

Welcome to subjects:

Welcome back to the Interdisciplinary Experimental Laboratory. I am Marco Janssen, a professor from Arizona State University, but also affiliated with Indiana University. And today will help me with the experiment. Before we start the explanation of the experiment I ask you to turn off all cell phones so that we are not disturbed during the experiment. We are very pleased that you are willing again to participate in an experiment on decision making. I will explain now the experiment. The experiment today will be a bit different than last week, but the first round will be similar. It is important that you all understand the rules of the experiment. If you have a question during my introduction, raise your hand.

The instructions are also on your screen. Although you have been in the experiment last week, I would like to repeat the instructions. In this game you share a renewable resource with four other participants. Each of you has been randomly assigned to one of three, equal-sized groups. Each of the groups is harvesting from an identical, but separate resource. You do not know who are your partners in the experiment in this room.

The world is a large square field with a gray line designating the edges. You can move past the edges on the left and the right, but you cannot move past these edges on the bottom or the top of the screen. When you collect 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 around an empty cell the higher the chance that the empty cell will be filled up by a green token. Thus the middle cell in Image 1 will be regenerated at a higher probability than the middle cell in Image 2.

In this game, you will have the opportunity to earn cash benefits. The amount you earn will depend upon the decisions that you make and upon the decisions that others in your group make.

- You can earn cash by picking up the green tokens. Each token is worth 1 cent. Thus, if you have collected 1500 tokens during three round you earn $1500 * 1$ cents = \$15 plus a \$5 show-up fee, equaling \$20. You will appear on the screen as a yellow dot. The other four participants appear on the screen as blue dots. **You will pick up a green token whenever you move your yellow dot over its location on the screen.** You can move by pressing the four arrow keys to the right of your keyboard. You can move either up, down, left or right. For each step you have to press a key. The ONLY keys you should press during the experiment are the four arrow keys.
- This game consists of three rounds. The length of each round is random. At the end of the third round, the cash benefits that you have earned in all three rounds will be totaled and will be paid to you after the experiment. The time spent during a round is shown at the top of the screen.

- During each round the computer keeps track of how many tokens you have collected and displays this number on top of the screen as well as the total amount of money that you have earned.

Please do not communicate with any other participant.

If you have any questions as we go through these instructions, feel free to raise your hand and to ask your question. **Do you have any questions so far?**

Practice round:

We will start with a practice round to get you familiar with the software. What you do in this round does not affect your earnings. I ask you not to use the arrow keys until I say so. I do this to make sure that you see that the resource is regenerating itself. During this round you will appear as a yellow dot, and the other players appear as blue dots. If you move on top of a token, you will gather it and it will disappear. The game will begin in a few moments. The image below, shows how the game area looks like. If you have a question, raise your hand.

Round 1:

Now the real experiment starts. Again, you are not allowed to communicate during the whole experiment. The practice round lasted one minute. The rounds in the real experiment will take longer but we can not say how long.

Round 2 (Thursday afternoon):

In the next two rounds the rules of the game are changed. You are now allowed to have a ten-minute discussion with other members of all groups in this room. In a minute I ask you to come up to the front of this room. Please make sure that you remember which computer you was sitting at. You may discuss in the ten minutes the experiment in any way that you would like except that you may not use any threats or promises of side payments. All other rules discussed in the first round remain the same.

We will time this discussion and tell you when 10 minutes have elapsed. Then you **MUST** stop communication and return to your individual decisions, where you play the game in the same environment as in round 1.

So, please come to the front of this room. [everybody comes] We will start the 10 minute discussion period now:

Round 2 (Friday afternoon):

For the last 2 round, you will meet with the other members of your groups in a room. Each group should assemble in its room and spend ten minutes in a discussion among themselves. You may discuss the experiment in any way that you would like except that you may not use any threats or promises of side payments. All other rules discussed in the initial instructions remain the same.

We will time this discussion and tell you when 10 minutes have elapsed. Then you **MUST** stop communication and make your individual decisions. Please make sure that you remember which computer was sitting on.

Those with computer number 1, 4, 7, 10 and 13 will go with prof. Ostrom to the room in the back. Those with computer number 2, 5, 8, 11 and 14 will go with ... to the room next door. Those with computer number 3, 6, 9, 12, and 15 will stay here with me.

Round 3 (Thursday afternoon):

In the last round we have again a 10 minute period to discuss the experiment. So please come to the front of this room so that we can start the discussion period.

Round 3 (Friday afternoon):

In the last round we have again a 10 minute period to discuss the experiment. So please come go the same room as in the previous round, and you have the discussion there with your group members.

Survey:

The experiment is now finished, but you are still asked to be quiet. Since you have filled in the survey last week, you do not have to fill in the survey again. Nevertheless, we need some minutes to prepare your payments. We will call your computer number and then you can go to the front desk where we pay you in private.

Experiments without communication. Experienced participants have first received these instructions.

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- During each round the computer keeps track of how many tokens you have collected and displays this number on top of the screen as well as the total amount of money that you have earned.

Please do not communicate with any other participant. In case you do not obey this request we may have to stop the experiment and you will not receive payments in this case.

If you have any questions as we go through these instructions, feel free to raise your hand and to ask your question. **Do you have any questions so far?**

Practice round:

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Please wait for 30 seconds so you can see the tokens regenerate.

Round 1:

Now the real experiment starts. Again, you are not allowed to communicate during the whole experiment. The practice round lasted one minute. The rounds in the real experiment will take longer but we can not say how long.

Round 2 (vote):

You have the option to implement a rule that restricts the behavior of you and all other participants in your group and is aimed at avoiding overuse of the resource. You are with 5 members in a group, and if 3 or more members vote for this rule, the rule will be activated. A vote in favor of the rule cost you 50 tokens. If you do not vote for a rule, or you vote no, it will not cost you anything.

When 3 or more members of a group voted for the rule, it holds for everybody in the group.

What is exactly the rule that you can vote for. Every subject has their own property of cells that they can use to collect tokens without any restriction. The original resource is split up into 5 equal property regions, and the initial distribution of tokens is random as was the case in the first round. You will see white lines around your property, and this is in the middle of your screen. Each time a participant harvest a token of a cell which is not within its own property, there is a 10% probability of being caught. The monitoring is performed by the computer. When a participant is caught the color of the agent changes for a moment from yellow to red to signal that a penalty is given. Note that you can only see this for your own agent. The penalty increases with the number of times the participant is caught. The first time a participant is caught, a penalty of 5 tokens is given, the second time 10 tokens, and the third and additional times, 15 tokens.

You have now 30 seconds to make up your mind and make a choice whether you want to invest 50 tokens to implement this rule.

You will see the results of the election and consequently whether the rule will be implemented.

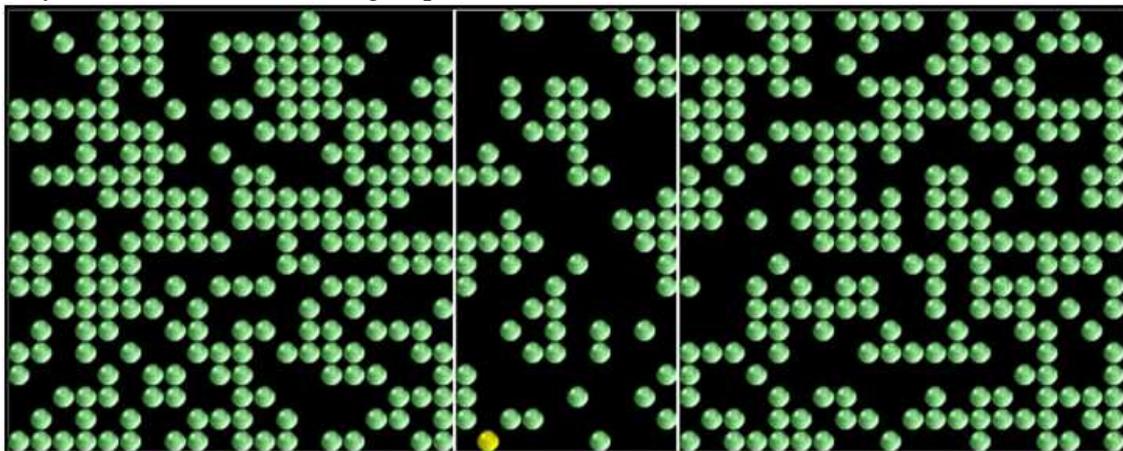
Round 3 (after imposed/voted)

We will change the rules of the game again. In fact we will turn back to the rules of the first round. Thus **No private area and no more private property rules enforced.**

Survey:

The experiment is now finished, but you are still asked to be quiet. You will now all receive a questionnaire. Please fill in this questionnaire. In the meantime we will prepare your payments. When you are ready turn the questionnaire upside down so that we can see that you are ready. When you are given permission, you will be allowed to go to the front desk with your survey. You turn in your survey and receive the payments.

The experimental environment looks like the figure below where each participants sees herself in the central part of the screen. The lines around the middle part of the resource is only visible in round 2 if the group elected the rule:



EXPERIMENT SURVEY

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. How much time did you spend per year in highschool in student organizations
 - None
 - Once a semester
 - Once every few weeks
 - One hour per week
 - A few hours per week
 - A few hours every day

2. Who do you believe should be the main enforcer of rules and the law regarding the underage drinking of alcohol on the Bloomington campus?
 - Student organizations
 - Professors and staff
 - Indiana University Police
 - State Police
 - Other

3. Who do you believe should be the main enforcer of rules and the laws regarding the use of forests in Indiana?
 - The national government (US Forest Service)
 - State government (Indiana Department of Natural Resources)
 - Citizen Community Organizations in the area
 - Private Foresters

- 4a The university wants to raise the tuition by 5% to finance a new supercomputer. Would you agree with this raise?
 - Yes
 - No

- 4b. If yes, which actions would you undertake regarding this tuition raise?
 - I would do nothing
 - I would write a letter to the IDS
 - I would take the initiative to create a petition in favor of this proposal
 - If a petition in favor of the proposal was organized, I would sign

- 4c. If no, is there anything that you would do about this tuition raise?
 - I would do nothing
 - I would write a letter to the IDS
 - I would take the initiative to create a petition against this proposal
 - If a petition against the proposal was organized, I would sign

5a. Increasing gasoline prices, parking problems, and air pollution have led the city of Bloomington to propose that students can park their car only around campus if they car pool. Would you agree with this?

- Yes
- No

5b. If yes, what would you do to support this proposal?

- I would do nothing
- I would sign a petition to support this proposal
- I would write a letter to the Herald Times to support this proposal
- I would take the initiative to collect signatures for a supportive petition

5c. If no, what would you do to support this proposal?

- I would do nothing
- I would sign a petition against this proposal
- I would write a letter to the Herald Times against this proposal
- I would take the initiative to collect signatures for a petition against this proposal

6. During the experiment, which of the following descriptions best characterize the strategy you used during the experiment?

- I tried to maximize the number of tokens that I personally harvested without regard for others
- I tried to maximize the number of tokens that everybody in the group, including myself, harvested.
- I had no strategy, and I just moved my agent around randomly
- I had a strategy, but it is not described above

Other strategy:

7a. Did you vote for the rule change?

- Yes
- No

7b. If yes, what was your motivation?

- I wanted to impose restrictions on others' behavior
- I wanted to control my own private property
- I expected that this rule would lead to better returns for myself
- I expected that this rule would lead to better returns for everybody in the group
- Other:

- I don't know

7c. If no, what was your motivation?

- I hoped that enough others voted for the rule change, so I would not have to pay for a rule change.
 - I did not see a benefit for me of a new rule
 - I don't believe in restrictions on individual behavior
 - Other:
- I don't know

8a. You invested 50 cents in the rule change, but not enough other participants invested in the rule change. How did this affect your motivation?

- It had no effect. I just had bad luck, but I'll made up for it later
- I lost trust in the other participants, and became more greedy in the collecting tokens
- Although the rule was not implemented, I tried to follow my own rule of collecting tokens in a limited area of the screen

8b. Would you invest in favor of the rule change if you had the opportunity again?

- Yes
- No

9. Which year are you in your study?

- Freshman
- Sophomore
- Junior
- Senior
- Graduate student

10. What is your major?:

11. What is your age?:

12. What is your gender?

- Male
- Female

13. If your hometown in Indiana?

- Yes
- No

14. Who is paying your university tuition?

- Myself (with student loans)
- Myself (without student loans)
- My parents and other members of my family
- I have a scholarship

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

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

17. How many students were there in your high school?

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