

Experimental Instructions

This document includes the instructions for the experiment reported in the paper. It also includes the practice questions for the leadership task, and the verbal instructions read out by the experimenter between Stage 1 and Stage 2 of the leadership task.

Overview of Experiment

Thank you for agreeing to take part in this study which is funded by the Australian Research Council. Please read the following instructions carefully. A clear understanding of the instructions will increase your earnings from the experiment.

There are two parts in today's experiment: Part 1 and Part 2. We have provided you with instructions for Part 1, and we will explain them in greater detail shortly. We will hand out instructions for Part 2 at the end of Part 1. At the end of Part 2, you will be asked to complete a post-experimental questionnaire. Please be assured that all your responses and decisions will remain anonymous.

You will be paid for either Part 1 or Part 2 of today's experiment. Hence, you should carefully consider all the decisions you make in today's experiment as they may determine your earnings. Whether you will be paid for Part 1 or Part 2 will be randomly determined at the end of today's session. You will be informed of the outcome of the experiment at the end of the session.

During the experiment, we will be using Experimental Currency Units (ECU). At the end of the session, we will convert the amount you earn into Australian Dollars (AUD) using the following conversion rate: 10 ECU = 1 AUD. You have already earned 50 ECU for completing the pre-experimental questionnaire.

Please do not talk to one another during the experiment, and please refrain from using your mobile phones and/or tablets. We require you to pay attention to the computer screen at all times. If anyone is found using their mobile phones and/or tablets, they may be asked to leave the experiment and may be excluded from future experiments. If you have any questions, please raise your hand and we will come over to answer your questions privately.

Do not turn over to the next page until you have been instructed by the experimenter to do so.

Part 1

You will participate in Part 1 in groups of three. There are two possible roles: Leader and Member. Each group will consist of one Leader and two Members.

Part 1 consists of two stages. In each stage, you will be asked to make decisions relating to five investment tasks. The following two sections explain the decisions that you will make in each stage.

(i) Stage 1: Investment decisions as Leaders

In Stage 1, you will be asked to make a decision for all five investment tasks assuming that you are the Leader of your group.

You will be informed whether you are the Leader at the end of Stage 1. Your decisions will be implemented if you are assigned to be the Leader of your group.

For each investment task, you will be given an endowment of 300 ECU. You will be asked to choose between two investment options. Your choice will affect both your payoff and your Members' payoffs. Each investment can either fail or succeed. The two investment options have different chances of success/failure, as well as different costs to you.

Specifically, the two investments are:

Investment X: This investment will succeed with a 75% chance and fail with a 25% chance, and it costs you 200 ECU.

Investment Y: This investment will succeed with a 25% chance and fail with a 75% chance, and it costs you 50 ECU.

Each investment provides you and your Members a high return if it succeeds, and a low return if it fails.

Your payoff and your Members' payoffs are calculated as follows:

Payoff to you (Leader) = 300 ECU – Cost of investment + Returns on investment

Payoff to each Member = Returns on investment

Note that the returns of the two investments may be different for each task, and this will therefore affect the final payoffs to you and your Members. However, the investments always provide a higher return if they succeed and a lower return if they fail. Please pay attention to these numbers on the screen for each task.

Figure 1 shows an example where Investment X and Investment Y provide you and each Member a return of 275 ECU if they succeed and 50 ECU if they fail. These numbers are shown in red.

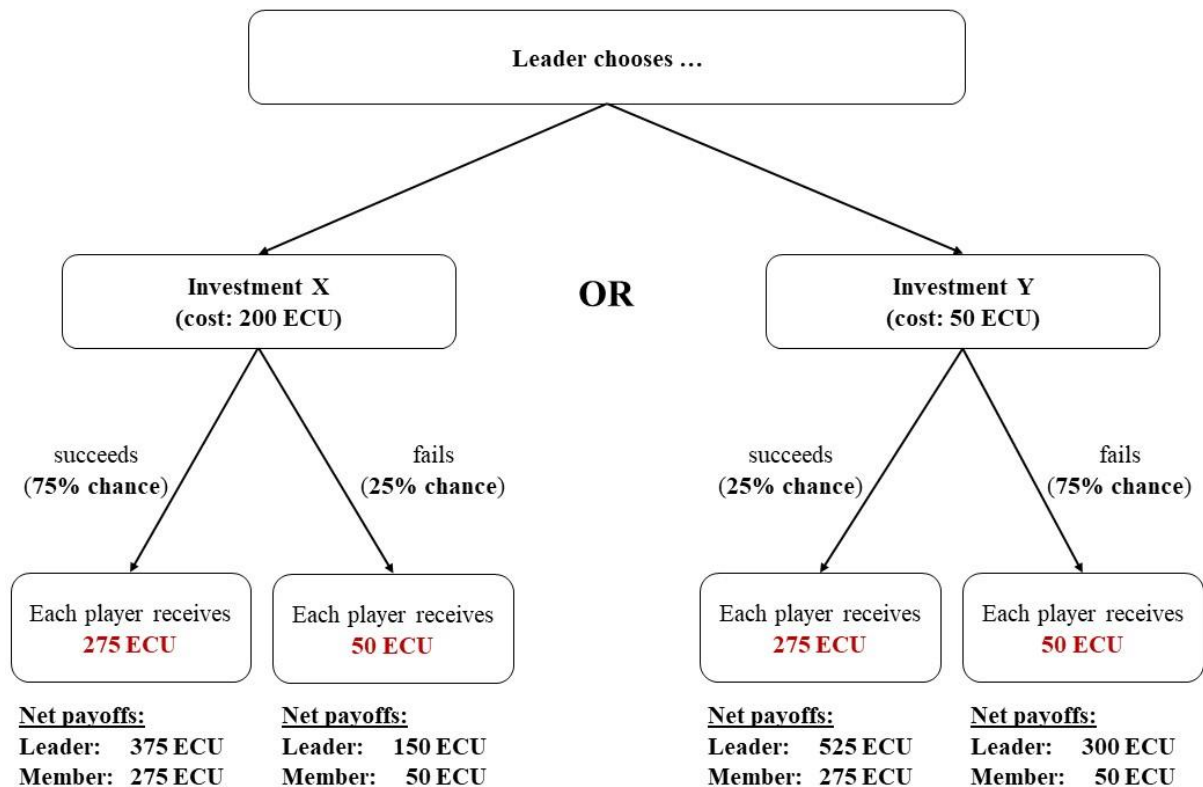


Figure 1: Investment Options in Part 1 (Example of a Task)

Example 1. Suppose in the task depicted in Figure 1, you choose Investment X. Then, the investment costs you 200 ECU, and will succeed with a 75% chance and fail with a 25% chance. If the investment succeeds, then you will receive $(300 - 200 + 275) = 375$ ECU and each Member will receive 275 ECU.

Example 2. Suppose in the task depicted in Figure 1, you choose Investment Y. Then, the investment costs you 50 ECU, and will succeed with a 25% chance and fail with a 75% chance. If the investment fails, then you will receive $(300 - 50 + 50) = 300$ ECU and each Member will receive 50 ECU.

The other Members of your group will never learn your investment decisions. At the end of the experiment, they will learn how much they have received from the chosen investment, but they will not learn your investment decision.

(ii) Stage 2: Members' predictions and decisions

At the beginning of Stage 2, you will be provided information about your groups and roles. Hence, you will be informed whether you are the Leader or a Member after you have completed Stage 1, and before Stage 2 begins.

Predictions of Leader's decisions: As a Member, you will be asked to predict your Leader's decisions in Stage 1. Specifically, we would like to know how likely it is in your opinion that the Leader has chosen Investment X in each of the five investment tasks in Stage 1.

For each investment task, the specific questions you will be asked are listed below.

Question 1

**How likely do you think it is that your Leader has chosen Investment X?
Specifically, what is the chance out of 100 that s/he has chosen Investment X?**

In Question 2, you are given additional information. You are asked to evaluate the same question with this additional information.

Question 2(a)

Suppose you are informed that the investment chosen by your Leader has succeeded. This gives you a high payoff.

Now consider whether your prediction will be higher than, lower than, or the same as the one you stated in Question 1.

Specifically, given that the investment has succeeded, what is the chance out of 100 that s/he has chosen Investment X?

Question 2(b)

Suppose you are informed that the investment chosen by your Leader has failed. This gives you a low payoff.

Now consider whether your prediction will be higher than, lower than, or the same as the one you stated in Question 1.

Specifically, given that the investment has failed, what is the chance out of 100 that s/he has chosen Investment X?

For both questions, you will need to choose a number between 0 and 100. A higher number means that you think your Leader is more likely to have chosen Investment X.

For your payment, the computer will randomly select one of these two questions and you will be paid for your response to this question. If Question 2 is chosen for payment, then you will be paid for your answer to the scenario that corresponds to the actual outcome, i.e., you will be paid for Question 2(a) if the investment has succeeded or Question 2(b) if it has failed.

To determine your payment, we use a procedure which has been used in many other studies. We explain the procedure in detail, but what is most important is that this payoff structure is designed such that it is in your best interest to report your true belief about the chance that your Leader has chosen Investment X.

Your payment will be determined as follows. You will receive either 0 ECU or 200 ECU. Your chance of receiving 200 ECU depends on your prediction and the actual decision made by your Leader.

Specifically, your chance of receiving 200 ECU is determined by the following formulas:

$$\begin{aligned} &\text{Chance of receiving 200 ECU if Leader chose **Investment X**} \\ &= \left[1 - \left(\frac{100 - \text{prediction}}{100} \right)^2 \right] \times 100 \end{aligned}$$

$$\begin{aligned} &\text{Chance of receiving 200 ECU if Leader chose **Investment Y**} \\ &= \left[1 - \left(\frac{\text{prediction}}{100} \right)^2 \right] \times 100 \end{aligned}$$

Suppose you state a high number as your prediction that your Leader chose Investment X. The formulas above imply that your chance of receiving 200 ECU is high if s/he chose Investment X, and your chance of receiving 200 ECU is low if s/he chose Investment Y. Hence, you should carefully consider how likely it is that your Leader chose Investment X.

To illustrate, suppose your prediction that your Leader chose Investment X is 100. Then, if s/he chose Investment X, your chance of receiving 200 ECU will be $\left[1 - \left(\frac{100 - 100}{100} \right)^2 \right] \times 100 = 100$. If s/he chose Investment Y, your chance of receiving 200 ECU will be $\left[1 - \left(\frac{100}{100} \right)^2 \right] \times 0$. Hence, your prediction should depend on whether you think your Leader is more likely to have chosen Investment X or Investment Y.

Here are two more examples explaining how your chance of receiving 200 ECU will be determined based on your prediction and the decision made by your Leader.

Example 1: Suppose you predict 70 as the chance that your Leader chose Investment X. At the end of the experiment, the computer reveals that s/he chose Investment X. Then, your chance of receiving 200 ECU will be $\left[1 - \left(\frac{100-70}{100}\right)^2\right] \times 100 = 91$.

Example 2: In the above example, suppose your Leader chose Investment Y. Then, your chance of receiving 200 ECU will be $\left[1 - \left(\frac{70}{100}\right)^2\right] \times 100 = 51$.

To determine whether you receive 200 ECU, the computer will randomly draw a number between 0 and 100. Each number between 0 and 100 is equally likely to be picked. If the number drawn by the computer is less than or equal to your chance of receiving 200 ECU as determined by the formulas above, then you will receive 200 ECU. Otherwise, you will receive 0 ECU. Hence, in Example 1 above, if the number randomly drawn by the computer is less than or equal to 91, then you will receive 200 ECU. Otherwise, you will receive 0 ECU.

In summary, your prediction will determine the chance that you receive 200 ECU. The closer your prediction is to the actual decision of your Leader, the higher your chance is of receiving 200 ECU.

Decisions to modify the Leader's payoff: After you state your predictions, you will be asked whether you would like to modify your Leader's payoff from Stage 1, given each possible outcome of the investment chosen by him/her.

Specifically, you may choose to either increase or decrease your Leader's payoff by an amount between 10 ECU and 100 ECU. You may choose any amount in multiples of 10 ECU within this range. You may also choose not to increase or decrease your Leader's payoff, i.e., you may choose to modify your Leader's payoff by 0 ECU.

You will be asked to make this decision both assuming that the investment chosen by your Leader has succeeded, and assuming that the investment chosen by your Leader has failed. Note that your earnings will not be affected by your decisions to increase or decrease your Leader's payoff.

At the end of the experiment, the decisions of one of the two Members within the group will be randomly selected to be implemented. Your Leader's payoff from Stage 1 will then be modified according to the decision that corresponds to the actual outcome of the investment.

Here is a scenario and two examples to illustrate how your decisions as a Member will affect your Leader's payoff from Stage 1.

Scenario: Suppose you choose to increase your Leader's payoff by 60 ECU if the investment succeeds, and decrease it by 80 ECU if the investment fails. The other Member of your group chooses to modify your Leader's payoff by 0 ECU if the investment succeeds, but increase it by 30 ECU if the investment fails.

Example 3: At the end of the experiment, suppose the computer reveals that the investment chosen by your Leader has failed, and that your decisions have been implemented. In this case, your Leader's payoff from Stage 1 will be decreased by 80 ECU.

Example 4: At the end of the experiment, suppose the computer reveals that the investment chosen by your Leader has succeeded, and that the decisions of the other Member have been implemented. In this case, your Leader's payoff from Stage 1 will not be modified.

Payment for Part 1

At the end of the experiment, the computer will randomly determine **one** of the five investment tasks for payment. For that randomly chosen investment task:

1. If you are the **Leader**, you will be paid according to your investment decision and the cost of that decision in Stage 1. Your payoff from Stage 1 may be modified based on your Members' decisions in Stage 2.
2. If you are a **Member**, the computer will randomly determine whether you will be paid for your Leader's investment decision in Stage 1 or your prediction of his/her decision in Stage 2.

Table 1 below summarizes the payoffs of the Leader and Members for each investment task.

Table 1: Payoffs to Leader and Members for each investment task of Part 1

	Paid for:	
	Investment Return	Prediction
Leader	Yes	Not applicable
Member	Either one but not both	

Summary

1. In Part 1, you will be divided into groups of three. There are two stages in Part 1. In each stage, you will be asked to make decisions relating to five investment tasks.
2. In Stage 1, you will be asked to make a decision for each investment task assuming that you are the Leader. As a Leader, you will be given an endowment of 300 ECU for each task and asked to choose between two investment options. Your choice will affect both your payoff and the payoffs of the Members you have been matched with. Your decisions in Stage 1 will be implemented only if you are assigned to be the Leader of your group.
3. The returns of Investment X and Investment Y may be different for each task. However, the investments always provide a higher return if they succeed and a lower return if they fail.
4. At the end of Stage 1, you will be provided information about your groups and roles. One participant in the group will be the Leader and the other two participants will be Members. You will be informed whether you are the Leader or a Member of your group after you have completed Stage 1 and before Stage 2 begins.
5. In Stage 2, if you are a Member, you will be asked to predict your Leader's decisions for the five investment tasks in Stage 1. For each investment task, you will be asked two questions.

In Question 1, you will be asked to predict how likely it is in your opinion that your Leader has chosen Investment X. You will need to choose a number between 0 and 100. A higher number means that you think that s/he is more likely to have chosen Investment X.

In Question 2, you will be asked the same question under two different scenarios: (i) assuming that the investment has succeeded; and (ii) assuming that the investment has failed. You should consider whether your prediction of your Leader's decision will be higher than, lower than, or the same as the one you stated in Question 1, given that you know the outcome of the investment chosen by him/her.

6. As a Member, the payoff structure used to determine your payment for your pre-dictions is designed such that it is in your best interest to report your true belief about the chance that your Leader has chosen Investment X.
7. After you state your predictions, you will be asked whether you would like to modify your Leader's payoff from Stage 1, given each possible outcome of the investment chosen by him/her.

You may choose to either increase or decrease your Leader's payoff by an amount between 10 ECU and 100 ECU. You may choose any amount in multiples of 10 ECU within this

range. You may also choose not to modify your Leader's payoff. Your earnings as a Member will not be affected by your decisions to modify your Leader's payoff.

8. At the end of the experiment, the computer will randomly select one of the five investment tasks for payment. For the randomly chosen investment task:
 - (a) The Leader will be paid for their investment decision in Stage 1, and their payoff may be modified based on the Members' decisions in Stage 2.
 - (b) Each Member will be paid either for their Leader's decision in Stage 1 or their prediction of the Leader's decision in Stage 2.

If you have any questions, please raise your hand and an experimenter will come to you to answer your questions privately. Otherwise, please proceed to answer the practice questions on your computer screen. The purpose of these practice questions is to make sure that you understand the experiment.

When you are ready to begin the practice questions, please press the button on your computer screen to launch the practice questions.

Part 2

You will participate in Part 2 in groups of two. The computer will randomly match you with one other person in the room. You will never learn the identity of your partner.

Each of you is given an endowment of 300 ECU, and you are asked to divide this amount between yourself and the person you are matched with.

At the end of today's session, if Part 2 is picked for payment, then you will be paid either according to your decision or according to the decision made by your randomly matched partner. The computer will randomly determine whose allocation decision will be implemented.

Example. Suppose you choose to divide your endowment by keeping 200 ECU for yourself and giving 100 ECU to your matched partner. Your matched partner decides to keep 130 ECU and give 170 ECU to you. If, at the end of the experiment, the computer randomly determines that it is the allocation of your matched partner that gets implemented, then your payment will be 170 ECU and your matched partner's payment will be 130 ECU.

Are there any questions? If not, we will proceed with Part 2.

Part 1: Practice Questions

(These are programmed on z-Tree.)

1. Which of the following statements is correct?
 - (a) I will be paid for the decisions in both parts of the experiment today.
 - (b) I will be paid for the decisions in either Part 1 or Part 2 of the experiment today.

Answer: (b)

2. We will make decisions relating to 5 investment tasks in Part 1. If we are paid for Part 1, then we will be paid for our decisions for one of the 5 investment tasks.
 - (a) True
 - (b) False

Answer: (a)

3. In Stage 1 of Part 1, everyone will make decisions as Leaders.
 - (a) True
 - (b) False

Answer: (a)

4. In Stage 2 of Part 1,
 - (i) I will learn whether I am the Leader or a Member of my group.
 - (ii) everyone will make decisions as Members.
 - (a) Both (i) and (ii) are correct.
 - (b) (i) is correct but (ii) is incorrect.
 - (c) (i) is incorrect but (ii) is correct.
 - (d) Both (i) and (ii) are incorrect.

Answer: (b)

5. Which of the following statements is correct?
 - (a) The Members will be informed of the investment chosen by the Leader, but not the outcome of the investment.
 - (b) The Members will be informed of the outcome of the investment chosen by the Leader, but not the investment chosen by him/her.
 - (c) The Members will be informed of the investment chosen by the Leader, and the outcome of the investment.

Answer: (b)

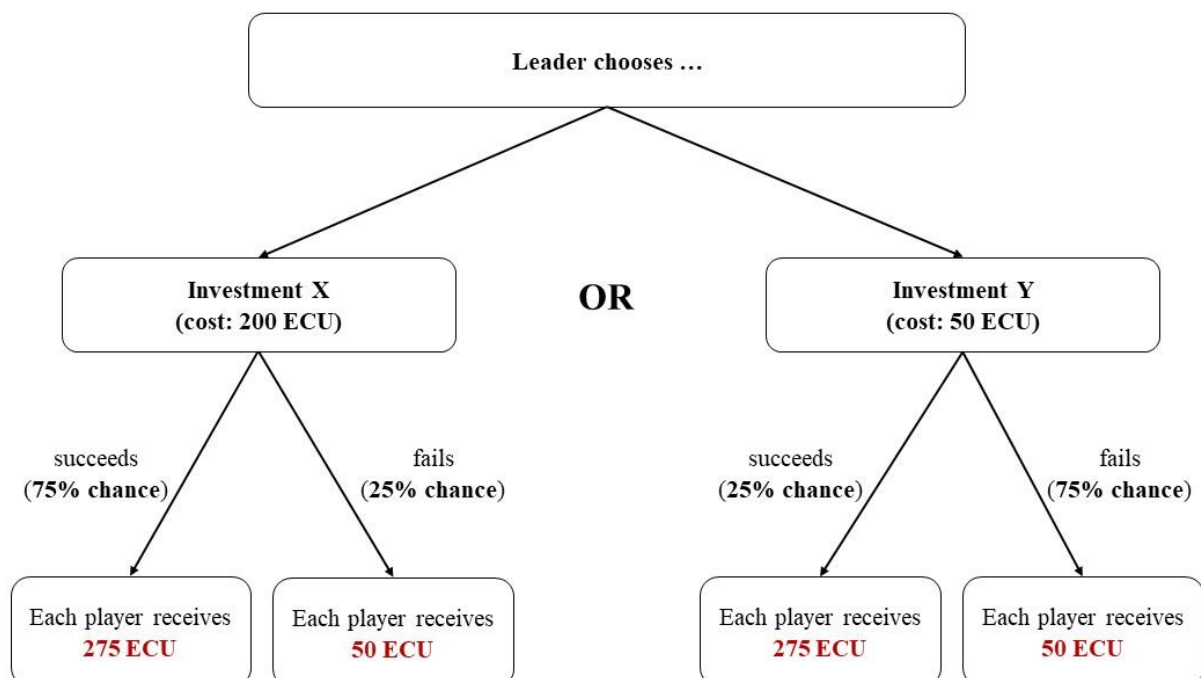
6. If I am a Member, then I will be paid for:
- (a) my Leader's investment decision in Stage 1 only.
 - (b) my prediction of my Leader's investment decision in Stage 2 only.
 - (c) both my Leader's investment decision in Stage 1 AND my prediction of his/her decision in Stage 2.
 - (d) either my Leader's investment decision in Stage 1 OR my prediction of his/her decision in Stage 2, but not both.

Answer: (d)

7. If I am a Member, I will be asked two questions. If I am paid for my predictions, then I will be paid accordingly to my responses to both questions.
- (a) This statement is true.
 - (b) This statement is false. I will be asked only one question as a Member. If I am paid for my predictions, then I will be paid for my response to that question.
 - (c) This statement is false. I will be asked two questions as a Member. However, if I am paid for my predictions, then I will be paid for my response to only one of the questions.

Answer: (c)

Consider the investment options below.



8. Suppose the Leader chooses **Investment X**.

At the end of the experiment, the computer randomly picks this task for payment and determines that the investment fails. What are the net payoffs of the Leader and each Member in Stage 1?

Answer:

Leader: 150

Each Member: 50

9. Suppose the Leader chooses **Investment Y**.

At the end of the experiment, the computer randomly picks this task for payment and determines that the investment succeeds. What are the net payoffs of the Leader and each Member in Stage 1?

Answer:

Leader: 525

Each Member: 275

10. Suppose you are a Member. If you strongly believe that your Leader has chosen Investment Y, which of the following statements is true?

- (a) It is in my best interest to choose a high number as my prediction of the chance that my Leader has chosen Investment X.
- (b) It is in my best interest to choose a low number as my prediction of the chance that my Leader has chosen Investment X.
- (c) It is in my best interest to choose 50 as my prediction of the chance that my Leader has chosen Investment X.

Answer: (b)

11. If I am a Member, then in Stage 2,

- (i) my decisions to increase or decrease my Leader's payoff from Stage 1 will affect my own earnings.
- (ii) I can choose not to modify my Leader's payoff from Stage 1.

- (a) Both (i) and (ii) are correct.
- (b) (i) is correct but (ii) is incorrect.
- (c) (i) is incorrect but (ii) is correct.
- (d) Both (i) and (ii) are incorrect.

Answer: (c)

Experimenter Notes

Before we proceed to Stage 2, we will now announce your groups and roles. Please pay attention to your computer screens.

(LAUNCH NEXT SCREEN)

You can see on your screen the ID number assigned to you prior to this experiment.

Remember that you have been divided into groups of three. One participant in the group is the Leader. The other two participants are Members. In a few moments, you will be informed on your computer screens your group number, and whether you are the Leader or a Member.

To ensure that all participants have been assigned to a group of three, we will announce each group separately. When we call out your group number, please raise your hand (above the partition) so that I can see it.

To ensure that every group has a Leader, we will also announce the Leader in each group by calling out the last three digits of their ID number. If you are the Leader, when I call out the last three digits of your ID number, please loudly and clearly announce “Here”. Please only say “Here” and nothing else.

To maintain your anonymity, please remain seated and face your computer screens.

Does anyone have any questions? If not, we will now begin with Group 1.

(LAUNCH NEXT SCREEN)

If you are in Group X, you will see this information on your screens. Please raise your hand if you are in Group X.

Please put down your hands.

(LAUNCH NEXT SCREEN)

I will now announce the Leader. The Leader in Group X has an ID number ending in: XXX.

(AFTER ALL GROUPS REVEALED)

We will now proceed with Stage 2.