**Screen 1**

**Overview**

In this experiment, you can earn money. For a successful experiment, you must not communicate with other participants or make yourself noticeable to them in any way. Please read the following instructions carefully as you will be required to answer a series of control questions to ensure that you understand the rules of play. Should you have any questions, please signal us. Thank you for your participation. We hope you enjoy the experiment, and wish you good luck!

**Today's Session**

Today’s session is divided into three parts: (1) a virtual lottery game, (2) a biosecurity game, and (3) a questionnaire. We will begin with the virtual lottery game.

**Screen 2**

**Part 1: Virtual Lottery Game**

Imagine you are taking part in a virtual lottery game where you have a choice between playing for the money amounts in Prize A or Prize B.  
  
The following PLAY PANELS contain the odds of each Prize for each game. The default choice is Prize A for each game. If you find the odds in Prize B more appealing at any given game, you can switch to Prize B. However, once you’ve switched to Prize B, you cannot go back to Prize A for the rest of the PLAY PANEL.  
  
You will be given three PLAY PANELS.

**How the game works**

Thirty-five balls (numbered 1-35) will be put into a virtual bingo cage and one ball will be randomly picked. This numbered ball will correspond to the GAME NUMBER in one of your PLAY PANELS and determines which out of the 35 games will be played.  
  
All balls are then removed from the bingo cage and ten balls (numbered 1-10) are put back in. The next ball that is picked determines how much money you win (or lose).  
  
For example, if GAME NUMBER 7 was randomly selected out of the 35 games, and you chose Prize A for that game, you will win  
  
- $40 if the ball number is between 1 and 3, or  
- $10 if the ball number is between 4 and 10.  
  
If you chose Prize B, you will win  
- $150 if the ball number is 1, or  
- $5 if the ball number is between 2 and 10.

Screen 3

To ensure that you understand how the virtual lottery game works, please answer the following control questions.

*1. How many balls will be randomly picked to determine which of the 35 games will be played?*

* 1



* 2



* 3



*2. How many paying games will there be (viz. games in which you can earn money)?*

* 1



* 2



* 3



*3. Imagine you have selected A for games 1-5 in a play panel and then select B for game 6 in the same play panel. What must you select for the rest of the games within this play panel?*

* Select A or B for all the remaining games



* Only select B for the remaining games



* Only select A for the remaining games



*4. How is the paying game and ball selected?*

* They are set the same every time



* They are chosen at random



* The experimenter chooses them



*5. If you select Prize A and Balls 1-3 will earn you $40, what is the chance you win $40 if this game is the paying game.*

* 50%



* 25%



* 10%



* 33%



**Screen 4**

## **Part 2: The Biosecurity Game**

Please read through these instructions carefully. If you have any questions please contact one of the experimenters.

You are about to take part in an experiment about collective decision-making related to risky choices. This experiment gives you an opportunity to earn money. How much you earn depends partly on your decisions, partly on the decisions of others, and partly on chance.

**Your Anonymity**

All decisions you make in the game are anonymous. To ensure this, a pseudonym is assigned to you by the computer. The pseudonym you have been assigned is **Charon**.

**Background Context**

In this experiment, you are a farmer in a region with three other farmers (viz. your co-players in the game). Each season, your crop will generate revenue. You will receive this revenue in the seasons where there is ***no*** *pest* ***outbreak***. When a *pest* ***outbreak*** occurs, the pest spreads quickly and infects all neighbouring farms, resulting in the loss of that season’s crop. You will generate no revenue in a season where a pest ***outbreak*** occurs.

At the start of each season, you must decide how much effort you will invest in ***protecting*** your crop against a pest ***outbreak****.* There is a financial cost associated with this effort—as the amount of effort you invest increases, so too does the cost of protection. You do not have to pay any cost if you choose to invest zero effort in protection.

The probability of a pest ***outbreak*** occurring is variable and depends on the amount of effort both you and your co-players invest in protection.

**The Game**

The game consists of 15 playing rounds, with each round corresponding to a growing season. On each round, your crop will generate you potential revenue of $25. You must also pay a $5 production cost. This is the labour cost of producing your crop, which you have no control over. You can also choose the amount of effort and money that you wish to invest in protecting your crops against a pest outbreak. The amount of effort you may invest in protection varies between 0% (with a cost of $0) and 100% (with a cost of $10).

If there is ***no*** pest ***outbreak*** you will receive your revenue of $25, minus the $5 cost of production and the cost of protection. For example, if you chose to invest 100% effort in protecting your crops then your cost of protection would be $10. Accordingly, your income for the round would be $10—viz. $25 (revenue from crop) - $5 (cost of production) - $10 (cost of protection) = $10.

If there is a pest ***outbreak*** each player’s crop revenue will be lost. Based on the above example, your income for the round would be -$15—viz. $0 (revenue from crop) - $5 (cost of production) - $10 (cost of protection) = -$15. If you had contributed 0% effort in protecting your crops, with an associated cost of $0, then your income for the round would be -$5—viz. $0 (revenue from crops) - $5 (cost of production) - $0 (cost of protection) = -$5. As you can see, when there is a pest outbreak your income for the round will necessarily be negative, with the extent of your losses increasing with the amount of effort you invested in protection.

***Whether*** or ***not*** there is a pest ***outbreak*** on a round is based on a joint probability calculated on the amount of protection you and each of your group members decide to provide. How the joint probability is calculated is illustrated in the following two examples:

*Example 1*: Imagine a round where there are 4 players and each player contributes an effort of 90% towards protection to give a 90% chance that each player is not the source of a pest outbreak. The joint probability of an outbreak is:

Probability of Outbreak = 1 - Player 1's Probability × Player 2's Probability × Player 3’s probability × Player 4’s probability  
Probability of Outbreak = 1 - (0.9) × (0.9) × (0.9) × (0.9)   
Probability of Outbreak = 1 - 0.66  
Probability of Outbreak = 0.34 or 34%

*Example 2*: Imagine another round, again with 4 players, where players 1, 2, and 3 contribute 90% and player 4 contributes 10%. The joint probability of an outbreak is:

Probability of Outbreak = 1 - Player 1's Probability × Player 2's Probability × Player 3’s probability × Player 4’s probability

Probability of Outbreak = 1 - (0.9) × (0.9) × (0.9) × (0.1)  
Probability of Outbreak = 1 – 0.07   
Probability of Outbreak = 0.93 or 93%

As can be seen from these examples, the chance of a pest outbreak is determined based upon the amount of protection each group member provides. Even if all players provide a relatively high amount of effort toward protection, there is still a relatively high risk of a pest outbreak (e.g., Example 1). If most players provide a relatively high amount of effort toward protection, but just a single player provides a relatively low amount of effort toward protection, then there is a very high risk of a pest outbreak (e.g., Example 2).

**Each round of the game is divided into two stages: (1) a protection decision stage, and (2) an outcome feedback stage.**

**1. Protection Decision Stage**. In this stage, you will use a slider to indicate how much effort you want to invest in protecting your crops. For a given effort level, indicated by the position of the slider, you will be able to see the cost of protection and the associated probability that you will not be the source of a pest outbreak. Remember, this game is based on joint probability—your individual probability is not an indicator of the group's probability of a pest outbreak, even if other players provide the same amount of protection.

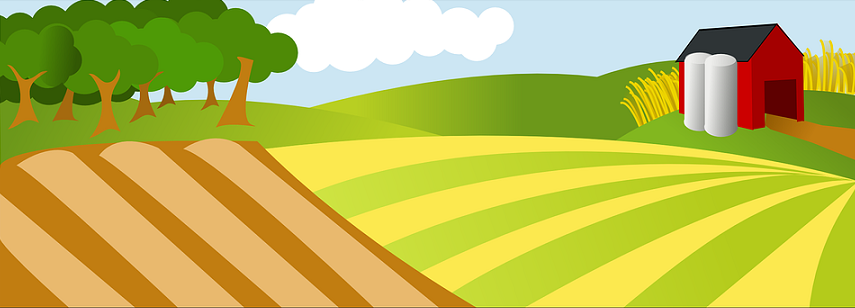
**2. Outcome Feedback Stage**. In this stage you will receive feedback about whether or not there was an outbreak of pests, and your income for the round.

**Your Payout**

At the end of the experiment, you will be paid your show-up fee of $10, in addition to any revenue generated during the biosecurity game, subject to a conversion rate. The conversion rate is your revenue earned × 0.1. For example, if your revenue earned was $300 then you would be paid 300 × 0.1 = $30 in addition to your show-up fee, taking your total earnings to $40.

*Important note:* any losses incurred in the game will be deducted from your show-up fee. For example, if your total account balance at the end of the game was -$60 then you would be paid 10 – (60 × 0.10) = $4. If the losses incurred in the game are equal to or greater than the show-up fee then you will leave the experiment empty handed.

**Screen 4**



**Protection Decision Stage**

**Charon**

Revenue from crop: $25.0   
Cost of production: $5.0

How much effort do you want to invest in protecting your crops?

Please adjust the slider to indicate the amount of money you want to spend on protection:

Cost of Protection:

$0

Probability that you are **not** the source of a pest outbreak:

0%

**Screen 5**

**Outcome Feedback Stage**

**Charon**

Was there a pest outbreak? **Yes**

Revenue from crop: $0

Cost of production: $5.0

Cost of protection: $0

Total cost: $5

**Income this round:** -$5

**Screen 6 (this will change to become Grace’s questionnaire)**

I felt that most people can be trusted:

* Strongly agree



* Somewhat agree



* Neither agree nor disagree



* Somewhat disagree



* Strongly disagree



I trust my doctor:

* Strongly agree



* Somewhat agree



* Neither agree nor disagree



* Somewhat disagree



* Strongly disagree



The police in my local area can be trusted:

* Strongly agree



* Somewhat agree



* Neither agree nor disagree



* Somewhat disagree



* Strongly disagree



It is a good thing for a society to be made up of people from different cultures:

* Strongly agree



* Somewhat agree



* Neither agree nor disagree



* Somewhat disagree



* Strongly disagree



I would lend money to my friends:

* Strongly agree



* Somewhat agree



* Neither agree nor disagree



* Somewhat disagree



* Strongly disagree



I would lend money to close family members:

* Strongly agree



* Somewhat agree



* Neither agree nor disagree



* Somewhat disagree



* Strongly disagree



I would lend personal possessions to my friends:

* Strongly agree



* Somewhat agree



* Neither agree nor disagree



* Somewhat disagree



* Strongly disagree



I would lend personal possessions to close family members:

* Strongly agree



* Somewhat agree



* Neither agree nor disagree



* Somewhat disagree



* Strongly disagree



To what extent would you agree to take a financial risk (or gamble) of $50?

* Very Likely



* Somewhat Likely



* Neutral



* Somewhat Unlikely



* Very Unlikely



To what extent would you agree to take a financial risk (or gamble) of $100?

* Very Likely



* Somewhat Likely



* Neutral



* Somewhat Unlikely



* Very Unlikely



To what extent would you agree to take a financial risk (or gamble) of more than $100?

* Very Likely



* Somewhat Likely



* Neutral



* Somewhat Unlikely



* Very Unlikely



What is your gender?

* Male



* Female



* Other



What is your age?

What is your residential suburb and postcode?



What is your annual income? :

* 0 – $18,200



* $18,201 – $37,000



* $37,001 – $80,000



* $80,001 - $180,000



* $180,001 and over



**Screen 7**

Results for **Thermisto**

## **Lottery Summary**

The play panel was 1.   
The game was 14.   
The ball number was 4.   
  
Your total pay-off for the Virtual Lottery Game is therefore 1700.00

## **Biosecurity Summary**

Your total pay-off for the Biosecurity Game is -59.93