# Experimental Instructions

**Welcome and thank you for participating in this study.**

Please, carefully read the following instructions to understand the rules of the experiment. For your participation you will receive fixed show-up fee of 3.5 GBP (simply for participating in the study until the end of it). On top of this, you can earn an additional amount of money depending on the decisions made by you and the other participants during the study. It is therefore very important that you read these instructions with care. After reading the instructions, we will ask you several questions to test whether you understand the experiment. The experiment will continue after you answered all questions correctly.

During the experiment we will speak in terms of Points instead of GBP. Your final earnings will be calculated in terms of Points and then exchanged at the end of the experiment into GBPs at the following rate:

## 150 Points = 1 GBP

The experiment consists of two parts. We start by describing Part 1.

## Part 1

*General Setup*:

The experiment consists of 30 rounds. At the beginning of the experiment, groups of **NINE** participants will be formed. Each participant will interact exclusively within his/her group without knowing the identity of the other 8 group members. Group members will be associated with ID numbers: ID1, ID2, ID3, ID4, ID5, ID6, ID7, ID8, ID9. You will learn your own ID number at the beginning of the experiment. Groups remain unchanged and a given ID number will refer to the same person throughout the whole experiment.

Everyone in your group received the exact same instructions.

*Your Task in a Given Round.*

In each round, you will make **two types of decisions**, which will influence the number of Points you earn in that round.

For the first type of decision, you need to choose an **activity level**. The minimum activity level is 0, and the maximum activity level is 20. You may choose any level in between, not only integer numbers. A higher activity level brings more benefits in terms of Points earned, but it is also more costly, as it will be explained in more detail below.

For the second type of decision, you can **establish links** to the other members of your group. You may do this by choosing the ID numbers of the group members to whom you wish to establish a link. At the same time, other group members may also choose to establish links to you. The group members to whom you establish a link or who establish a link to you, will be your "network neighbors". You can benefit from the activity levels of *all your network neighbors* in terms of Points earned, but *each link you initiated* will cost 1 Point.

The following formula explains the **number of Points** that you can earn **based on your two types of decision:**

*Your Points =*

*10\*(Your activity)+0.4\*Your activity\*(The sum of the activity levels chosen by your network neighbors)*

*-2\*(Your activity)\*(Your activity)*

*-1\*(The number of links you initiated)*

In this formula, the **first row** represents the benefits of your activity level which also depend on the sum of activity levels of your network neighbors.
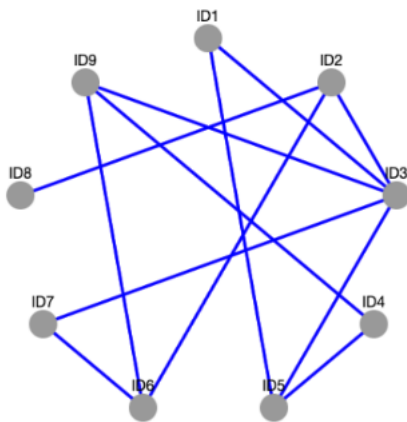
The **second row** represents the costs of your activity level.

The **third row** stands for the costs of initiating links where each link costs 1 Point.

The following examples illustrate the formula. The numbers used in these examples have been chosen randomly and serve only illustration purposes.

**Example 1.** The graph on the left-hand side illustrates the established links among your group members, where any two nodes are connected by a line if they are network neighbors. The table on the right-hand side shows the activity levels and the list of network neighbors of the other group members. Suppose your ID number is ID5. Your activity level is 6.3 and your network neighbors are ID1, ID3, ID4 (as shown on the graph). Hence, you have 3 network neighbors, the sum of their activity levels is 8.4+2.3+6.8=17.5 (which can be computed using the information in the table). Suppose that you initiated 2 links.

## The network formed in your group in this Round.



| ID | Activity level | Network neighbors |
|-----|----------------|---------------------------|
| ID1 | 8.4 | ID3, ID5 |
| ID2 | 11.8 | ID3, ID6, ID8 |
| ID3 | 2.3 | ID1, ID2, ID5, ID7, ID9 |
| ID4 | 6.8 | ID5, ID9 |
| ID6 | 10.4 | ID2, ID7, ID9 |
| ID7 | 5.8 | ID3, ID6 |
| ID8 | 3.8 | ID2 |
| ID9 | 9.7 | ID3, ID4, ID6 |

Based on this, we use mentioned formula to obtain:
Your Points=
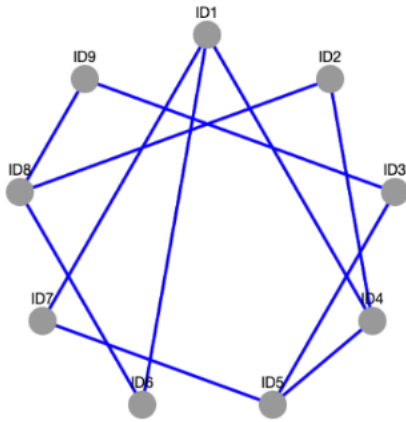
10*(6.3)+0.4*6.3*(17.5)          *(benefits of activity)*

-2*(6.3)*(6.3)               *(costs of activity)*

-1*(2)            *(costs of linking)*

**=25.72**

**Example 2.** The graph on the left-hand side depicts the established links among your group members, where any two nodes are connected by a line if they are network neighbors. The table on the right-hand side shows the activity levels and the list of network neighbors of the other group members. Suppose your ID number is ID3. Your activity level is 5.1 and your network neighbors are ID5, ID9 (as shown on the graph). Hence, you have 2 network neighbors, the sum of their activity levels is 5.3+7.9=13.2 (which can be computed using the information in the table). Suppose that you initiated 1 link.

The network formed in your group in this Round.



| ID | Activity level | Network neighbors |
|-----|------|------------------|
| ID1 | 7.8 | ID4, ID6, ID7 |
| ID2 | 6.3 | ID4, ID8 |
| ID4 | 2.8 | ID1, ID2, ID5 |
| ID5 | 5.3 | ID3, ID4, ID7 |
| ID6 | 14.8 | ID1, ID8 |
| ID7 | 5.3 | ID1, ID5 |
| ID8 | 8.9 | ID2, ID6, ID9 |
| ID9 | 7.9 | ID3, ID8 |

Based on this, we use the mentioned formula to obtain:

Your Points=

10*(5.1)+0.4*5.1*(13.2)        *(benefits of activity)*

-2*(5.1)*( 5.1)                    *(costs of activity)*

-1*(1)                    *(costs of linking)*

**=24.91**

*Note1: Your points earned can be negative in a given round.*

*Note2: In your group, all group members make the activity and linking decisions at the same time and independently from each other, that is, making an individual decision without knowing other group members' decisions. The points earned by other group members are calculated with a similar formula as yours (see 'Your Points' formula).*
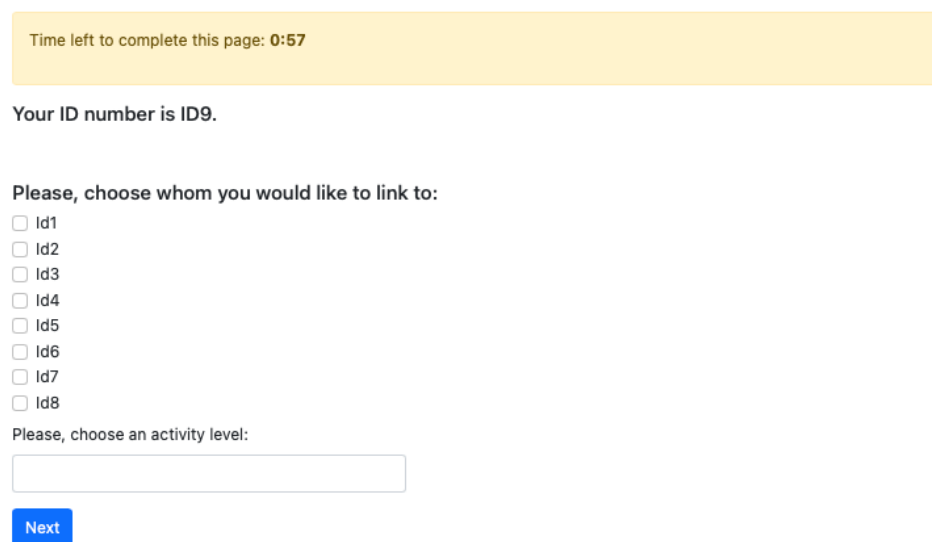
Figure 1 shows the decision screen on which you can choose your activity level and your links. You can establish a link to a given group member by ticking the box next to their ID number. You may set your activity level by entering a number in the box at the bottom of the page. Once you made these decisions, please, click on the 'Next' button.

IMPORTANT: You will have **60 seconds** to submit your decisions, a timer on the top of the screen shows the number of seconds left. *If you do not submit a decision within this time limit, you will be considered as an inactive participant and **you will drop out of the study**.* **This implies that you will not receive any payment from this study.**

If one or more of the **other members** in your group drop out of the study, your group will be terminated in that round and you receive the **total number of Points earned up to that round,** converted to GBP at the exchange rate **150 Points = 1 GBP.** In addition, you receive the **show-up fee** of 3.5 GBP. You will be notified on the screen in case your group is terminated and about your earnings.

**Figure 1: Screenshot of the decision screen**



### Decision in Round 1

> Time left to complete this page: **0:57**

**Your ID number is ID9.**

**Please, choose whom you would like to link to:**
- ☐ Id1
- ☐ Id2
- ☐ Id3
- ☐ Id4
- ☐ Id5
- ☐ Id6
- ☐ Id7
- ☐ Id8

Please, choose an activity level:

[                    ]

[ Next ]

*At the End of a Round*

After all group members submitted their decisions, you will see the **following information** on the screen:

- The graph of established links among your group members (on the left side of the screen), where any two nodes are connected by a line if they are network neighbors;
- Your activity level;
- The list of your network neighbors;
- The number of your network neighbors;
- The list of group members you initiated link to;
- The number of links you initiated;
- Your Points from the Round;
- The benefits of your activity level;
- The costs of your activity level;
- The costs of your links initiated;

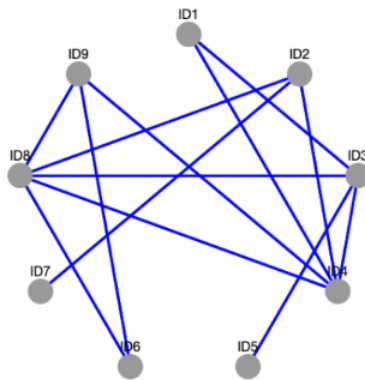- The activity levels and network neighbors of the other group members in table format.

An example of the information screen is shown in Figure 2. The numbers used on the figure have been chosen randomly and serve only illustration purposes. This screen will be shown to you for 60 seconds.

**Figure 2: Information screen at the end of a Round**



*Your Earnings from Part 1*

Part 1 of the experiment consists of 30 Rounds as described above. Your earnings from Part 1 will be the **sum of Points earned in the 30 Rounds** converted to GBPs using the following exchange rate:

**150 Points = 1 GBP**

*If the sum of your Points earned over all 30 Rounds is negative, you will receive 0 points from Part 1 of the Experiment.*

You will see your earnings from Part 1 on the screen at the very end of the experiment.

## Part 2

Part 2 of the experiment consists of a questionnaire. Please, answer all the questions. Some of the questions will allow you to earn additional Points as it will be explained on the screen. These Points will be converted to GBP at the rate

**150 Points = 1 GBP**

*Your Final Earnings in the Experiment*

Your final earnings from the experiment is **the sum of payoffs earned in Part 1 and 2 of the experiment.** This amount plus your **show-up fee of 3.5 GBP** will be paid to you via Prolific.

*Start of the Experiment*

Before we start Part 1 of the experiment, you will be asked to answer a set of questions to make sure that you understood the instructions. You will be allowed to proceed further once you answered all questions correctly.

After you finished the questions, you will participate in **5 practice rounds of the game** described above. In these rounds, you will **play against the computer**: the activity levels and links of the other 8 group members will be chosen by the computer. The computer will choose the **same activity level and links in all 5 rounds**.

Your task is to choose your activity level and links. The 5 practice rounds will **not influence your payoffs from the experiment**. During these practice rounds, you can familiarize yourself with the decision environment and understand how to make the best decisions during the experiment.

After the 5 practice rounds, you will be waiting for the other participants of your group to finish the instructions and practice rounds as well. Once your group is formed, the experiment will start. However, it may take for a while to form your group. **Please, be patient and pay attention to your screen as your group may be ready at any moment!**

If the waiting time exceeds 15 minutes, we consider that there are not sufficient group members available, and you will be asked to exit the study in order to save your time. In that case, you will receive the **show-up fee of 3.5 GBP**.