

Appendix 1: Experimental protocol

Recruitment

Potential participants have been recruited via emails to undergraduate courses at the Tempe campus of Arizona State University to sign up for a data base of potential participants in decision making experiments. This database did consist of around 500 potential participants at the time of these experiments. When an experiment is scheduled a random sample of participants is send an email invitation to sign up for an experiment until the maximum number of participants is reached.

Each experiment includes 8 to 16 participants. The experiments are held in CARL (Computer Assisted Research Laboratory) within the Institute for Social Science Research.

After the participants come in, they read and sign the consent form and get a computer number. When the experiment is about to start, the participants are asked to go to the computer room and take place behind the computer they have been assigned to. Each computer is within a cubicle, so the participants can not see the activities of others. All participants are asked to turn off mobile devices and not to speak during the experiment.

The following pages contain instructions that are given on the computer screen and are also read out loud by the instructor. The software we use is available as open source software via <http://commons.asu.edu/software>

General Instructions

Welcome. You have already earned 5 dollars by showing up at this experiment. You can earn more, up to 40 dollars, by doing the experiment which will take about one hour. The amount you earn depends on your decisions as well as the decisions of others during the five rounds of the experiment.

In this experiment you can collect green diamond shaped tokens  and you will earn two cents for each collected token. You appear on the screen as a yellow dot . You can move by pressing the four arrow keys to the right of your keyboard. You can move either up, down, left or right. You have to press a key for every move of your yellow dot.

There are two different modes to collect tokens; the explicit and the implicit mode.

Implicit mode: You will pick up a green diamond shaped token whenever you move your yellow dot over its location on the screen. You move around by pressing the four arrow keys. As default setting you are in the implicit mode.

Explicit mode. In the explicit mode you can be more precise, more explicit, which token to collect. If you move around you only collect a token if you click also on the **space bar** when you are on a cell with a green token. You can switch to another mode by pressing the **M key**. If you are in the explicit mode you see a purple horizontal bar on your yellow avatar.

When you have collected a green token, a new token can appear on that empty cell again. The rate at which this happens depends on the amount of green tokens occupying the 8 cells surrounding an empty cell. When all neighborhood cells are empty, the chance that a green token fills the empty center cell is zero. The more green tokens are located around an empty cell the higher the chance that the next second a new green token will appear on the empty cell. Thus the middle cell in Image 1 denoted with x will be regenerated at a higher probability than the middle cell in Image 2.

Image 1

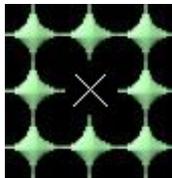
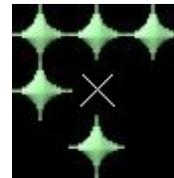


Image 2

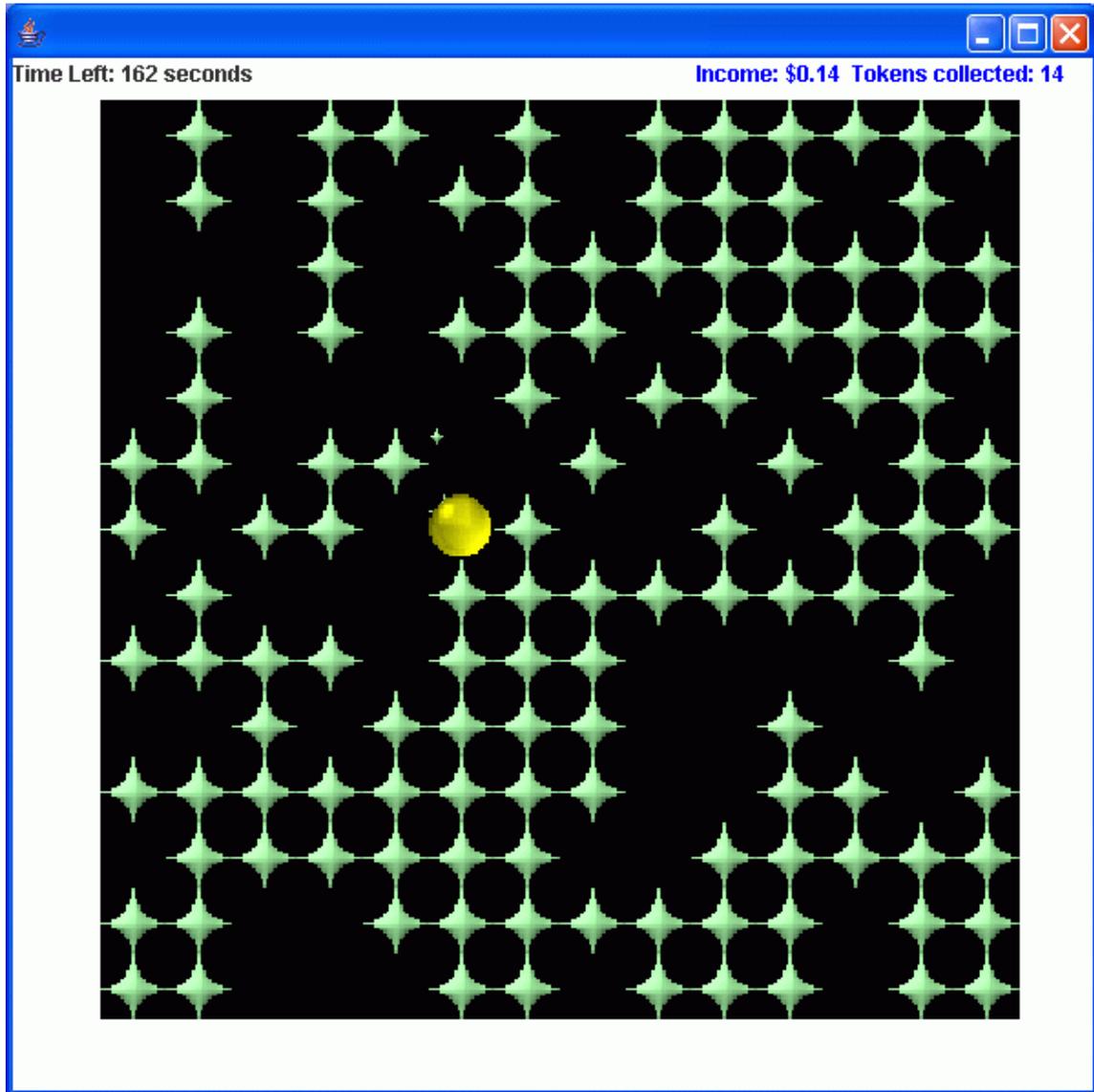


You will now have five minutes to practice with the experimental environment. At the beginning of the practice round half the cells are occupied with green tokens. You can collect these tokens, but it does not contribute to your earnings. When you push the keyboard key **R** you will reset the distribution of the tokens to randomly occupying half the cells with green tokens.

Please do not communicate with any other player.

If you have any questions feel free to raise your hand and to ask your question. **Do you have any questions so far?**

[Then the participants do the practice round in the environment depicted below: The instructor ask the participants to switch modes, so they experience both the explicit and implicit mode during the practice round]



[After the practice round there are statistics:]

Your stats in this round:

- Tokens : 0
- Income: \$0.00

Your **total income** sofar is: \$0.00

Round 1

This is the first round of the experiment. The length of the round is 4 minutes. Like in the practice round you can collect green tokens. This time you earn **two cents** for each token collected. This time you **cannot** reset the distribution of green tokens.

If you have any questions feel free to raise your hand and to ask your question. **Do you have any questions so far?**

[The same experimental environment as in the practice round is used]

[After Round 1 the participants get the following information:

Your stats in this round:

- Tokens : 255
- Income: \$5.10

Your **total income** sofar is: \$10.10

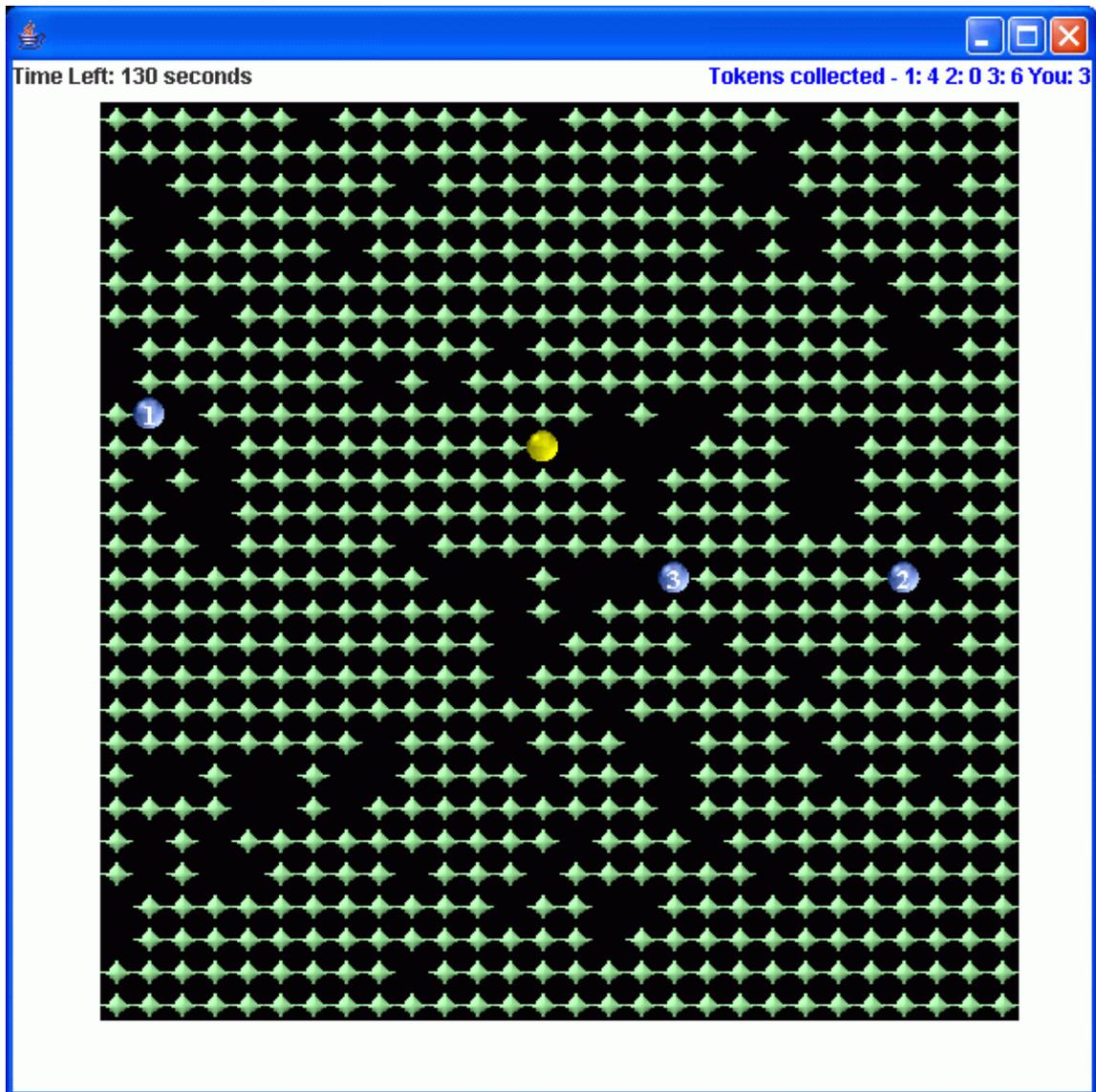
Round 2

In this round the renewable resource will becomes four times bigger. You will share this larger environment by three other players in this room. Each of you has been randomly assigned to one of equal-sized groups. Each of the groups is harvesting from an identical, but separate resource.

The other three players appear on the screen as blue dots ● where each dot has a white number “1”, “2” or “3”. On top of the screen you can see how many tokens each player has collected. The length of round 2 is 4 minutes.

If you have any questions, feel free to raise your hand and to ask your question. **Do you have any questions so far?**

[The experimental environment in round 2 looks like:]



[After Round 2 the participants get the following information:]

Your stats in this round:

- Tokens : 107
- Income: \$2.14

Your **total income** sofar is: \$12.24

Round 3

Round 3 is the same as round 2 with one exception. After the end of this round you will see the number of tokens collected in this round by yourselves and for each other participant. You will also be allowed to decrease the total tokens collected of other participants. At a cost of 1 token you can decrease the token amount of another

participant with 2 tokens. You can adjust the token number of another participant to a maximum of 50 tokens at a cost of 25 tokens for yourselves.

Before the collection period start you have 5 minutes to chat with other participants in your group about the experiment. The same will happen in round 4 and 5.

The length of the round is again four minutes.

If you have any questions feel free to raise your hand and to ask your question. **Do you have any questions so far?**

Before the next round begins you must complete the quiz below. You can only continue when you have answered all questions correctly. If an error is made you will need to answer the questions again.

At the end of the round, if I decrease the tokens of the other participants in the group by ten tokens, how much will this cost me?:

- 0 tokens
- 10 tokens
- 15 tokens
- 30 tokens

At the end of the round, if each other participant in the group decreases my token amount by 30 tokens, with how many tokens will my amount decrease? :

- 0 tokens
- 30 tokens
- 45 tokens
- 90 tokens

If you have any questions, feel free to raise your hand and to ask your question. **Do you have any questions so far?**

[chat round]

You can now chat with the other participants in your group for 5 minutes total. During the chat round, you may communicate about any aspect of the experiment that you would like to discuss with other participants with whom you have been matched. You may not promise them side-payments after the experiment is completed or threatened them with any consequence after the experiment is finished. We are monitoring the chat traffic while you chat.

[
]”

[The same experimental environment as the previous round]

[After the four minute round they get the following information]

You have now the opportunity to decrease the accumulated number of tokens of other participants in your group. The maximum adjustment is 50 tokens. In the table below you see your accumulated tokens in the last round as well as the accumulated tokens of the other participants. You can decrease the earnings of other participants at the cost of 1 token for each 2 tokens change. For example, if you type in 5 in the column “cost of increasing others” for participant 1, your total will reduce the earnings of the other with 10 tokens.

	Tokens Collected	Your Adjustments [-50,50]	Cost of Decreasing Others [0,25]
You	...		
1	[]
2	[]
3	[]

[Round 3 the participants get the following information:]

Your stats in this round:

- Tokens : 200
- Income: \$4.00

Your **total income** sofar is: \$16.24

[Rounds 4 and 5 are the same as Round 3]

[After Round 5 the total earnings are provided and the following instructions:]

The experiment is now almost over. Please take the given survey while the facilitator prepares your earnings. When the facilitator is ready and you have completed the survey, your computer number will be called. You will then go to the room next door where you receive your payments.

The survey is given on paper. The text of survey is attached as a separate file.

The participants derive their payments in private, and are called by computer number to go to the room next door. They get their payment and sign for receiving their payments.

EXPERIMENT SURVEY

Computer number: _____

Thank you for participating in this experiment.

While the experimenter is arranging for your payment, please take a few minutes to respond to the questions below. We would really appreciate learning your views on several questions and about the experiment you just finished.

1. Are you satisfied with your earnings in the experiment?

Not satisfied 1 2 3 4 5 very satisfied

2. Did the decisions from other players affect your own decisions?

Yes / No

3. When you made your decision, did you take into account if they affected the others in the group?

Yes/No

4. Did you understand the instructions of the experiments?

I did not understand anything 1 2 3 4 5 I did understand everything

If you **did reduce tokens** from other participants, answer question 5a:

5a Why did you reduce tokens from other participants? (Select only the most suitable statement)

- Those other participants collected too many tokens.
- Those other participants collected more than me.
- Those other participants collected tokens too fast.
- Those other participants did not follow our agreements.
- I don't know.

If you **did not reduce tokens** from other participants, answer question 5b:

5b. Why did you not reduce tokens from other participants? (Select only the most suitable statement)

- I did not want to give up some of my tokens.
- I did not want to reduce earnings of others.
- I was afraid of retaliation.
- I did not see any reason for doing that.
- I don't know.

SEE ALSO THE BACKSIDE

6. Which year are you in your study?

- Freshman
- Sophomore
- Junior
- Senior
- Graduate Student

7. What is your major?

8. What is your age? _____

9. What is your gender? Female Male

10. In which State is your hometown? _____

11. Who is paying your university tuition? If more than one option holds, indicate the relative amount by **x**'s. For example: **x** small part, and **xx** large part

- _____ myself (with student loans)
- _____ myself (without student loans)
- _____ my parents and other members of my family
- _____ I have a scholarship.

12. If you are working while going to school, about how many hours a week do you work?

_____ hours

13. If you also have time to play video games during the week, approximately how many hours per week do you play?

_____ hours

We would appreciate any further comments or feedback that you would share with us. Please use the space below. Thank you for your participation!!
