Appendices

A. Experiment 1

A.1 Additional methods

Procedure of cognitive tests

Cognitive Reflection Test: Participants answered the three questions of the CRT without any time limit. The number of correct responses in the test represents the *CRT score*.

Raven Advanced Progressive Matrices Test (APM): Participants performed a 20-minute timed version of the test. We utilized a 20-minutes timed version of the APM test since previous studies have shown that it is an adequate predictor of the untimed APM score (Hamel & Schmittmann, 2006). Participants were incentivized by receiving 20 cents for each correct response (maximum 7.20 euros). We refer to *Raven score* as the number of correct responses in the test.

Forward digit span: Participants were asked to repeat orally a series of digits in the order they were presented. Number of digits increased until participants made two mistakes. The length of last series recalled correctly by a participant reflected her *forward digit span*.

Backward digit span: We asked participants to repeat in reverse order a series of digits. Similarly to the forward digit span, digit sequences increased in length until participants made two mistakes, and the number of digits of the last series recalled correctly by a participant reflected her *forward digit span*.

N-back task: Participants observed series of single letters appearing at the center of the screen for 1000 ms, followed by a blank screen (1000 ms) anticipating the appearance of the next letter. The task consisted of two blocks of 100 trials each. In the first block, participants had to decide if the letter in the current trial matched the one observed two trials before (2-back). In the second block, they had to decide whether the current letter matched the one observed three trials before (3-back). Participants implemented their decision by pressing a button for "match" or pressing nothing for "non-match". Participants were paid according to the proportion of correct responses (min 1 euro, max 6 euros). We refer to *n-back score* as the proportion of corrected responses in the task.

2x2 matrix games

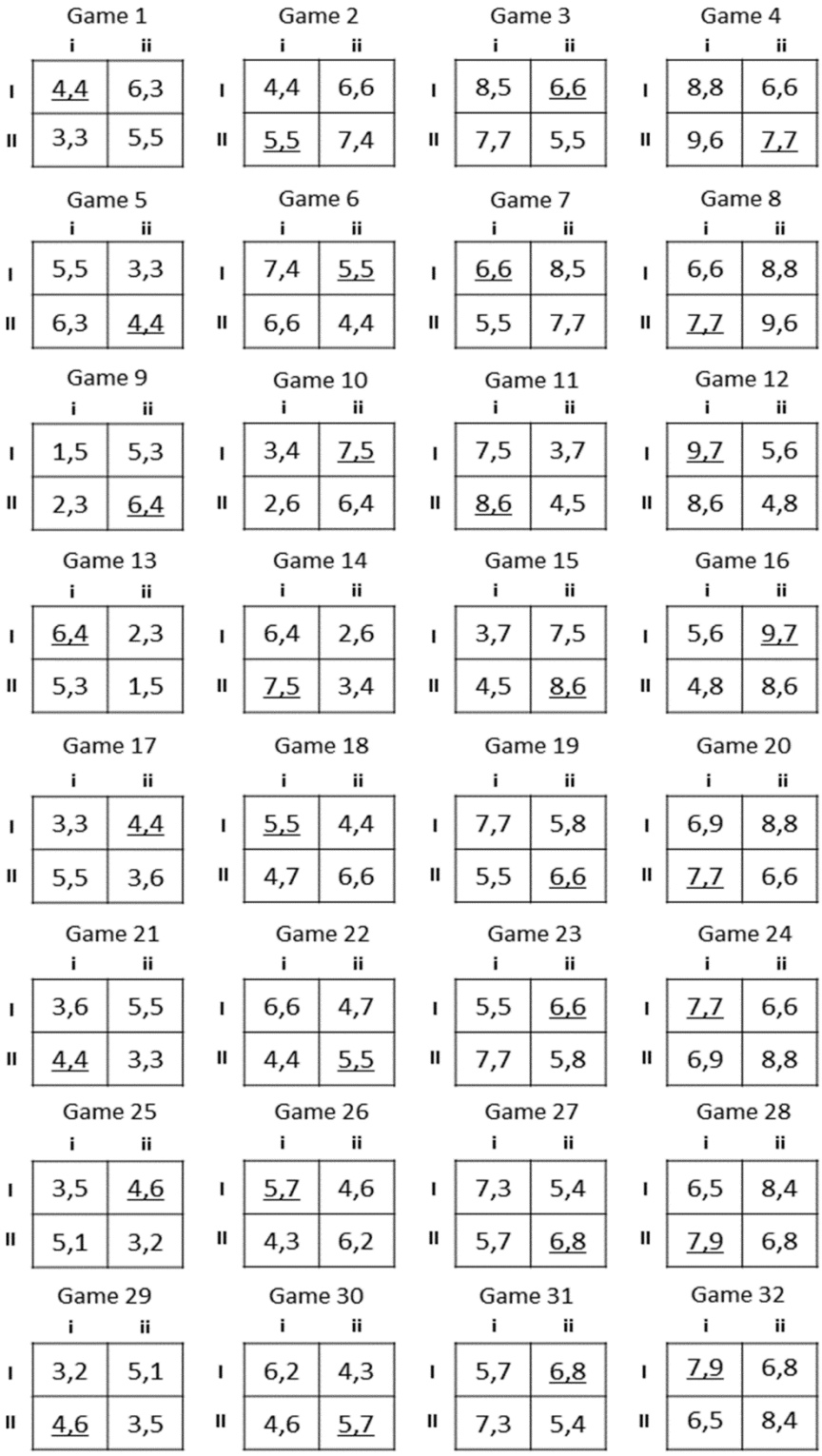


Figure A1. Full list of 2x2 games. The line in one of the cells of each matrix signals the equilibrium solution of the game.

A.2 Additional analyses

Temporal analysis of fixations

In each trial, fixation distribution was normalized across trial time by assigning fixations to five homogeneous intervals based on total number of fixations. In this way, each trial was characterized by five temporal intervals containing equivalent numbers of fixations. We then classified fixations in *own* or *other* fixations depending on the fixation location. Trial-by-trial proportions of own and other fixations were then averaged for each participant to obtain an individual curve expressing the typical temporal evolution of attention along the time course of game playing. As shown in Figure 5 (main text), high CRT players seem to express the typical temporal pattern of information acquisition of strategic players described in a previous work (Polonio et al. 2015): strategic players indeed start attending their own payoffs, then move to evaluate the counterpart's incentives and eventually return to focus on their own incentives to best response to the prediction about the counterpart's move.

In order to test whether this "strategic" attentional pattern was related to the CRT level, we considered the first, the middle and the last temporal window defined in our temporal analysis, since they can efficiently capture the typical evolution of attention of strategic players (Polonio et al. 2015). We ran a mixed-effects linear regression with subject as random effect, the proportion of fixations as dependent variable and temporal window (first, middle, last), fixation location (own or other), the CRT score and interactions as dependent variables. In particular, we were interested in exploring the presence of an interaction effect between the attentional switch towards other payoffs and CRT score across the three different temporal intervals. Results are reported in the Results section in the main text of Experiment 1 ("CRT and gaze patterns" paragraph).

A.2 Additional results

Cognitive measure	CRT	APM	Forward digit span	Backward digit span	N-back
CRT	1.00				
APM	0.37	1.00			
Forward digit-span	0.38	0.27	1.00		
Backward digit-span	0.40	0.16	0.44	1.00	
N-back	0.15	0.27	0.18	0.12	1.00

Table A1. Correlation table of our five cognitive measures.

Proportion of transitions	DSS	DSO	ALL
Own-payoffs within-action	0.12 (0.07)	0.12 (0.07)	0.12 (0.07)
Own-payoffs between	0.07 (0.05)	0.08 (0.05)	0.07 (0.05)
Other-payoffs within-action	0.09 (0.05)	0.08 (0.05)	0.09 (0.05)
Other-payoffs between-action	0.07 (0.03)	0.07 (0.03)	0.07 (0.03)
Intra-cell	0.16 (0.09)	0.17 (0.09)	0.17 (0.09)

Table A2. Average proportion of the five types of relevant transitions by type of game (between-subject standard deviations in brackets).

Equilibrium response	B	SE	Z	p	95 % CI	
Own-payoffs within-action # game-type	- 0.04	0.17	- 0.24	.807	- 0.38	0.30
Own-payoffs between-action # game-type	0.05	0.17	0.29	.769	- 0.29	0.39
Other-payoffs within-action # game-type	- 0.13	0.17	-0.77	.443	- 0.47	0.21
Other-payoffs between-action # game-type	0.11	0.17	- 0.24	.807	- 0.38	0.30
Intra-cell # game-type	- 0.04	0.17	0.56	.572	- 0.24	0.44
N. obs.	670					
N. independent obs.	48					

Table A3. Mixed-effects linear model with subject as random effect, proportion of transition as dependent variable, and the five types of relevant transitions, the game type and all interactions as independent variables. We report only interaction of interests determined by linear combination of coefficients.

Proportion of equilibrium responses	B	SE	t	p	95 % CI	
Prop. other-payoffs within-action transitions	0.09	0.03	2.91	.006	0.03	0.16
CRT score	0.03	0.03	0.95	.348	-0.03	0.09
N. obs.	48					

Table A4. Linear regression of proportion of equilibrium responses in DSO games with other-payoffs within-action transitions and CRT score as independent variables. Introducing other-payoffs within-action transitions as independent variable, the effect of CRT = 3 (observed in Table 1) is no longer significant, indicating full mediation of other-payoffs within-action transitions on the relationship between CRT score and proportion of equilibrium responses.

B. Experiment 2

B.1 Additional methods

Game 1	i	ii	iii
I	78,73	69,23	12,14
II	67,52	59,61	78,53
III	16,76	65,87	94,79

Game 2	i	ii	iii
I	21,67	59,57	85,63
II	71,76	50,65	74,14
III	12,10	51,76	77,92

Game 3	i	ii	iii
I	74,38	78,71	46,43
II	96,12	10,89	57,25
III	15,51	83,18	69,62

Game 4	i	ii	iii
I	73,80	20,85	91,12
II	45,48	64,71	27,59
III	40,76	53,17	14,98

Game 5	i	ii	iii
I	78,49	60,68	27,35
II	10,82	49,10	98,38
III	69,64	42,39	85,56

Game 6	i	ii	iii
I	39,99	36,28	57,86
II	83,11	50,79	65,70
III	11,50	69,61	40,43

Game 7	i	ii	iii
I	84, 82	33, 95	12, 73
II	21, 28	39, 37	68, 64
III	70, 39	31, 48	59, 81

Game 8	i	ii	iii
I	47, 30	94, 32	36, 38
II	38, 69	81, 83	27, 20
III	80, 58	72, 11	63, 67

Game 9	i	ii	iii
I	57, 58	46, 34	74, 70
II	89, 32	31, 83	12, 41
III	41, 94	16, 37	53, 23

Game 10	i	ii	iii
I	60, 59	34, 91	96, 43
II	36, 48	85, 33	39, 18
III	72, 76	43, 14	25, 55

Game 11	i	ii	iii
I	43, 91	38, 81	92, 64
II	39, 27	79, 68	68, 19
III	69, 10	66, 21	74, 54

Game 12	i	ii	iii
I	25,27	90, 43	38, 60
II	49, 39	53, 73	78, 52
III	64, 85	20, 46	19,78

Game 13	i	ii	iii
I	83, 40	23, 68	70, 81
II	93, 45	12, 71	29, 41
III	66, 94	56, 76	21, 70

Game 14	i	ii	iii
I	82, 61	36, 46	24, 22
II	43, 17	70, 50	40, 87
III	75, 16	49, 75	57, 35

Figure B1. List of 3x3 games. The underlined payoffs indicate the pure-strategy Nash equilibria. Games 1, 3, 5, 7 are solvable with 2 steps of iterated dominance (row player). Games 2, 4, 6, 8, 9 are solvable with 3 steps of iterated dominance. Game 10 can be solved with 4 steps of iterated dominance. Games 11, 12, 13, 14 have a unique Nash solution without dominant strategies. The line in one of the cells of each matrix signals the equilibrium solution of the game.

B.2 Additional results

Proportion of equilibrium responses	B	SE	t	p	95 % CI	
CRT score	0.16	0.15	1.07	.290	-0.14	0.45
N. obs.	48					

Table B1. Linear regression of proportion of equilibrium responses, with CRT score as continuous independent variable.

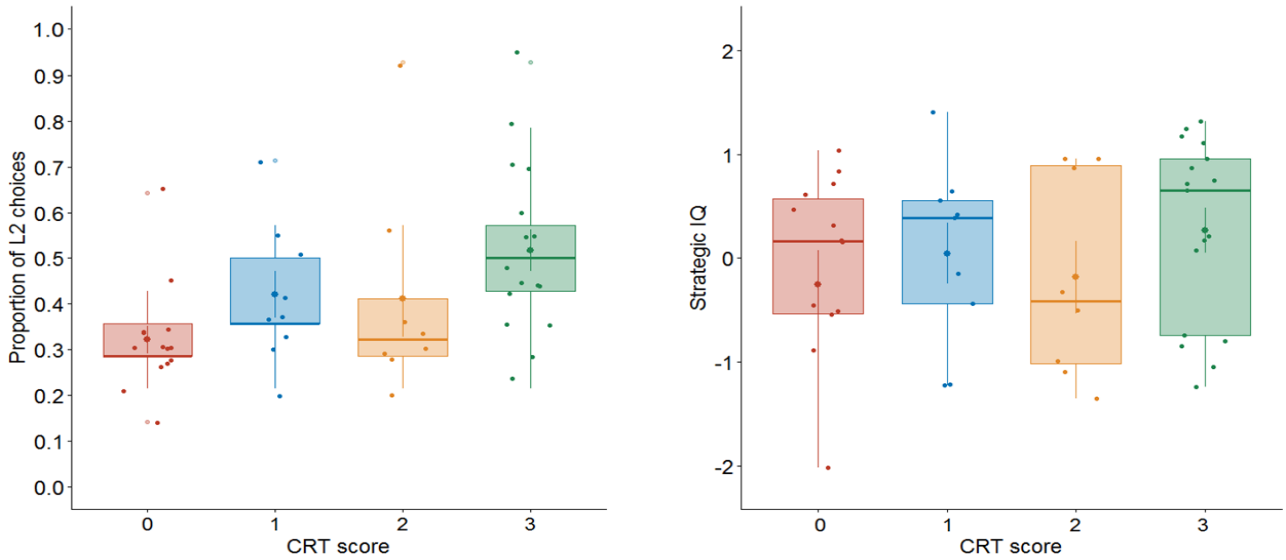


Figure B2. Boxplots of proportion of L2 choices (left panel) and Strategic IQ (right panel) by CRT score.

Proportion of transitions	2 steps	3/4 steps	No dominance	All
Own-payoffs within-action	0.16 (0.12)	0.17 (0.13)	0.16 (0.12)	0.16 (0.12)
Own-payoffs between	0.06 (0.03)	0.06 (0.04)	0.06 (0.04)	0.06 (0.03)
Other-payoffs within-action	0.07 (0.07)	0.07 (0.07)	0.08 (0.08)	0.07 (0.07)
Other-payoffs between-action	0.05 (0.03)	0.05 (0.03)	0.05 (0.03)	0.05 (0.03)
Intra-cell	0.12 (0.10)	0.11 (0.10)	0.11 (0.09)	0.11 (0.10)

Table B2. Average proportion of the five types of relevant transitions by type of game (between-subject standard deviation in brackets).

Equilibrium response	B	SE	Z	p	95 % CI	
Own-payoffs within-action	- 0.19	0.16	- 1.17	.241	- 0.50	0.13
Own-payoffs between-action	0.09	0.09	1.01	.310	- 0.09	0.28
Other-payoffs within-action	- 0.03	0.12	-0.25	.799	- 0.26	0.20
Other-payoffs between-action	0.11	0.09	- 1.13	.260	- 0.08	0.29
Intra-cell	- 0.04	0.14	-0.26	.797	- 0.32	0.24
N. obs.	670					
N. independent obs.	48					

Table B3. Mixed-effects logistic model with subject as random effect, equilibrium response as dependent variable and the five types of relevant transitions as independent variables.

L2 response	B	SE	Z	p	95 % CI	
Own-payoffs within-action	- 0.10	0.16	- 0.66	.510	- 0.43	0.21
Own-payoffs between-action	0.22	0.09	2.35	.019	0.04	0.41
Other-payoffs within-action	0.67	0.13	5.08	< .001	0.41	0.93
Other-payoffs between-action	- 0.06	0.10	- 0.65	.514	- 0.26	0.13
Intra-cell	0.07	0.15	0.46	.642	- 0.22	0.35
N. obs.	670					
N. independent obs.	48					

Table B4. Mixed-effects logistic model (subject as random effect). L2 response is the dependent variable, and the five types of relevant transitions are the independent variables.

Proportion of transitions	B	SE	t	p	95 % CI	
Own within-action						
CRT score	-0.23	0.14	-1.58	.121	-0.39	0.20
Own between-action						
CRT score	-0.03	0.15	-0.19	.850	-0.27	0.33
Other within-action						
CRT score	0.37	0.14	2.73	.009	0.19	0.72
Other between-action						
CRT score	0.27	0.14	1.94	.059	-0.23	0.36
Intra-cell						
CRT score	-0.12	0.15	-0.84	.405	-0.35	0.25
N. obs.	48					

Table B5. Multivariate regression, the five types of relevant transition are the dependent variables, and the CRT score is the independent variable. The effect of the CRT score on the proportion of other-payoffs within-action transitions survives Bonferroni correction for multiple comparisons.

Proportion of L2 choices	B	SE	t	p	95 % CI	
Other-payoffs within-action transitions	0.75	0.09	8.05	< .001	0.57	0.94
CRT score	0.13	0.09	1.40	.168	-0.06	0.32
N. obs.	48					

Table B6. Linear regression of proportion of L2 response. The proportion of other-payoffs within-action transitions and the CRT score are the independent variables. Introducing other-payoffs within-action transitions as independent variable, the effect of CRT is no longer significant. This indicates full mediation of the proportion of other-payoffs within-action transitions on the relationship between CRT score and strategic choices.

Effect	Estimated coefficient	95% CI lower bound	95% CI upper bound	p
Average causal mediation effect (ACME)	0.28	0.11	0.50	.003
Average direct effect (ADE)	0.13	-0.04	0.32	.14
Total effect	0.41	0.18	0.65	.001
Proportion mediated	0.68	0.37	1.17	.003

Table B7. Results of Causal Mediation Analysis with proportion of other-payoffs within-action transitions as a mediator, CRT score as independent variable and L2 responses as dependent variable.

C.1 Instructions and questionnaires

The following is a translation of the original instructions and questionnaires (in Italian). The original text is available upon request.

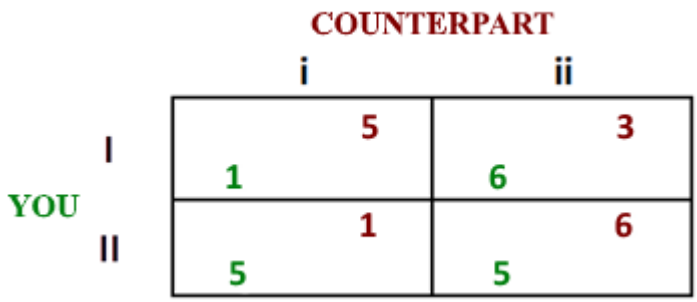
Experiment 1

Instructions Exp. 1

Dear student, you are about to participate in an experiment on interactive decision making. Your privacy is guaranteed; results will be used and published anonymously. Your choices during the experiment will determine your earnings, which you will receive at the end of the data collection, via bank transfer. You can earn between 3 € and 27 €. Your earnings will depend on both your choices and the choices of another participant that will play the same games as you. This participant will receive the same instructions as you, and her/his earnings will depend, as in your case, on the combination between your choices and hers/his.

General structure of the game

This part of the experiment consists of 32 rounds. In each round, you will face an interactive decision-making situation. The structure of each interactive decision problem, which we will call "game" henceforth, will be represented by a matrix like the one shown below. Each number in the matrix indicates an amount in euros. Throughout the experiment, you will always play as the row player and you will have to choose either row I or row II, while the other participant (counterpart) will always play as the column player and it will choose either column i or column ii.



From each combination of choices of the **ROW PLAYER** and **COLUMN PLAYER** (i.e., for each combination of rows and columns), one cell of the matrix will be selected. Each cell contains two numerical

values (one in green and one in red). These values correspond to a score for each player. In each cell, the number at the bottom and in green represents the score for the ROW PLAYER (yours), while the number on top and in red represents the score for the COLUMN PLAYER (the one of the counterpart).

For example, in the matrix below, if YOU choose row I, and your counterpart chooses column i, your respective scores will be located in the cell at the intersection between the selected row and column. In this example, the score is 1 for you and 5 for the other player.

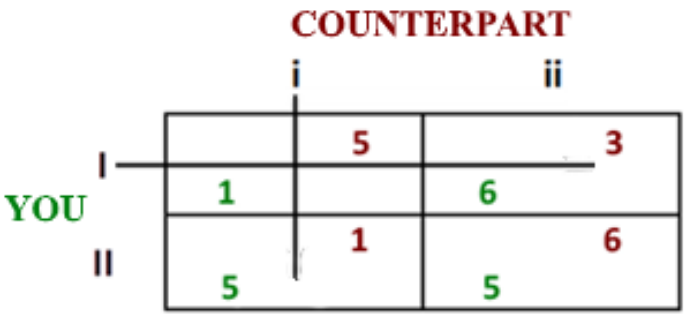
Keep in mind that you cannot directly choose the cell of the matrix, but only one of the rows (the counterpart with whom you will be matched will choose one column). Only the combination of both choices will select one and only one cell, corresponding to your earnings and to those of the counterpart.

The choices that you and the other participant will make, and the corresponding results, will not be communicated to you or her/him after each game.

In each of the 32 rounds, the screen will show the decisional matrix for that round, and you will be asked to make a decision. To select your choice, you will have to press key 1 for row I (the row on the top of the matrix) and key 2 for row II (the row on the bottom of the matrix).

You will face 32 decisional matrices, corresponding to 32 different interactive situations. There is no relation between your choices in the different games, each game is independent from the others. You have not time limit in your response.

Payment



Your earnings will be determined at the end of the entire experiment. We will use the following procedure. Each matrix is identified by a code. Some tags will be placed in a box, each showing the code of one of the matrices. The experimenter will ask you to pick three of these tags from the box. You will be paid according to the sum of the earnings obtained in the matrices correspondent to the extracted codes. Specifically, your earnings will be determined by the combination between your choice and the choice of your counterpart, in the games you have drawn. The earning of all other participants will be determined using the same procedure. Since each of the 32 decisional matrices of the experiment has the same probability of being selected for payment, we ask you to devote the same attention to all of them.

Before the experiment starts, we will ask you to answer a simple questionnaire, in order to test whether instructions have been clearly understood or whether clarifications are needed. If there are incorrect answers, the relevant part of the instructions will be repeated. The experiment will start after the questionnaire phase is completed.

Thank you for your participation!

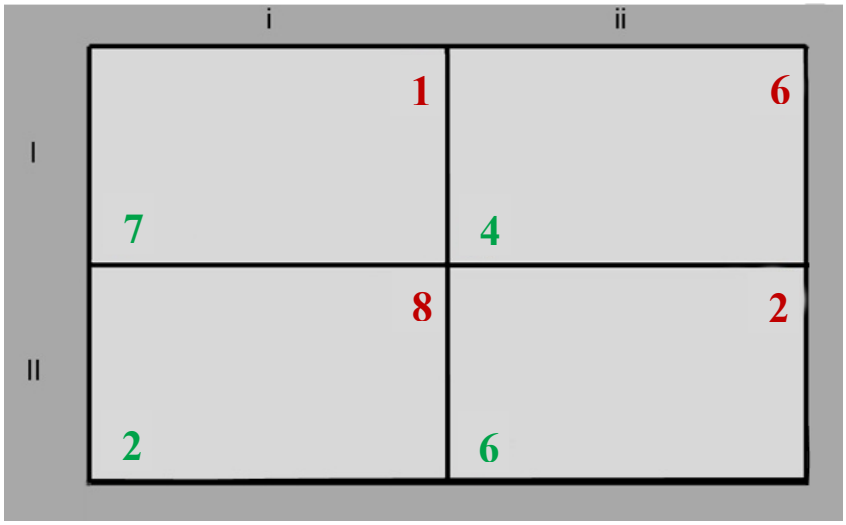
Questionnaire Exp. 1

Dear Participant,

the following questionnaire has the sole purpose of verifying your understanding of the rules of this experiment. We ask you to answer the following questions. If you are uncertain about how to respond, please consult the instructions sheet or the experimenter. Your answers to these questions will not affect your earnings in the experiment.

Thank you for your cooperation!

Considering this game:



Suppose you are assigned the role of ROW PLAYER:

- If the COLUMN PLAYER chooses the first column and you choose the first row, how many EUROs will you earn? ..... And how many will the other player earn? .....
- If you choose the second row, and COLUMN PLAYER chooses the first column, how many EUROs will that person earn? ..... And how many EUROs will you earn? .....

- If the other player chooses the second column, your earnings will be: ……
- If you choose the first row: .....
- If you choose the second row: .....

Suppose you are assigned the role of COLUMN PLAYER:

- If the ROW PLAYER chooses the first row and you choose the second column, how many EUROs will you earn? ..... And how many will the other player earn? .....

- If the other player chooses the second row, your earnings will be: ……
- If you choose the first column: .....

- If you choose the second column: .....

Experiment 2

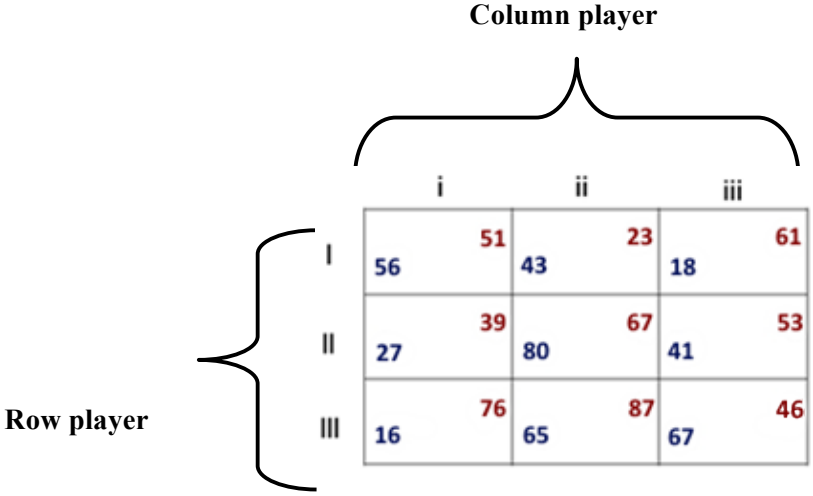
Instructions Exp. 2

Dear student, you are about to participate in an interactive decision making experiment. Your privacy is guaranteed; results will be used and published anonymously. The experiment is divided into two parts. Each part of the experiment will be described in detail below. In total, you can earn between €3.10 and €29.00.

General structure of the game

The task consists of 14 rounds. In each round you will face an interactive decision-making situation. In each round you will have to choose one **of three options**: the word "*interactive*" indicates that the outcome of your decision will be determined by your choice and the choice of another randomly chosen participant.

The structure of each interactive decision problem, henceforth **game**, will be represented by a matrix like the one shown below.



Each number in the matrix indicates an amount in euros (e.g. 56 indicate 5 euros and 60 cents). Throughout the experiment, you and the participant with whom you will be paired will play the roles, respectively, of **ROW PLAYER** and **COLUMN PLAYER**. The available choices of the **ROW PLAYER** (for you) are

represented by the **rows** of the matrix (the row on top "**I**", the row in the middle "**II**" and the row at the bottom "**III**"). The available choices of the **COLUMN PLAYER** are represented by the **columns** of the matrix (the column on the left "**i**", the column on the center "**ii**" and the column on the right "**iii**").

Each possible combination of choices of the row and column player (i.e., each possible combination of rows and columns) identifies one cell in the matrix. Each cell reports two numerical values. These values indicate the earnings (in EUROS) of each participant associated with that combination of choices. Conventionally, the blue number on the bottom-left corner of the cell represents the earnings of the **ROW PLAYER** (your earning), while the red number on the top-right corner represents the earnings of the **COLUMN PLAYER**.

For example: in the table below, if **YOU** choose the second row (II) and the **OTHER PLAYER** chooses the first column (i), then your earnings will be those in the cell at the intersection of the selected row and column. In this example, **YOU** earn 2.70 EUROS and the **OTHER PLAYER** 3.90 EUROS.

	i	ii	iii
I	56 / 51	43 / 23	18 / 61
II	27 / 39	80 / 67	41 / 53
III	16 / 76	65 / 87	67 / 46

Bear in mind that you cannot directly choose the cell of the matrix, but only one of the rows (the other participant with whom you will be matched will choose one column). Only the combination of both choices will select one and only one cell.

The choices that you and the other participant will make, and the corresponding results, will not be communicated to you at the end of each period.

You will face 14 matrices, corresponding to 14 different interactive situations. Each game is independent of all other games and there is no time limit on responses. To help you with your choice, the row-player payoffs (your payoffs) will be located in the bottom-left corner of each cell and will be in blue, while the payoffs of the column player (the counterpart) will be located in the top-right corner of the cell and will be in red.

To select your choice you will have to press key 1 for the row I (the row on the top), key 2 for the row II (the row in the middle) and key 3 for the row III (the row on the bottom).

Payment

Your earnings will be determined at the end of the experiment through the following procedure. Each game is identified by a code. Some tags will be placed in a box, each showing the code of one of the matrices. The experimenter will ask you to pick three of these tags from the box. You will be paid according to the sum of earnings obtained in the game corresponding to the extracted codes. Your earnings will be determined by your choices and the choices of the column player that was randomly associated with you, in the games you have drawn. The earning of all other participants will be determined using the same procedure.

Since each of the 14 matrices has the same positive probability of being selected for payment, we ask you to devote the same attention to all of them.

Before the experiment starts, we will ask you to answer a simple anonymous questionnaire, in order to test whether instructions have been clearly understood or whether clarifications are needed. If there are incorrect answers, instructions will be repeated. The first part of the experiment will start after the questionnaire phase is completed.

Questionnaire Exp. 2

Dear Participant,

the following questionnaire has the sole purpose of verifying your understanding of the rules of the choice task. We ask you to answer the following questions. If you are uncertain about how to respond, please consult the instructions sheet. Your answers to these questions will not affect your earnings in the experiment.

Thank you for your cooperation!

	i	ii	iii
I	2 3	4 2	9 1
II	6 4	5 4	6 7
III	3 2	2 1	8 2

Suppose you are assigned to the role of Row Player:

- If the column player chooses the column ii and you choose the row I, how many euros will you earn? …… and how many will the other player earn? …….
- If you choose the row II and column player chooses the column iii, how many euros will the column player earn? …… and how may euros will you earn? …….
- If the other player chooses the column i, your earning will be:

  if you choose the row **I**: ……..

  if you choose the row **II**: ……..

  if you choose the row **III**: ……..

Suppose you are assigned to the role of Column Player:

- If the row player chooses the row ii and you choose the column I, how many euros will you earn? …… and how many will the other player earn? …….
- If the other player chooses the row i, your earning will be:

  if you choose the column **i**: ……..

  if you choose the column **ii:** ……..

  if you choose the column **iii**: ……..

- Your role (as ROW or COLUMN PLAYER) in the rounds of the experiment will change:

  TRUE or FALSE

- The participant with whom you are paired will be determined randomly in each round, and you will never be matched more than once with the same participant.

  TRUE or FALSE

- After you have taken your decision on a table, you will be able to observe the choice of the participant with whom you were paired.

  TRUE or FALSE