5**. In cycle 5 there will be only one set with all thirty-two participants.

### Final Comments

- Do not talk to others and do not look at their screens.
- In every period you have a 50% chance to be **red** and 50% chance to be **blue**.
- If you are **red**, then you can choose to execute either outcome **Y** or **Z**. If you are **blue**, then you may hold or transfer a ticket, or do nothing. Earned points will be redeemed for dollars. Tickets will not be redeemed for dollars.
- Your match is a random person in your set. Therefore, your match in the following period may be a different person than your previous match.
- In cycles 1 through 4, you have one chance out of three of being matched with the same person in two consecutive periods. In cycle 5 you have one chance out of thirty-one of being matched with the same person in two consecutive periods
- Each cycle has at least three periods. From period three on there is a 93% chance of an additional period in the cycle, and a 7% chance that the cycle ends. These probabilities are constant across periods and across cycles.
- The rules are the same in all five cycles. After a cycle, you will never interact with the same participants with the exception of cycle 5. The size of a set will be different in cycle 5.

**Questions?** Now it is time for questions. Do you have any questions before we begin?

## QUIZ

1. The total number of **cycles** is \_\_\_\_\_
2. You are in period 9 of a cycle. What is the probability that the cycle will continue? \_\_\_\_\_  
How many **additional** periods do we expect? \_\_\_\_\_
3. What if you are in period 19? Probability \_\_\_\_\_ Expected additional periods  
\_\_\_\_\_
4. The number of **participants** in the experiment is \_\_\_\_\_
5. In **cycle 4**, how many participants are in your set? \_\_\_\_\_ In **cycle 5** \_\_\_\_\_
6. Will you ever see the **ID** of your match? Yes \_\_\_ No \_\_\_ (circle one)
7. Can you see how many times your match chose Y or Z in the past? Yes \_\_\_ No \_\_\_ (circle one)
8. Will you know at the end of the period the outcome in the **other pair(s) from your set**?  
Yes \_\_\_ No \_\_\_
9. If IDs 6, 10 & 12 are in your set in cycle 1, is there any chance that ID 6, 10 or 12 will be your match in cycles 2, 3, or 4? Yes \_\_\_ No \_\_\_
10. You are BLUE and your RED match executes **Y**; how many points do you earn? \_\_\_\_\_
11. Suppose the **experiment** lasts 70 periods, you are RED half of the periods, BLUE half of the periods, and everybody always chooses **Y**. How many dollars will you earn?  
\_\_\_\_\_
12. You are BLUE and you have a ticket. You choose “**Give a ticket to red** only if **red** executes Z.” and your match chooses “Execute Z only if **blue gives me a ticket.**” How many points do you and your match earn? \_\_\_\_\_
13. You are BLUE and you have a ticket. You choose “**Keep your ticket(s)**”. Suppose your match chooses “Execute Z only if **blue gives me a ticket.**” How many points do you and your match earn? \_\_\_\_\_

14. Suppose the experiment lasts 70 periods, you are RED half of the periods, BLUE half of the periods, and everybody always chooses **Z**. How many dollars will you earn?

\_\_\_\_\_



Period	Your Color (B or R)	Outcome in your pair (Y or Z)	Earnings	Notes (optional)
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