Experiment Instructions Appendix – For Online Publication Only

Note to reader: These were the written instructions used in the control treatment, for a session in which the predictor subjects first ranked outcomes for 9 games with "choices" determined by bingo cage draws, followed by 3 games played by 24 human players.

The instructions for the earlier game play and bingo cage drawing sessions are included, since the predictor subjects read the earlier instructions in their session.

Not shown are computerized worked examples that all subjects were required to answer correctly before they made any decisions.

INSTRUCTIONS

Now that the session has begun, we ask that you do not talk with each other for the duration of the experiment. Please also silence and put away your cell phones. If you have a question after we finish reading the instructions, please raise your hand and the experimenter will approach you and answer your question in private.

Please note that our approval by the campus Human Subjects Protection Committee requires that nothing in this experiment be deceptive. These instructions are completely truthful and accurate, as required by university regulations for the conduct of economics experiments.

On March 10, 2017, two researchers in this experimental laboratory used two bingo cages to make a sequence of random draws for a series of simple games. These draws were witnessed by two students who were recruited like you from a database of Purdue students interested in participating in economics experiments. For witnessing these draws, they received earnings that depended on the outcomes of these draws. This will be described in more detail below. Some photos from that procedure are shown below. Today you will be asked to guess the outcomes of these random draws. You will be rewarded in cash for the accuracy of your guesses.

It is important that you understand the process of these random draws. This is best illustrated by reading through the instructions provided to the students who witnessed the drawings in the March 10, 2017 session. Please pay careful attention to these instructions.

Two bingo cages operated by two researchers to draw balls.

Two witnesses watched ball draws and recording.

Experiment Instructions Appendix-2

Now that the session has begun, we ask that you do not talk with each other for the duration of the experiment. Please also silence and put away your cell phones. If you have a question after we finish reading the instructions, please raise your hand and the experimenter will approach you and answer your question in private.

You will receive $5 for participating in this experiment. You will also earn an additional payment, based on outcomes of random draws as explained below. All earnings in this experiment are in Experimental Currency Units (ECUs). At the end of the experiment, these will be translated into US dollars at an exchange rate: $1 = 4 ECUs. Your earnings will be paid to you in cash individually and privately.

Games

In this experiment you will witness 9 different games. An example of a game is shown on the picture below.

A "game" is described by a two-by-two matrix, as shown above. One of you represents the ROW player (in blue color) and other the COLUMN player (in the green color). The ROW player choices are made by the ROW cage -- in the game above either Up or Down. The COLUMN player choices are made by the COLUMN cage -- in the game above either Left or Right. The number of ECU earned by each player is displayed in the cell where the drawn row and the chosen column intersect.

For each game, both bingo cages contain 12 balls of different colors. For the ROW cage, yellow ball draws correspond to an UP choice and blue ball draws a DOWN choice. For the COLUMN cage, green ball draws correspond to an LEFT choice and red ball draws a RIGHT choice. We will simply refer to these as UP, DOWN, LEFT and RIGHT balls.

The games have different numbers of UP, DOWN, LEFT and RIGHT balls placed in the cages. A ball will be drawn out of each bingo cage 12 times, paired with the ball drawn out of the other cage and recorded, and then replaced back into the cages. For example, if a DOWN ball is drawn from the ROW cage and a RIGHT ball is drawn from the COLUMN cage, a DOWN-RIGHT outcome will be recorded and then the balls will be returned back to their respective cages. In this process, 12 different ROW-COLUMN combinations will be randomly determined.

Finally, for each game, one of the 12 drawn ROW-COLUMN combinations will be randomly selected to determine that game's earning for the ROW and the COLUMN player. In the example above, if DOWN-

RIGHT outcome is selected for payment, the ROW player receives d ECU (in the lower blue triangle of the Down-Right cell) and the COLUMN player receives z ECU (in the upper green triangle of the Down-Right cell).

Note for today's session: This will now be demonstrated for a small sample of draws from the two bingo cages at the front of the room.

In this experiment you will make no choices of your own. You will observe and witness the draws from both bingo cages. At the end of the experiment you will receive a dollar amount equal to:

($5 fee for showing up) + $(sum of the ECUs earned in 9 games)/4$

Sequence of events

1. We will answer any questions you may have regarding the experimental procedures.
2. All games are evaluated and outcomes are determined directly in front of you.
3. You will receive your experimental earnings in cash

Please make sure you have understood everything in these instructions. If you have any questions please raise your hand.

INSTRUCTIONS – Today's session

In the March 10, 2017 bingo cage drawings, for each of the 9 games, 12 pairs of bingo balls were drawn producing 12 outcomes of play – pairs of actions. For each game you will rank 4 outcomes according to how likely you think they were drawn. That is, you will guess which outcome was the most likely, the second most likely, the third most likely and the fourth most likely drawn for one randomly chosen pair of balls in the March 10, 2017 drawings. Next you will read instructions explaining how to rank outcomes. Please pay careful attention to these instructions.

Ranking of Outcomes

Next we outline the steps you will take when ranking outcomes.

Step 1: First you will decide the likelihood of the four outcomes. Then click the button "Ready to rank".

Step 2: In the text fields inside the outcome boxes enter numbers from 1-4 representing the individual ranks: enter 1 for the most likely, 2 for the second most likely, 3 for the third most likely and 4 for the fourth most likely outcome.

Note (i): You must enter numbers in order from 1 to 4. Assign rank 1 first, rank 2 second, rank 3 third and rank 4 last.

Note (ii): If you make an error and want to change your ranking the software will not let you delete an individual entry. To make a correction, click the button "Reset ranking." This will clear all fields and you will be able to enter all four ranks again.

Note (iii): If you think that two or more outcomes are equally likely you can assign the same rank to multiple outcomes.

Experiment Instructions Appendix-5

After you have assigned the ranks click the "Submit" button.

Step 4: On the next screen (see picture below) you see a blank text field(s) inside the outcome(s) that you ranked as the most likely. In these field(s) enter your best guess of how many pairs of action-pairs, between 1-12, were this outcome.

> Note: If you have ranked multiple outcomes as 1st most likely then there will be multiple text fields. In this case you can enter the number of pairs in any one of them, indicating the number of pairs you believe played one of the 1st most likely outcomes. After you choose one and enter the number, the other fields will automatically disappear.

Earnings

You will receive $5 for participating in this experiment. You will also be rewarded for accuracy of your rankings. All earnings in this experiment are in Experimental Currency Units (ECUs). At the end of the experiment, these will be translated into US dollars at an exchange rate: $1 = 4 ECUs. Your earnings will be paid to you in cash individually and privately.

At the end of the experiment we will randomly select 1 pair of action-pairs for each of the games. In each game, the actual outcome of play of the selected pair along with your ranking of the same outcome will determine your earning in the following way:

> If you ranked the actual outcome as the 1st most likely, then you get 9 ECU.
> If you ranked the actual outcome as the 2nd most likely, then you get 6 ECU.
> If you ranked the actual outcome as the 3rd most likely, then you get 3 ECU.
> If you ranked the actual outcome as the 4th most likely, then you get 0 ECU.

If you assign the same rank to several outcomes, then the computer randomly determines your earning from the possible payoffs for the ranks you assigned equal likelihood (see example 2 below).

Bonus: you can earn an additional payment 5 ECU if you rank the actual drawn outcome as the 1st most likely and you correctly guess the number of pairs that played that outcome.

Example 1: Suppose your stated ranking is 1,2,3,4 (see picture below, left panel); and your guess about the number of pairs at the most likely outcome is 6 (see picture below, right panel).

Experiment Instructions Appendix-6

-   If the actual outcome for the randomly-drawn pair was Up-Left, then you would earn 9 ECU because you ranked Up-Left as 1st most likely. In addition, if the number of pairs at Up-Left outcomes was exactly 6 you would earn an extra 5 ECU. Notice, you get this bonus opportunity only because you ranked the actual outcome as the 1st most likely.
-   If the actual outcome was Down-Right, then you would earn 0 because you ranked Down-Right as the 4th most likely.
-   If the actual outcome was Up-Right, then you would earn 6 because you ranked Up-Right as the 2nd most likely.
-   If the actual outcome was Down-Left, then you would earn 3 because you ranked Down-Left as the 3rd most likely.

Example 2: Suppose your stated ranking is 2,2,1,1 (see picture below, left panel); and your guess about the number of pairs at the most likely outcome is 4 (see picture below, right panel).

Ranking outcomes screen

		Column bingo cage	
		Left p bls.	Right r bls.
Row bingo cage	Up m bls.	2 x / a	2 y / b
	Down n bls.	1 w / c	1 z / d

Number of pairs at 1st most likely outcome

		Column bingo cage	
		Left p bls.	Right r bls.
Row bingo cage	Up m bls.	x / a	y / b
	Down n bls.	4 w / c	z / d

Because you have assigned two ranks 1 and two ranks 2, the rank 1 now indicates the 1st or the 2nd most likely outcome. Similarly, the rank 2 rank now indicates the 3rd or 4th most likely outcome.

-   If the actual outcome was Up-Left, then you would earn either 3 or 0 (determined randomly), because you ranked Up-Left as the 3rd or 4th most likely.
-   If the actual outcome was Down-Left, then you would earn either 9 or 6 (determined randomly), because you ranked Down-Left as the 1st or 2nd most likely. In addition, if the number of pairs at Down-Left was exactly 4 you would earn an extra 5 ECU.
-   If the actual outcome was Up-Right, then you would earn either 3 or 0 (determined randomly), because you ranked Up-Right as the 3rd or 4th most likely.
-   If the actual outcome was Down-Right, then you would earn either 9 or 6 (determined randomly), because you ranked Down-Right as the 1st or 2nd most likely. In addition, if the number of pairs at Down-Right was exactly 4 you would earn an extra 5 ECU.

Note that it does not matter where you indicate the number of pairs choosing the most likely outcome (4 in this example) when you indicate that multiple outcomes are "tied" as equally most likely. You receive the extra 5 ECU whenever the actual outcome randomly drawn at the end of the experiment is one of those you indicated as 1st most likely, *and* you correctly guess how many of the 12 pairs chose this drawn outcome.

How are the outcomes determined?

At the end of the experiment, an outcome for each of the games will be determined by an additional random draw of a sequence number between 1-12 from a 12-sided dice roll today in the front of the room. One number from the sequence of 12 action-pairs will be determined for each game. You will be able to watch the dice rolls being performed in front of you. These actual outcomes will then determine your payments as described above.

How is my total earning calculated?

You will receive a dollar amount equal to:

($5 fee for showing up) + $(sum of the ECUs earned in all games)/4

PRACTICE GAMES – Today's session

Please enter this information into the computer interface.

TASK 1: Suppose you think that Up-Left is the 1st most likely, Down-Left the 2nd most likely, Down-Right the 3rd most likely and Up-Right the least likely outcome. Also suppose that you think Up-Left was the outcome of 8 pairs of drawings.

TASK 2: Suppose you think that Down-Left is the 1st most likely and Up-Right the 2nd most likely outcome. Furthermore suppose you think that Up-Left and Down-Right are equally likely as the 3rd or the 4th most likely outcomes. When asked for number of pairs at Down-Left enter 11.

TASK 3: Now suppose that you think outcomes Up-Right and Down-Right are equally likely and outcomes Up-Left and Down-Left are also equally likely. However, you think that the first two are more likely than the other two. When asked for the number of pairs, enter 6 in any of the two fields.

Experiment Instructions Appendix-8

SEQUENCE OF EVENTS

1. We will answer any questions you may have regarding the experimental procedures.

2. Following the practice part is the experiment. You will rank outcomes of 9 games that will all be evaluated for payment.

3. You will rank 3 additional games. Separate instructions for this part will be provided.

4. You fill out a short questionnaire.

5. Outcomes for all games are evaluated.

6. You will receive your experimental earnings in cash, privately at your seat.

Please make sure you have understood everything in these instructions. If you have any questions please raise your hand.

INSTRUCTIONS (Part 2)

In April 2014, 24 participants at this experimental laboratory interacted by making decisions in a series of simple games. These participants were recruited from the Purdue undergraduate student population just like you were. Some photos from that session are shown below. Today you will be asked to guess the outcomes of their decisions. You will be rewarded in cash for the accuracy of your guesses. It is important that you understand the games and choices faced by the participants in the earlier experimental session. Therefore, as a first step, you will be exposed to the same experimental instructions and practice rounds as experienced by the participants in the April 2014 session. Please pay careful attention to these instructions.

Experimenter displaying choices to participants at the session conclusion so they could verify the correct recording of all choices.

Experiment Instructions Appendix-10

INSTRUCTIONS – Experimental Session, April 2014

Now that the session has begun, we ask that you do not talk with each other for the duration of the experiment. Please also silence and put away your cell phones. If you have a question after we finish reading the instructions, please raise your hand and the experimenter will approach you and answer your question in private.

You will receive $5 for participating in this experiment. You will also earn an additional payment, based on choices made by you and other participants. All earnings in this experiment are in Experimental Currency Units (ECUs). At the end of the experiment, these will be translated into US dollars at an exchange rate: $1 = 4 ECUs. Your earnings will be paid to you in cash individually and privately.

Games

In this experiment you will play 12 different games. An example of a game is shown on the picture below.

Each game is played by the ROW player (in blue color) and the COLUMN player (in the green color). The ROW player chooses the row-- in the game above either Up or Down. The COLUMN player chooses the column-- in the game above either Left or Right. The number of ECU earned by each player is displayed in the cell where the chosen row and the chosen column intersect.

For example: if the ROW player chooses Up and the COLUMN player chooses Right, then the ROW player receives b ECU (in the lower blue triangle of the Up-Right cell) and the COLUMN player receives y ECU (in the upper green triangle of the Up-Right cell).

At the beginning of the experiment you will be randomly assigned a role of either the ROW or the COLUMN player. You will remain in this role for the duration of the experiment (for all 12 games). Your role will be displayed in the center portion of the computer screen.

In the actual experiment there will be 12 games.

In each game of the practice part you are matched with the computer. In the actual experiment "Cmp" will be replaced with the player number of your matched opponent in that game.

Record sheet

Game:	G 1	G 2	G 3	G 4
Match. with pl. #:	Cmp	Cmp	Cmp	Cmp
Your Action:				

Your player number is #1

Your role is the ROW player

In this example the participant's player number is 1.

Practice game 1/4

Please choose action (one of the buttons below) that corresponds to the information in the Task 1 of the Control Questions sheet.

In this example this participant's role is the ROW player; he/she chooses rows by clicking on the appropriate buttons

In the actual experiment the letters in the cells will replaced by numbers representing number of ECUs that could be earned by the players.

In each game you will be matched with a different participant in this room. All participants are assigned player numbers. Your player number is displayed in the center portion of the computer screen just above your role. The player numbers of the 12 participants that you will interact with in the 12 games are displayed at the top of the computer screen in the "Record sheet." Your decisions will be identified with your player number. Please do not reveal this number to anyone during or after the experiment. The experimenter will never refer to you by your player number. This ensures that your identity in this experiment is kept strictly anonymous.

At the end of the experiment, outcomes of all games will be evaluated and displayed on the projector screen in the front of the room. For each game, everyone in the room will be able to see: the ROW player numbers and actions and the COLUMN player numbers and actions. Participants will be able to verify that the information on their Record sheets regarding their actions as well as the player numbers of their opponents corresponds to the outcome information displayed on the projector screen.

You will receive a dollar amount equal to:

($5 fee for showing up) + $(sum of the ECUs earned in 12 games)/4

Experiment Instructions Appendix-12

4. We will answer any questions you may have regarding the experimental procedures.

5. You will participate in the practice part of the experiment. In this part you will complete 4 tasks that are described in the "Practice Games" sheet attached at the end of these instructions. Please follow the directions for each task and click the appropriate button on your computer screen. The experiment will not proceed until everyone has successfully completed the four practice tasks.

6. Following the practice part is the experiment. You will make choices in 12 different games that will all be evaluated for payment.

7. You fill out a short questionnaire.

8. All games are evaluated and outcomes are presented to participants on the projector screen.

9. You will receive your experimental earnings in cash, privately at your seat.

Please make sure you have understood everything in these instructions. If you have any questions please raise your hand.

PRACTICE GAMES – Experimental Session, April 2014

TASK 1: Suppose you are the ROW player. Your matched COLUMN player chooses Right. Please click on the action that will earn you amount d ECU.

TASK 2: Suppose you are the COLUMN player. Please click on the action that will make it impossible for you to earn w ECU.

TASK 3: Suppose you are the COLUMN player. Your matched ROW player earned a ECU. Click on the action that must have been chosen by you.

TASK 4: Suppose that after players made their decisions the ROW player earned c ECU and the COLUMN player earned z ECU. Please click on the action that must have been chosen by the ROW player.

INSTRUCTIONS – Today's session

In the April 2014 experimental session, each of the 12 games was played by 12 pairs of players producing 12 outcomes of play – pairs of actions.

In today's session you will encounter 3 of the 12 games that the participants played in the April 2014 session. For each game you will rank 4 outcomes according to how likely you think they were played by the April 2014 session's participants. That is, you will guess which outcome was the most likely, the second most likely, the third most likely and the fourth most likely played by one randomly chosen pair of participants in the April 2014 session. The procedure of ranking of the outcomes in these games is identical to what you have experienced in the previous part of the experiment.