

Appendix: Experiment Instructions¹³

Stage 1: Open Access Treatment (Open Access)

Before we begin, we want to thank you all for accepting this invitation and participating in this exercise. The objective of this exercise is to understand how people make decisions related to the use of a shared natural resource. All the decisions you make, as well as all the other information you will provide us, will remain confidential. We will not divulge your individual decisions to any other member of the community, nor to any other person.

Introduction

The exercise in which you are going to participate can be different from other exercises in which members of your community might have participated in the past, therefore, any comment that you might have heard about the exercise does not necessarily apply to the version in which you will participate.

This exercise is similar to a situation in which a group of people have to make decisions on how to use a shared natural resource. For example, a forest, a drinking water source, or a fishing area. In this experiment, the resource will be referred as a fishery.

You have been selected to participate in a group of 5 people. Today, there are 3 groups participating at the same time. However, each group is independent and the decisions of the other groups do not affect the decisions of your group. Each group will be differentiated by the color of the sheets used during the exercise.

In this exercise you will earn money depending on your decisions and the decisions of the other members of your group. The reason why we use money in this exercise is to represent real life situations in which your economic decisions will bring yourself monetary consequences. You will play several rounds equivalent, for example, to periods such as years, months, or fishing seasons.

In each round, you will earn a number of points that will be equivalent to a number of pesos. At the end of the exercise, we will sum the total number of pesos earned in all the rounds, we will round the total earned, and we will personally hand that to you in cash.

We will now explain how to participate in the exercise. Please pay a lot of attention to the instructions. If you understand the instructions, you will be able to make better decisions in the exercise. Please, remain seated and do not speak with other participants. If you have a question, raise your hand. The assistant will answer your question in private.

Earnings Table

We will now hand out the EARNINGS TABLE which contains all the information you will need to make your decisions in this exercise.

¹³ Thanks to Juan Camilo Osorio for translating the instructions from Spanish to English.

All participants have the same EARNINGS TABLE that you do. The numbers in the table are points equivalent to the pesos you can earn in each round, depending on both what you decide to extract and the decisions made by others in your group.

In each round you have to decide how many units of the resource you will extract. We will call your decision “MY LEVEL OF EXTRACTION.” These units correspond to the columns 1 to 9 in the EARNING TABLE. In this exercise, each participant can extract a maximum of 9 units, and a minimum of 1.

In the EARNINGS TABLE, the decisions of the other members of your group correspond to the column “LEVEL OF EXTRACTION OF OTHERS”, which will be a number between 4 and 36. This number is the sum of the units extracted by the other members of the group. In other words, “LEVEL OF EXTRACTION OF OTHERS” is equal to: the total extraction of the whole group, minus the amount you extracted. When you make your decision, you will not know the decisions made by the other members of your group.

Once all participants hand in their decisions, we will sum all the levels of extraction and will announce the group’s TOTAL LEVEL OF EXTRACTION. With this information you will be able to calculate the “LEVEL OF EXTRACTION OF OTHERS,” which is equal to the “TOTAL LEVEL OF EXTRACTION” minus “MY LEVEL OF EXTRACTION”.

Let’s see some examples so that you can understand how to use the EARNINGS TABLE.

Imagine you decide that “MY LEVEL OF EXTRACTION” is 4 units, and that the other members of the group extract 4 units each. We will announce that the TOTAL level of extraction is 20 units. Since you decided to extract 4, you can calculate the “LEVEL OF EXTRACTION OF OTHERS,” which is equal to the “TOTAL LEVEL OF EXTRACTION” minus “MY LEVEL OF EXTRACTION”. In this case, the “LEVEL OF EXTRACTION OF OTHERS” is $20 - 4 = 16$ units. Thus, as seen in the table, your earnings will be 859.

In the previous example all the members of the group picked the same level of extraction. However, each person can pick a different number. For example, if you choose 4 and the other members of the group extract 2, 3, 7 and 8, we will announce that the TOTAL level of extraction is 24. Given the fact that you decided to extract 4, the “LEVEL OF EXTRACTION OF OTHERS” will be 20. In other words, the “TOTAL LEVEL OF EXTRACTION (24) minus “MY LEVEL OF EXTRACTION” (4). In this case, as seen on the table, your earnings will be 754.

The EARNINGS TABLE has an additional table called “Average of others”. This column indicates you the average decision of your group for a determined level. For example, if the others extract 8, this means that the average amount extracted per person is 2. Instead, if the others extract 20, the average amount extracted per person is 5.

Take a few seconds to look at the EARNINGS TABLE and understand how it works. If you have any questions, please raise your hand and someone will come to you.

Decision Card

I will now explain how you will inform us in each round your level of extraction. In each round you will receive a “decision card”. The decision cards are these small pieces of paper.

<i>DECISION CARD</i>	
Participant Number:	
Round Number:	
My level of extraction: (a number between 1 – 9):	
How much do you think others will extract? (a number between 4 – 36):	

In each round you will have to write:

- The number of the round, which will be announced by us.
- “MY LEVEL OF EXTRACTION”, in other words, how many units will you extract, which in this case will be a number between 1 and 9.
- You also have to write what you think the other members of your group will extract.

This is the sum of the levels of extraction that you think the other 4 members of your group will extract. This sum is a number between 4 and 36. Remember that when you make your decision you do not know what the others are choosing. However, we want to know how much you think the others will extract. For example, if you think that two people will choose 3 and the other two 5, then, what you think the others will extract is 16 (3 +3+ 5 + 5).

What you write on the level of extraction of others will not affect your earnings, either if it is equal or different to what actually happened. However, we are interested to know what you are thinking about the level of extraction of the others when you make your choice.

After all the members of your group have made their decisions, we will pick up the 5 participants’ cards and calculate the groups’ TOTAL level of extraction. Once we announce the total extraction of the group you will be able to calculate the true “LEVEL OF EXTRACTION OF OTHERS.” With this information and your level of extraction, you will be able to calculate how much you earned by looking at the EARNINGS TABLE.

It is very important that you remember that your decisions are private and that you can not show them to the other members of the group. We will only announce the TOTAL level of extraction.

Calculation sheet

Each one of you will receive a calculation sheet with which you record your decisions and earnings. Please write your participant number in the calculation sheet. This is the same number that is written in the decision cards.

Let's see how to use the calculation sheet by looking at an example. Suppose you decided to extract 4 units. In consequence, you have to write 4 under column A of the calculation sheet, as shown in the example. You should also write this number in "MY LEVEL OF EXTRACTION" in the Decision Card. You are writing your decision in two places, in the Decision Card, which you will hand in back to us, and in the calculations sheet. Please, check that you have written the same number in the two sheets before you hand in the decision card.

After all the members of the group have finished taking their decisions, we will pick up the cards of the 5 participants and calculate the groups' TOTAL level of extraction.

Suppose the "TOTAL LEVEL OF EXTRACTION" is 20 units. You should write 20 in the column B in the calculations sheet. In order to calculate accurately the "LEVEL OF EXTRACTION OF OTHERS," you should subtract Column A ("MY LEVEL OF EXTRACTION") from Column B ("TOTAL LEVEL OF EXTRACTION") You should write the result in Column C ("LEVEL OF EXTRACTION OF OTHERS") In our example, the "LEVEL OF EXTRACTION OF OTHERS" is 16 (20 - 4.)

In order to calculate your earnings, you should use the EARNINGS TABLE. In this case, given that "MY LEVEL OF EXTRACTION" is 4 and the "LEVEL OF EXTRACTION OF OTHERS" is 16, then your earnings will be 859. This is the information you should write in column D.

Practice rounds

Before we begin the exercise we will do some practice rounds. The decisions that you take in these practice rounds would not affect your earnings today.

The first practice round will be done altogether. First, write the number of the round in the decision card, in this case (P) of practice. After that, looking at the EARNINGS TABLE suppose that each one of you picked 5. Write this in the decision card and in Column A of the earnings sheet. You should also write in the decision card what you think the other members of your group will extract. In this case, it is 20, because we know that all of them picked 5. Remember, when we begin the real exercise, you will not know the exact number of extraction of the other members while you will be picking your level of extraction. In the next rounds you will write what you think the others will extract.

Given that all the members of the group picked 5 in this example, the total level of extraction for the group is 25. Each one should write now 25 under Column B ("TOTAL LEVEL OF EXTRACTION") in the calculations sheet.

Now subtract "MY LEVEL OF EXTRACTION" (5) from the "TOTAL LEVEL OF EXTRACTION" (25). In other words, column B minus Column A. This operation is equal to 20. This number is the true "LEVEL OF EXTRACTION OF OTHERS", which you should write in

Column C. Using the number in Column A, “MY LEVEL OF EXTRACTION,” and the number under column C, the “LEVEL OF EXTRACTION OF OTHERS”, you should use the earnings table to determine your earnings for this round. In this case, your earnings will be 790. Write your earnings in column D.

We did this example and the previous one supposing that everyone picked the same level of extraction. However, when you make your decision, you may choose the level of extraction that you want by looking at the EARNINGS TABLE. *Are there any questions?*

Let’s continue with the next practice round. First, write down the round’s name in the decision card, in this case (P) of practice. Now, each one of you has to decide your level of extraction using the EARNINGS TABLE. Write it down in the decision card and in Column A in the calculations sheet. Before you hand in the decision card, check that the number in column A is equal to the one you wrote in “MY LEVEL OF EXTRACTION” in the decision card. You should also write in the decision card the level of extraction that you believe the other members of the group will extract.

Stage 2 – Communication Treatment (Com)

We now will begin the second part of this exercise. This part is very similar to the previous one, with the difference that in the next rounds you will be able to communicate with the other members of your group.

At the beginning of each round, before you decide how much you will extract, you will have 5 minutes to discuss the exercise with the other members of your group. During these 5 minutes, you will be able to discuss with them anything related with the exercise. Before the discussion round begins, turn your calculations sheet upside down and leave it on the table. After 5 minutes, the discussion will come to an end and you will return to your seat to decide privately what your level of extraction decision will be.

Stage 2 – Mid Penalty Treatment (Mid Penalty)

(These are the instructions for the medium penalty of 165. The instructions for the low penalty treatment are identical, except that the penalty for each additional unit extracted is 27).

We will now begin the second part of this exercise. This part is very similar to the previous one, with the difference that in the next rounds we will establish a regulation. The objective of this regulation is to make all participants of your group extract **2 units**.

In order to promote that people do not extract more than 2 units of the resource, we are going to impose a penalty of 165 points for each additional unit extracted. The table that we will be handing out summarizes the total penalties that result from each level of extraction.

(Hand out the tables and explain them)

Penalty Table

My level of extraction	1	2	3	4	5	6	7	8	9
Penalty	0	0	165	330	495	660	825	990	1155

You will have to pay the penalty only if you are inspected when extracting more than 2 units of the resource. In other words, you can extract more than 2 units, but if you are inspected, you will have to pay the penalty. However, it will be very difficult to inspect the decisions of all the members of the group.

In consequence, once each person decides their level of extraction (a number between 1 and 9) and has handed in the decision card, we will randomly pick who will be inspected.

In order to decide who will be inspected, we will take a ballot from a bag containing 5 ballots with the participants' numbers on them, and 5 other blank ballots.

(Show the ballots)

This implies that for each round you have ONE chance in 10 of being inspected. If your number is selected and you extracted more than 2 units of the resource, then you will have to pay the penalty for every additional unit. Nobody else will ever know the result of such inspection. If a blank ballot is selected, no one will be inspected.

(Practice picking the ballot)

In each round we will only take one ballot. The selected ballot will be returned to the bag. This means that the result of the inspection in this round will not affect the result of the next one. In this way, someone can be inspected more than one time during the exercise. It is also possible that you never get inspected.

Let's make some examples:

For example, if you extract 5 units of the resource, your level of extraction is 3 units greater than the permitted level of 2 units.

If your number is randomly selected from the bag, then you will be inspected. Since you extracted 5 units, the penalty will be 495, as can be seen in the penalty table ($5-2=3$ and $3*165=495$). In consequence, we will have to subtract 495 from your earnings.

If a blank ballot is selected nobody will be inspected and we will follow on to the next round. If you are not inspected, you will not have to pay any penalty.

Another example:

If you extract 2 units, your level of extraction is equal to the level permitted. If your number is randomly selected from the bag, you will be inspected. Given the fact that your level of extraction is equal to the permitted level, then you will not have to pay the penalty. If a blank ballot is selected, nobody will be inspected and we will pass to the next round. If you are not inspected, you will not have to pay the penalty.

Calculation sheet

The calculation sheet for these rounds is very similar to the one used in the previous rounds, but includes some changes.

Before we begin, please write your participant's number in the new calculation sheet.

Columns A, B and C are used as in previous rounds. In column D you must write your earnings before you know if you will be inspected. Now, there are two additional columns. In column E you must write whether you were inspected or not in each round. Write YES or NO. In column F we will write the total value of the penalty you will have to pay if you are inspected. If you were not inspected, please write 0 in this column. In the last column, column G, you can write your earnings after the inspection. Earnings after the inspection are calculated subtracting the value of the penalty (column F) from the earnings before the inspection (column D). If you were not inspected, or your penalty is 0, your earnings (column G) will be exact to what was written in column D (My earnings before the inspection).

Let's see some examples:

Suppose that your level of extraction was 5 units and the total level of extraction was 17 units. Write this information in the corresponding columns as in the previous rounds. In this case, level of extraction of the others is 12 (column C) and your earnings will be 1021, before the inspection.

If your number is randomly selected from the bag, then you will be inspected. Write “YES” in column E. Since you extracted 5 units, the penalty will be 495, as you can see in the penalty table ($5-2=3$ and $3*165=495$.) Write 495 in column F (total penalty value.) In consequence, your total earnings for this round will be 1021 (column D) – 495 (column F) = 526. Write 526 in the last column (My earnings after the inspection, column G.)

If a blank ballot is selected and nobody is inspected we will pass the following round. You will not have to pay any penalty. Write NO in column E, 0 in column F (penalty value) and write your earnings before the inspection (column D) in column G (earnings after the inspection.)

EARNINGS TABLE

Level of extraction of others	My level of extraction									Average of the others
	1	2	3	4	5	6	7	8	9	
4	900	996	1087	1172	1252	1326	1395	1458	1516	1.0
5	882	976	1064	1146	1223	1295	1361	1421	1476	1.3
6	864	955	1040	1120	1194	1263	1326	1384	1436	1.5
7	846	934	1017	1094	1165	1231	1292	1347	1396	1.8
8	829	914	994	1068	1137	1200	1258	1310	1357	2.0
9	811	893	970	1042	1108	1168	1223	1273	1317	2.3
10	793	873	947	1016	1079	1137	1189	1236	1277	2.5
11	775	852	923	989	1050	1105	1154	1198	1237	2.8
12	757	831	900	963	1021	1073	1120	1161	1197	3.0
13	739	811	877	937	992	1042	1086	1124	1157	3.3
14	721	790	853	911	963	1010	1051	1087	1117	3.5
15	703	769	830	885	934	978	1017	1050	1077	3.8
16	686	749	807	859	906	947	983	1013	1038	4.0
17	668	728	783	833	877	915	948	976	998	4.3
18	650	708	760	807	848	884	914	939	958	4.5
19	632	687	736	780	819	852	879	901	918	4.8
20	614	666	713	754	790	820	845	864	878	5.0
21	596	646	690	728	761	789	811	827	838	5.3
22	578	625	666	702	732	757	776	790	798	5.5
23	560	604	643	676	703	725	742	753	758	5.8
24	543	584	620	650	675	694	708	716	719	6.0
25	525	563	596	624	646	662	673	679	679	6.3
26	507	543	573	598	617	631	639	642	639	6.5
27	489	522	549	571	588	599	604	604	599	6.8
28	471	501	526	545	559	567	570	567	559	7.0
29	453	481	503	519	530	536	536	530	519	7.3
30	435	460	479	493	501	504	501	493	479	7.5
31	417	439	456	467	472	472	467	456	439	7.8
32	400	419	433	441	444	441	433	419	400	8.0
33	382	398	409	415	415	409	398	382	360	8.3
34	364	378	386	389	386	378	364	345	320	8.5
35	346	357	362	362	357	346	329	307	280	8.8
36	328	336	339	336	328	314	295	270	240	9.0