

SUPPLEMENTARY MATERIALS FOR REVIEWERS

Experimental instructions and screenshots

Instructions

Welcome. This is an experiment on decision-making. If you read the following instructions carefully, you can, depending on your decisions, earn a considerable amount of money. It is therefore very important that you read these instructions carefully.

It is prohibited to communicate with the other participants during the experiment. If you have a question at any time raise your hand and the experimenter will come to your desk to answer it. Please switch off your mobile phone or any other devices which may disturb the experiment. Please use the computer only for entering your decisions. Please only use the decision forms provided, do not start or end any programs, and do not change any settings.

During the experiment you can earn “points”. At the end of the experiment these points will be converted to cash at the following rate:

1 point = \$0.02

Each participant receives a lump sum payment of **50 points** at the beginning of the experiment. **[ONLY PUNISHMENT:** This one-off payment can be used to pay for eventual losses during the experiment. **[ONLY REGULAR PUNISHMENT:** However, you can always avoid losses with certainty through your own decisions.]] At the end of the experiment your entire earnings from the experiment plus the lump sum payment will be paid to you **in cash**.

The experiment is divided into different periods. In all, the experiment consists of **fifty** periods. In each period the participants are divided into groups of three. You will therefore be in a group with two other participants. The composition of the groups will stay the same for all fifty periods. **You are therefore with the same people in a group for all fifty periods.**

Each period **[ONLY PUNISHMENT:** consists of **two stages**. In the **first stage]** you will have to decide whether or not you would like to contribute to a project. At the same time the other group members make the same decision. Afterwards, all the group members’ decisions are revealed publicly **[ONLY NOISE:** , but with the possibility of an error. In particular, if you decide not to contribute then your public record will be that you did not contribute, without error. However, if you contribute then with 90% probability your public record will indicate that you contributed. With 10% probability an error occurs, and your public record will be that you did not contribute.]

[ONLY PUNISHMENT: In the **second stage**, you can decide whether or how much to reduce the other two players’ earnings from the first stage by distributing points to them. The same applies to your group members, too.]

The following pages describe the course of the experiment in detail:

Detailed Information on the Experiment

[ONLY PUNISHMENT: The First Stage]

At the beginning of each period each participant receives an endowment of **20 tokens**. Your task is to decide if you want to contribute the 20 tokens to a **project** or if you want to keep the 20 tokens yourself. The consequences of your decision are explained in detail below.

At the beginning of each period the following input-screen for the first stage will appear:

The screenshot shows a web-based interface for an experiment. At the top left, it says "Period" and "1 out of 1". At the top right, it says "Remaining time [sec]: 12". The main content area is a large gray rectangle with a white border. Inside this rectangle, the text reads: "Your endowment 20" followed by "Do you want to contribute the 20 tokens?". Below this text are two radio buttons: "no" and "yes". The "no" radio button is selected. At the bottom right of the gray rectangle is a red button labeled "OK". At the bottom left of the entire interface, there is a "HELP" section with the text: "Please enter your contribution. When you are ready, please click the 'OK' button."

Your **endowment in each period is 20 tokens**. You have to decide whether you want to contribute them to the project by selecting either “yes” or “no”. Once you clicked the OK button your decision has been made and cannot be changed.

Your **income [ONLY PUNISHMENT: from the first stage]** consists of two parts:

- (1) The tokens which you have kept for yourself (“Income from retained tokens”) whereby **1 token = 1 point**.
- (2) The “income from the project”. This income is calculated as follows:

Your income from the project = 0.5 times the total contributions to the project (including yours).

Your income in points from **[ONLY PUNISHMENT: the first stage of]** a period is therefore:

$$(20 - \text{your contribution to the project}) + 0.5 \times (\text{total contributions to the project})$$

The income of each group member from the project is calculated in the same way, i.e., each group member receives the same income from the project. Thus,

- If no group member contributes, each group member's income is $(20 - 0) + 0.5 \times 0 = 20$ points.
- If one group member contributes, and the other two do not contribute, the income of the contributing group member is $(20 - 20) + 0.5 \times 20 = 10$ points, and the income of each of the not contributing group members is $(20 - 0) + 0.5 \times 20 = 30$ points.
- If two group members contribute, and the other group member does not contribute, then the income of each of the two contributing group members is $(20 - 20) + 0.5 \times 40 = 20$ points, and the income of the not contributing group member is $(20 - 0) + 0.5 \times 40 = 40$ points.
- If all three group members contribute, then each group member's income is $(20 - 20) + 0.5 \times 60 = 30$ points.

After all members of your group have made their decisions the following screen will show you and other participants in the group information on who contributed to the project and who did not. You and the other participants in your group see exactly the same **[NO NOISE: information]****[NOISE: public records]** on your computer screens. **[ONLY NOISE: However, there is some probability that the information in the public records contains an error.** If you decided not to contribute, your public record will surely be that you did not contribute. If you decided to contribute, with 90% probability your public record will indeed be that you contributed. But with 10% probability an error occurs, and your record will be that you did not contribute. **However, errors in the public records do not influence payoffs earned in the first stage** (those payoffs only depend on the actual contributions). Besides the public records (including your own), you are also shown whether you contributed to the project or not. This is information that only you see on your screen, though.]

[ONLY PUNISHMENT: After you have viewed the information screen the first stage is over and the second stage commences.

The Second Stage

In the second stage you will see the public records of the other two members from the first stage. Moreover, in this stage you can decide whether to **decrease** the income of each other

group member by assigning **deduction points**. The other group members can also decrease your income if they wish to. This is apparent from the input screen at the second stage:]

SCREENSHOT

[ONLY NOISE: Your public record is displayed in blue in the first column, while the public records of the other group members from the first stage of this period are shown in the remaining two columns. Note that the order in which others' recorded public records are displayed will be determined at random in every period. The public record in the second column, for example, could represent a different group member in different periods. The same holds true for the third column.]

[ONLY PUNISHMENT: You will have to decide how many deduction points to assign to each of the other two group members. You must enter a number for each of them. If you do not wish to change the income of a specific group member then you must enter 0. You can assign up to 5 points to each group member.

You will incur costs from assigning deduction points. Every deduction point you assign costs you 1 point. For example, if you assign 2 deduction points to one member, this costs you 2 points; if, in addition, you assign 4 deduction points to the other member this costs you an additional 4 points. In total you will have assigned 6 points and your **total costs** therefore amount to 6 points.

After you have assigned points to each of the other two group members you must click the button "**calculation**" (see the second stage input screen). On the screen you will then see the total costs of your assigned points. As long as you have not yet clicked the **OK- button**, you can still change your decision. To recalculate the costs after a change of your assigned points, simply press the "calculation" button again.

If you assign 0 deduction points to a particular group member (i.e., enter "0"), you will not alter his or her income. However, if you assign **one deduction point** to a group member you will **decrease** the income of this group member by **[REGULAR: 3][STRONG: 6] points**. If you assign a group member **2 deduction points** you will **decrease** the group member's income by **[REGULAR: 6][STRONG: 12] points**, and so on. Each deduction point that you assign to another group member will reduce his or her income by **[REGULAR: 3][STRONG: 6] points**. Similarly, each deduction point assigned to you by another group member will reduce your first stage income by three points:

Costs of received deduction points = [REGULAR: 3][STRONG: 6] × Sum of received deduction points.

How much the income at the second stage is decreased depends on the sum of deduction points received. For instance, if somebody receives a **total of 3 deduction points** (from all other group members in this period), his or her income would be decreased by **[REGULAR: 9][STRONG: 18] points**. If somebody receives a **total of 4 deduction points**, his or her income is reduced by **[REGULAR: 12][STRONG: 24] points**.

[ONLY REGULAR PUNISHMENT: There is one exception to this rule. If the cost of received deduction points exceeds the group member's first stage income, his or her first stage income will only be reduced to zero, not below that. However, even in this case the group member must still incur the costs of any deduction points he or she assigned.]

Your total income from the two stages is therefore calculated as follows:

[ONLY REGULAR PUNISHMENT: If income from the first stage is greater than or equal to the cost of received deduction points:]

Total income (in points) at the end of the second stage = period income =

= Income from the first stage

– sum of deduction points you have assigned

– 3 × (sum of received deduction points)

[ONLY REGULAR PUNISHMENT: OR

If income from the first stage is less than the cost of received deduction points:

Total income (in points) at the end of the second stage = period income =

= 0 – sum of deduction points you have assigned]

Please note that your income in points at the end of the second stage can be negative **[ONLY REGULAR PUNISHMENT:** if the costs of the points you assign to others exceed your income from the first stage minus the income reduction by the received deduction points. You can, however, avoid such losses with certainty through your own decisions!]

After all participants have made their decision, these decisions will be displayed on the following results screen.]

After you have viewed the income screen the period is over and the next period commences.

[ONLY STRONG PUNISHMENT: Your total earnings from the experiment are the sum of the incomes you collected in different periods. If your total earnings from the experiment are lower than zero they will be capped at zero.]

Screenshots

No punishment – No noise

Period: 1 out of 1 Remaining time [sec]: 30

RESULTS

	You	Other group members	
Endowment	20	20	20
Contribution	no	yes	no

Your income: 30

HELP
This screen shows the results of this period. The experiment will continue after time has expired or when all participants have clicked the button.

Regular or strong punishment – No noise

Period: 1 out of 1 Remaining time [sec]: 0
Please reach a decision!

STAGE 2

	You	Other group members	
Endowment	20	20	20
Contribution	no	yes	no

Your stage 1 income: 30

Your decision in stage 2: --

Assign no deduction points: enter 0
Assign deduction points: enter number

Total cost of the deduction points you assigned:

HELP
Please enter your decisions. Then click the button "calculation".

No punishment – Noise

Period: 1 out of 1 Remaining time [sec]: 11

RESULTS

	You	Other group members	
Endowment	20	20	20
Contribution	yes	???	???
Public Record of Contribution	yes	yes	no

Your income if public records are correct: 20

continue

HELP
This screen shows the results of this period. The experiment will continue after time has expired or when all participants have clicked the button.

Regular or strong punishment – Noise

Period: 1 out of 1 Remaining time [sec]: 5

STAGE 2

	You	Other group members	
Endowment	20	20	20
Contribution	no	???	???
Public Record of Contribution	no	no	yes

Your stage 1 income if others' public records are correct: 30

Your decision in stage 2: --

Assign no deduction points: enter 0
Assign deduction points: enter number

calculation

Total cost of the deduction points you assigned: -----

OK

HELP
Please enter your decisions. Then click the button "calculation".