Theory and Decision

Suplemental material for Experimental cheap talk games: strategic complementarity and coordination

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S.1 Game theoretic analysis of the model

In this appendix we present a one-shot model that encompasses our four underlying games as different parameter configurations of a general setup.

S.1.1 The general game description

There are two players, $\{1, 2\}$, with strategies $X_i \in [0, 100]$. As the game structure is completely symmetric, we will make the analysis just for player 1 without loss of generality.

The individual payoff function is:

$$\pi_1 = \begin{cases} 0 & \text{if } X_1 > X_2 \\ \lambda(P + \delta(X_1 - P)) & \text{if } X_1 = X_2 \\ P + \delta(X_1 - P) & \text{if } X_1 < X_2 \end{cases} \tag{1}$$

being $P > 0$, $\lambda \in (0, 1]$ and $\delta \in [0, 1]$ known parameters.

This payoff function can be rewritten as a linear combination between the parameter P and the player 1's choice:

$$\pi_1 = \begin{cases} 0 & \text{if } X_1 > X_2 \\ \lambda[(1-\delta)P + \delta X_1] & \text{if } X_1 = X_2 \\ (1-\delta)P + \delta X_1 & \text{if } X_1 < X_2 \end{cases} \tag{2}$$

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Notice that the payoff function is not decreasing in the other player's strategy; indeed, if $\delta > 0$, this function is strictly increasing in X_2. For $\lambda = 1$, the payoff function is left-continuous and, for $\lambda < 1$ discontinuous at X_2.

In our experimental setup, $P = 50$. The two incentive elements of our design correspond to the other two parameters: δ associated with strategic complementarity and λ associated with coordination. Therefore, we next analyse theoretical properties of the general game according to the last two parameters.

S.1.2 Best-response analysis

Lemma 1. *The best-response function (correspondence) of the general game is:*

$$\mathrm{BR}(X_2) = \begin{cases} [0, X_2) & \text{for } \delta = 0 \text{ and } \lambda < 1 \\ [0, X_2] & \text{for } \delta = 0 \text{ and } \lambda = 1 \\ X_2 - \epsilon & \text{for } \delta > 0 \text{ and } \lambda < 1 \\ X_2 & \text{for } \delta > 0 \text{ and } \lambda = 1 \\ [0, 100] & \text{for } X_2 = 0 \text{ and } \delta = 1 \end{cases} . \tag{3}$$

Proof. For any $\lambda < 1$ the payoff function has a discrete negative jump at X_2. So any best response should be a number below X_2. This happens even if $\delta = 1$. If $\delta > 0$ (and $\lambda < 1$) the payoff is strictly increasing in X_1 if $X_1 < X_2$. Then the best response should be $X_2 - \epsilon$, for $\epsilon \to 0$.

In the limit, if $\lambda = 1$, X_2 is on the best response correspondence to X_2. Then, when $\delta = 0$ and $\lambda = 1$ any choice below or equal to X_2 is a best response. Instead, when $\delta > 0$ and $\lambda = 1$ the payoff is strictly increasing in X_1 whenever $X_1 \leq X_2$, so the best response should be X_2.

Finally, when the other player chooses 0 and $\delta = 1$, any choice is a best response, irrespectively of the value of λ. □

Note that the best response function is no-decreasing in the other player's strategy. If $\delta > 0$, then this function is strictly increasing in X_2.

S.1.3 Rational response to a off-the-equilibrium path

When a (risk-neutral) rational player expects that the other will not behave rationally, a knowledgeable expectation of such behaviour increases the expected payoff of the rational player. This is true for all parametric configurations with $\delta > 0$.

To model such a hypothesis, let us consider $F(X_2)$ as the (continuous) expected distribution function of rival's choices and $f(X_2)$ its corresponding density function. Then, the problem to be solved is:

$$\max_{X^*} \int_{X^*}^{100} f(X_2)(P + \delta(X^* - P))\,\mathrm{d}\,X_2 + \lambda(P + \delta(X^* - P))\,\Pr(X_2 = X^*). \tag{4}$$

When X_2 is a strictly continuous random variable, $\Pr(X_2 = X^*) = 0$ for all X_2; under this assumption, the second term is cancelled. Integrating on X_2 the problem becomes:

$$\max_{X^*}(P+\delta(X^*-P))\Big[F(X_2)\Big]_{X^*}^{100} = \max_{X^*} P(1-\delta)(1-F(X^*))+\delta X^*(1-F(X^*)). \tag{5}$$

The first order condition is:

$$0 = P(1-\delta)(-f(X^*)) + \delta(1-F(X^*)) - \delta X^* f(X^*), \tag{6}$$

so the optimal value is defined implicitly by the equation:

$$X^* = \frac{\delta(1-F(X^*)) - P(1-\delta)f(X^*)}{\delta f(X^*)}. \tag{7}$$

The second order condition is:

$$-f'(X^*)\big(P(1-\delta)+\delta X^*\big) - 2\delta f(X^*) < 0, \tag{8}$$

which always holds for $f'(X^*) > 0$. For decreasing density functions, the optimal value can be a corner solution, i.e. $X^* = 0$.

Notice that (7) can be rewritten as:

$$X^* = \frac{1-F(X^*)}{f(X^*)} - P\frac{1-\delta}{\delta}, \tag{9}$$

so that for $P > 0$ the optimal value is increasing in δ. $\frac{1-\delta}{\delta}$ is the weight of the fixed payoff in the optimal choice; the lower delta the higher this term, which reduces the optimal choice.

When δ takes values at the extreme, the problem simplifies to:

- If $\delta = 0$
$$\max_{X^*} P(1-F(X^*)), \tag{10}$$
that is decreasing in X^* for any non-degenerate distribution function. Then, the optimal choice is any X^* such that $F(X^*) = 0$, i.e. any value lower than the minimum expected choice of the other player.
- If $\delta = 1$
$$\max_{X^*} X^*(1-F(X^*)), \tag{11}$$
then,
$$X^* = \frac{1-F(X^*)}{f(X^*)}. \tag{12}$$
This condition shows that a rational agent has to ponder two issues in her decision: lower numbers increase the probability of winning $(1-F(\cdot))$ but reduce the payoffs associated with that decision (X^*).

S.1.4 Solution concept

From (3) we can obtain the (pure strategies) Nash Equilibria for the general game. Notice that even a small level of rivalry in payoffs ($\lambda < 1$) eliminates the coordination element of the game.[1] Whenever $\lambda < 1$, the equilibrium in the game is unique: $\{0, 0\}$.

Lemma 2. *If $\lambda < 1$ the equilibrium is unique and equals $\{0, 0\}$.*

Proof. Equation (3) shows that for $\lambda < 1$ the best response to X_2 is a lower number. Then, equilibria can only happen at the lower bound of the decision space, regardless of the value of δ. □

Lemma 3. *For $\lambda = 1$ any pair of actions X_1, X_2 such that $X_1 = X_2$ is an equilibrium.*

Proof. Obviously, for $\delta > 0$, as the best response is the same choice as the other player's choice, any pair of equal numbers should be an equilibrium. For $\delta = 0$, $X_1 = X_2$ are elements of the best-response correspondences, then this pair is also a *weak* equilibrium. □

Of course, the payoffs for each player depend on which of these possible equilibria they select. In next section, we will deal with this question.

Remark. For $\lambda = 1$ and $\delta = 0$, the dyad $\{0, 0\}$ is a strict equilibrium. In this case, the strategy of choosing 0 is also weakly dominant.

Remark. For $\lambda < 1$ and $\delta = 1$ the unique equilibrium is weakly dominated as the payoffs are 0. If $\delta < 1$ this equilibrium becomes strict.

Remark. Even if there are multiple equilibria, as defined in lemma 3, there are not equilibria in mixed strategies. The intuition behind this result comes from equation (7). As that optimal value is unique, the response to a mixed strategy is a pure strategy, so there can not be an equilibrium in mixed strategies.

S.1.5 Efficiency and equilibrium selection: payoff dominance and risk dominance

We define the efficiency of the game as the addition of both players' payoffs. Its value depends on the parameters of the game as follows:

$$\Pi = \pi_1 + \pi_2 = P(1-\delta) + X^*\delta + Y^*\lambda(P(1-\delta) + X^*\delta) = (1+Y^*\lambda)(P+\delta(X^*-P)), \tag{13}$$

being $X^* = \min\{X_1, X_2\}$, and $Y^* = 1$ if $X_1 = X_2$, 0 otherwise.

Note that Π is decreasing neither in λ nor in δ.

The payoff dominance definition is the standard one. An equilibrium $\{X_1^*, X_2^*\}$ payoff dominates another one if for each player payoffs are higher in the first one.[2]

[1] In the game definition we assume $\lambda \in [0, 1]$. Values outside this interval accentuate the coordination (anti-coordination if they are negative) nature of the game.

[2] Although this definition is stricter than the usual one which requires that all payoffs are at least equal for all players and higher for one of them, as equilibrium payoffs are equal for all players in this game, both definitions are equivalent.

An equilibrium is payoff dominant if it payoff dominates all the rest of equilibria in the game.

Lemma 4. *There is payoff dominance between multiple equilibria if* $\delta > 0$ *and* $\lambda = 1$*. The payoff dominant equilibrium is* $\{100, 100\}$.

Proof. From Lemma 3 we know that there are multiple equilibria only when $\lambda = 1$. Given that in any equilibrium, $X^* = X_1 = X_2$ and $Y^* = 1$, the payoff of a player is $\pi_i = P(1-\delta) + X^*\delta$ which is strictly increasing in X^* if $\delta > 0$. Consequently the payoff dominant strategy is the upper bound of the strategy space. □

Remark. As the game is symmetric, an equilibrium dominates another one if efficiency is higher in the first one.

The risk dominance criterium proposed by Harsanyi and Selten (1988) for 2 × 2 games is not easily generalisable as the risk dominance relationship can be no-transitive when there are more than two equilibria (Haruvy and Stahl 2004). For our game we will use the Peski (2010)'s cardinal generalised risk dominant criterium.[3]

Definition 1. *Given a profile of actions* $\mathbf{a} = (a_1, a_2)$ *and two associated profiles* η *and* $\bar{\eta}$ *such as that for* $i = 1, 2$ *either* $\eta_i = a_i$ *or* $\bar{\eta}_i = a_i$*. We say that* $\mathbf{a}$ *is cardinal generalised risk dominant* (CGRD) *if for all* $\eta \in \times_2[0, 100]$ *and* $\bar{\eta} \in \times_2[0, 100]$ *and all players* $1, 2$*:*

$$\max_{X_i \neq a_i} \pi_i(X_i, \eta) - \pi_i(a_i, \eta) \leq \pi_i(a_i, \bar{\eta}) - \max_{X_i \neq a_i} \pi_i(X_i, \bar{\eta}) \tag{14}$$

Lemma 5. *There is a cardinal generalised risk dominant equilibrium if* $\lambda = 1$ *and* $\delta \leq \frac{P}{100+P}$*. Under these conditions the* CGRD *equilibrium is* $\{0, 0\}$.

Proof. From lemma 3, $\lambda = 1$ is required for the existence of multiple equilibria and then, for risk dominance.

As the game is symmetric, we need to check definition 1 just for one player: player 1 without loss of generality. For convenience we also rewrite equation (14) as a function L such as:

$$L = \max_{X_1 \neq a_i} \pi_1(X_1, \eta) + \max_{X_1 \neq a_i} \pi_1(X_1, \bar{\eta}) - (\pi_1(a_i, \eta) + \pi_1(a_i, \bar{\eta})) \,. \tag{15}$$

This function should be non-positive for all η and $\bar{\eta}$ associated to a CGRD equilibrium $\mathbf{a}$.

For a candidate CGRD equilibrium we call the action chosen by player 1 $\mathbf{a}_1 = a$. By symmetry, $\mathbf{a}_2 = a$. Since there are only two players, if η and $\bar{\eta}$ are $\mathbf{a}$-associated, then we will have either $\eta_2 = a$ or $\bar{\eta}_2 = a$. Again, without loss of generality, we suppose that $\eta_2 = a$ and $\bar{\eta}_2 = c \neq a$. Then (15) becomes:

$$L = \max_{X_1 \neq a} \pi_1(X_1, a) + \max_{X_1 \neq a} \pi_1(X_1, c) - (\pi_1(a, a) + \pi_1(a, c)) \,. \tag{16}$$

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[3] This author proposes a second criterium, ordinal generalised risk dominance. Its definition is based only on the best-response correspondence and then, is less restrictive. In fact, in our game all equilibria are ordinal generalised risk dominant.

For $\lambda = 1$, π_1 is:

$$\pi_1 = \begin{cases} 0 & \text{if } X_1 > X_2 \\ P(1-\delta) + \delta X_1 & \text{if } X_1 \leq X_2 \end{cases}. \tag{17}$$

Firstly, we show that if $a > 0$, this candidate cannot be a CGRD equilibrium. If $a > 0$, there is some c such as $0 < c < a$. Then,

$$L = P(1-\delta)+\delta(a-\epsilon)+P(1-\delta)+\delta c-\big(P(1-\delta)+\delta a+0\big) = \delta(c-\epsilon)+P(1-\delta), \tag{18}$$

being ϵ a small positive number. The previous expression is positive for some c. So $\mathbf{a}$ cannot be CGRD equilibrium.

Consequently, the only possible remaining CGRD candidate is $\{0, 0\}$. In this case, c must be bigger than a. Hence, L is:

$$L = P(1-\delta)+\delta(0)+P(1-\delta)+\delta c-\big(P(1-\delta)+\delta 0+P(1-\delta)+\delta 0\big) = \delta c-P(1-\delta), \tag{19}$$

that is no-positive if $\delta c \leq P(1-\delta)$. This inequality should hold for all possible values of c in the strategic set, so $\{0, 0\}$ is CGRD equilibrium if $\delta 100 \leq P(1-\delta)$ or:

$$\delta \leq \frac{P}{100 + P}. \tag{20}$$

□

Condition (20) is intuitively sensible, the only equilibrium that can hold out downward deviations is $\{0, 0\}$, however, if bot players deviate simultaneously upwards to a new equilibrium, when $\delta > 0$ the higher choice is the higher winner's payoff will be. Thus, the fixed component of payoffs $(1-\delta)P$ should be high enough (bigger than the payoff of the maximum possible deviation, i.e. 100δ) to let $\{0, 0\}$ to be a CGRD equilibrium.

For $P = 50$, $\{0, 0\}$ is a CGRD if $\delta \leq 1/3$.

S.1.6 Strategic complementarity analysis

In a game, strategic complementarity exists when the payoff of a player is increasing in the other player's choice, i.e. the best-response function is upward-slopping. The standard definition of strategic complementarity[4] is based on the mixed derivative of the payoff function; i.e. players' actions are strategic complements if $\frac{\partial^2 \pi_i}{\partial X_i \partial X_j} > 0$.

Since our payoff function is not continuous, we have to use a discrete definition similar to the one proposed by Eichberger and Kelsey (2002).

Definition 2. *We define the marginal payoff function for player $i = 1, 2$ as:*

$$\Delta_i(X_1, X_2) = \pi_i(X_1 + \epsilon, X_2 + \epsilon) - \pi_i(X_1, X_2). \tag{21}$$

[4] See, for example, Potters and Suetens (2009).

Definition 3. *We say that the payoff function π_i shows strategic complementarity if the marginal payoff function as defined by* (21) *is no negative for all* $X_1, X_2 \in [0, 100)$ *and* $\epsilon > 0$*, and positive for some* X_1, X_2, ϵ.

Definition 4. *The payoff function π_i is (strategically) no complementary if the marginal payoff function as defined by* (21) *is zero for all* $X_1, X_2 \in [0, 100)$ *and* $\epsilon > 0$.

That is, there is strategic complementarity if, when both players increase their choices by the same amount (ϵ), the payoff of at least one player increases and, additionally, the other player's payoff does not decrease. [5]

Lemma 6. *In our model, there is strategic complementarity if $\delta > 0$. There is no complementarity if $\delta = 0$.*

Proof. The general payoff function for player 1 is:

$$\pi_1 = \begin{cases} 0 & \text{if } X_1 > X_2 \\ \lambda[(1-\delta)P + \delta X_1] & \text{if } X_1 = X_2 \\ (1-\delta)P + \delta X_1 & \text{if } X_1 < X_2 \end{cases}. \tag{22}$$

If both players change their actions by $\epsilon > 0$, the role of winner/loser will not change. Then, the marginal payoff function can be expressed by:

$$\Delta_1 = \begin{cases} 0 - 0 = 0 & \text{if } X_1 > X_2 \\ \lambda[(1-\delta)P + \delta(X_1 + \epsilon)] - \lambda[(1-\delta)P + \delta X_1] = \delta\lambda\epsilon & \text{if } X_1 = X_2 \\ (1-\delta)P + \delta(X_1 + \epsilon) - \big((1-\delta)P + \delta X_1\big) = \delta\epsilon & \text{if } X_1 < X_2 \end{cases}. \tag{23}$$

Function (23) is positive for some X_1, X_2 if $\delta > 0$. Otherwise, if $\delta = 0$ its value is zero for all X_1, X_2 and ϵ.[6]

□

In our experiment, we set the following values for our parameters: $\delta = \{0, 1\}$ and $\lambda = \{1/2, 1\}$, which give us four different games (see Figure S.1). From the previous analysis, these games have the properties shown in Table S.1.

Game	Best Response (X_{-i})	Equilibrium	Efficient choices	Payoff Domin.	Risk Domin.	Strategic Compl.
NON-COMPL NON-COORD	$X_i \in [0, X_{-i})$	$\{0, 0\}$	Any X_i, X_{-i}	—	—	No
NON-COMPL COORD	$X_i \in [0, X_{-i}]$	$X_i = X_{-i}$	$X_i = X_{-i}$	—	$\{0, 0\}$	No
COMPL NON-COORD	$X_i = X_{-i} - \epsilon*$	$\{0, 0\}$	$\{100, 100\}$	—	—	Yes
COMPL COORD	$X_i = X_{-i}$	$X_i = X_{-i}$	$\{100, 100\}$	$\{100, 100\}$	No	Yes

Table S.1 Theoretical properties of every experimental game

[5] Strategic substitutability would be associated with a negative value of δ in our game.

[6] Notice that the value of λ does not play any role in the property of strategic complementarity whenever λ is positive, which is true in our model by definition.

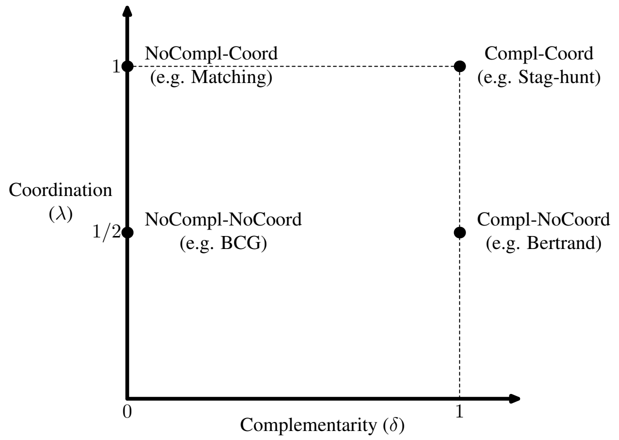


Fig. S.1 Experimental games positioned across incentive conditions

S.2 Further statistical analysis

Table S.2 presents some descriptive statistics for the eight treatments.

Game	Mean Choice	First Round Mean Choice	Last Round Mean Choice	Coordination Rate (%)	Equilibrium Rate (%)	Average Profit
Non-Communication treatments						
NON-COMPL NON-COORD	32.6	49.0	20.4	7.3	3.3	25.0
	(25.05)	(22.75)	(25.11)			
NO COMPL COORD	35.6	48.3	29.2	20.0	20.0	30.0
	(25.45)	(25.54)	(27.91)			
COMPL NO COORD	40.6	50.4	37.4	2.7	0.0	14.9
	(24.96)	(27.99)	(25.35)			
COMPL COORD	46.4	50.5	43.3	8.7	8.7	22.0
	(24.01)	(21.67)	(26.27)			
Communication treatments						
NON-COMPL NON-COORD	25.1	35.5	12.6	16.0	5.3	25.0
	(22.00)	(20.58)	(13.82)			
NON-COMPL COORD	34.3	42.7	26.8	38.7	38.7	34.7
	(28.17)	(28.30)	(29.21)			
COMPL NON-COORD	47.4	46.9	46.8	14.0	0.7	18.8
	(29.36)	(28.35)	(27.27)			
COMPL COORD	64.1	56.0	66.1	44.7	44.7	48.0
	(30.83)	(23.51)	(33.77)			

Table S.2 Descriptive summary by treatment. Standard deviations in parentheses.

Figure S.2 shows the evolution of average choice and coordination along time for the eight treatments. On each panel, both NON-COORD (red) and COORD (blue) treatments are shown.

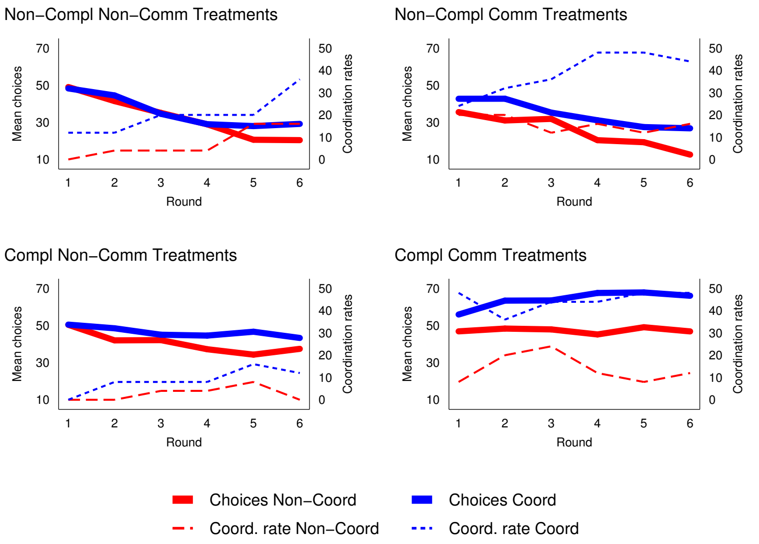


Fig. S.2 Dynamics over time of average choice and coordination by treatment.

Figure S.3 plots the histograms for the frequencies of individual choices over the six rounds in the eight treatments.

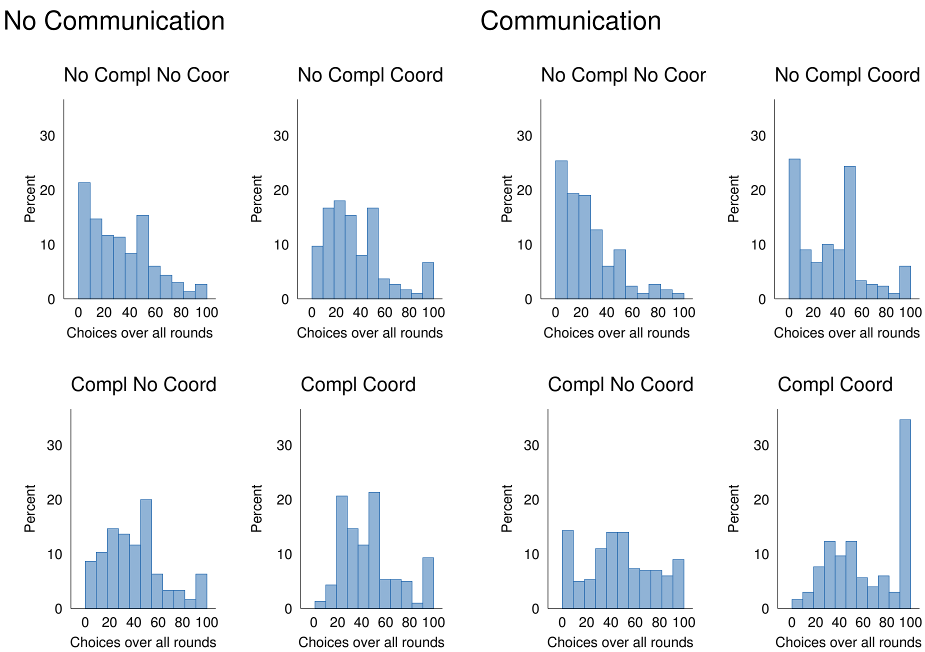


Fig. S.3 Distribution of choices by treatment.

Additionally, Figure S.4 plots the histograms for the frequencies of individual first-round choices in the eight treatments.

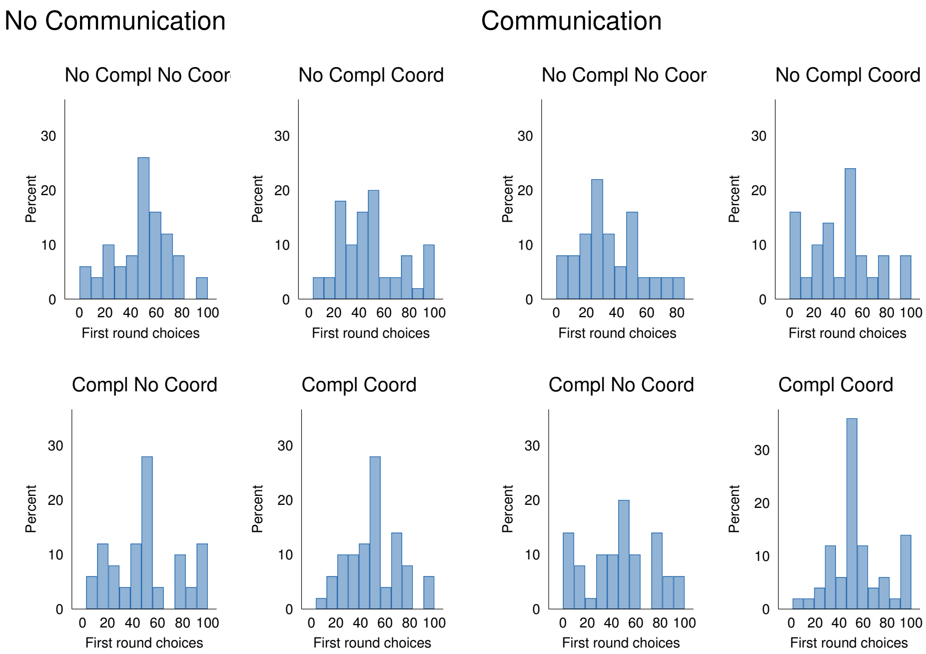


Fig. S.4 Distribution of choices in the first round by treatment.

Table S.3 shows some specific descriptive statistics in the four communication treatments: communication rates, average message values and faithfulness rates conditional on the player role.

Game	Comm. Rate (%)	Comm. Rate Periods 1-3 (%)	Comm. Rate Periods 4-6(%)	Mean mess. Value	Faith. Senders (%)	Faith. Receivers (%)
NON-COMPL NON-COORD	50.7	54.7	46.7	41.0	26.3	28.9
NON-COMPL COORD	68.0	72.0	64.0	43.9	72.5	56.9
COMPL NON-COORD	60.0	61.3	58.7	64.5	28.9	36.7
COMPL COORD	77.3	69.3	85.3	80.0	62.9	62.9

Table S.3 Summary of communication behaviour in the communication treatments.

Figure S.5 shows the evolution over time of the communication rate in the four treatments with communication.

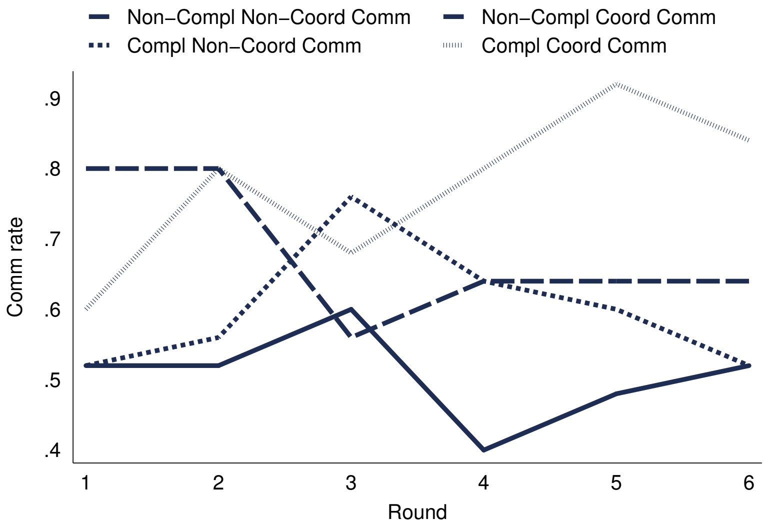


Fig. S.5 Dynamics of the communication rate in the communication treatments.

Figure S.6 shows the histogram for frequencies of message values over the six periods in each communication treatment.

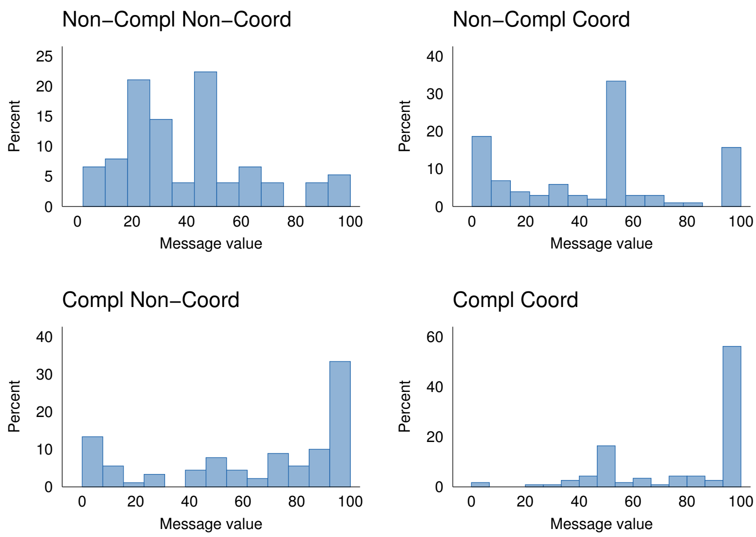


Fig. S.6 Distribution of message values by communication treatment.

Figure S.7 displays the average message values, the average choices and the coordination rates in the four communication treatments. For each one, two different categories are distinguished: i) instances where a pre-play message is sent in a particular round (MESS) and, ii) instances where no pre-play message is sent (NO MESS). For comparison purposes, we also include the corresponding statistics for the non-communication treatments, considered jointly (the top row).

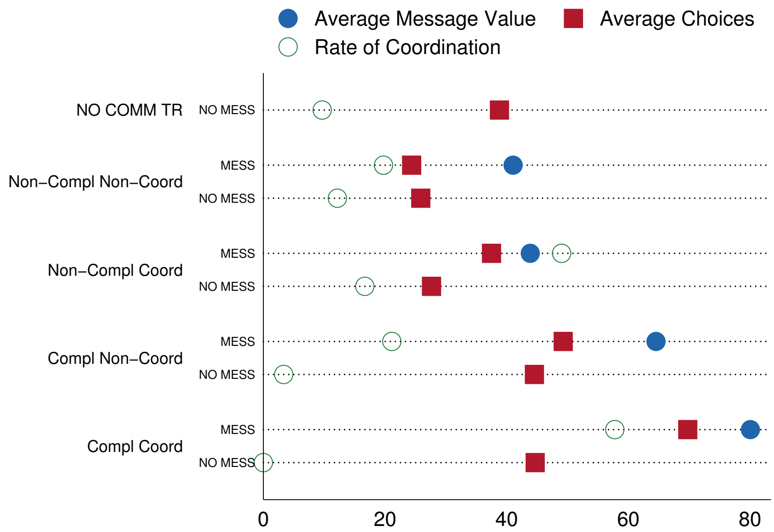


Fig. S.7 Behaviour comparison (message, choice and coordination) across treatments, distinguishing by message use.

Figures S.8 and S.9 present the faithfulness rates for both senders and receivers by game, conditional on own previous faithfulness (Figure S.8) and the partner's previous faithfulness (Figure S.9).

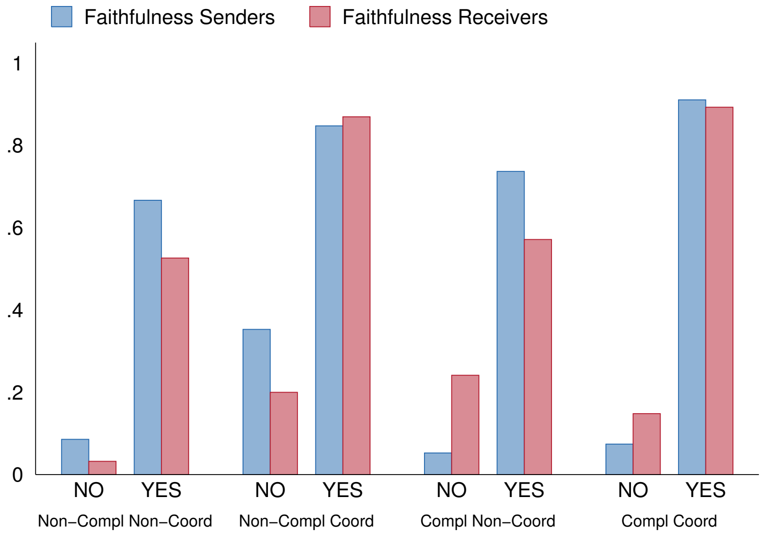


Fig. S.8 Faithfulness rates conditional on the subject's own previous faithfulness

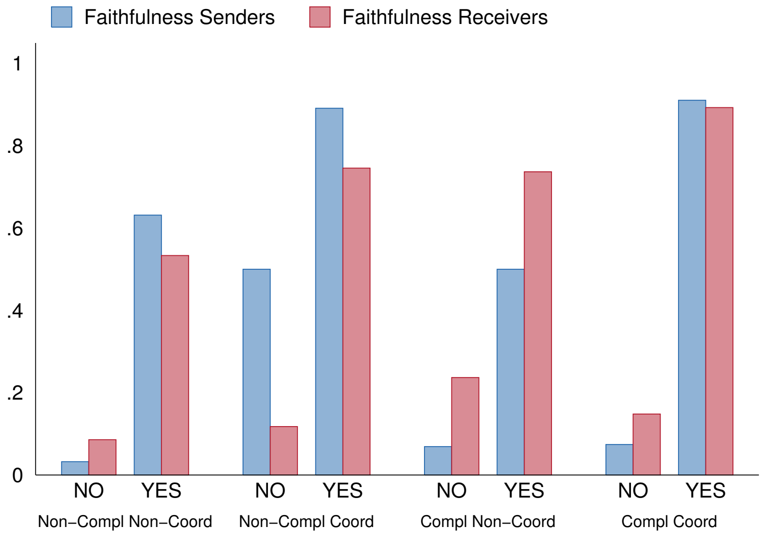


Fig. S.9 Faithfulness rates conditional on the subject's partner previous faithfulness

Table S.4 presents the regression results for faithfulness as Table 4 in the main text does, with the addition of Past Partner Unfaithfulness. This variable captures the past history of a subject's partner, that is, the number of times that the partner has been unfaithful in the past by choosing a number different from the message value sent.

VARIABLES	(M1) Faithfulness
First Round Faith	2.049***
	(0.273)
Mess. value	-0.0127**
	(0.00644)
Value×COMPL	0.0164**
	(0.00824)
Value×COORD	-0.00961
	(0.00736)
Past Partner Unfaithfulness	-0.424***
	(0.112)
Sender	0.00656
	(0.170)
Period	-0.223**
	(0.110)
COMPL	-0.751
	(0.559)
COORD	0.500
	(0.545)
Period×COMPL	0.0729
	(0.125)
Period×COORD	0.263**
	(0.134)
Constant	-0.291
	(0.454)
Observations	598
Wald chi2	85.80

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table S.4 Faithful behaviour in the COMM treatments. Results from probit panel data analysis.

Figure S.10 displays, for each game, the average profits (left graph) and coordination rates (right graph) in three communication contexts: i) NON-COMM (blue bars), the treatments in which subjects are not allowed to communicate; ii) COMM WITH NO MESSAGE (red bars), instances in which communication is allowed (the

COMM treatments) but no message is sent, and iii) COMM WITH MESSAGE (green bars), instances in which a pre-play message is sent.

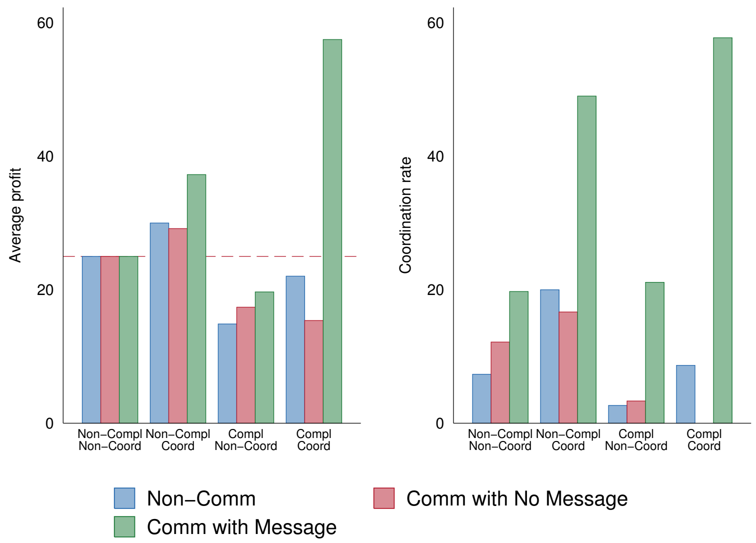


Fig. S.10 Average profits and coordination rates across games, conditional on the communication condition and the message emission.

Figure S.11 shows the evolution over time of the faithfulness rate in the four treatments with communication. As can be seen, while at the first round the two non-complementary games have the same rates, along time faithfulness separates across the COORD dimension.

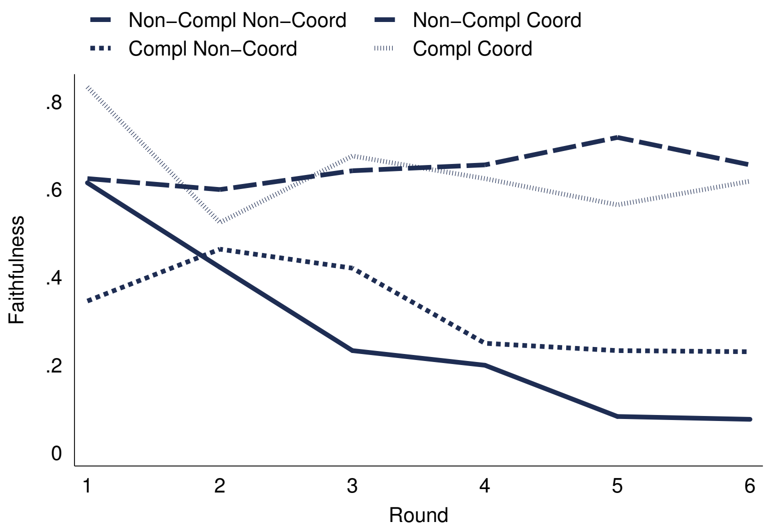
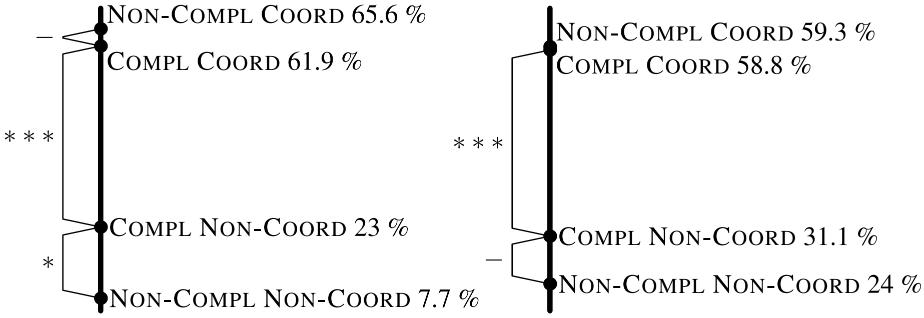


Fig. S.11 Dynamics over time of faithfulness in the communication treatments.

Running a series of tests of differences of means of the average faithfulness by group, significant differences can be found between the two COORD treatments and the other two: NON-COMPL COORD COMM vs. NON-COMPL NON-COORD COMM, t= 3.97, p<0.001; COMPL NON-COORD COMM vs. NON-COMPL NON-COORD COMM, t=0.81, p=0.21; COMPL COORD COMM vs. NON-COMPL NON-COORD COMM, t= 3.14, p= 0.001; NON-COMPL COORD COMM vs. COMPL NON-COORD COMM, t= 3.18, p=0.001; NON-COMPL COORD COMM vs. COMPL NON-COORD NON-COMM, t= 0.005, p= 0.47; and COMPL COORD COMM vs. COMPL NON-COORD COMM, t= 2.57, p=0.007. Alternatively, using proportions tests just for the last round individual faithfulness levels results are similar but even more extreme: NON-COMPL COORD COMM vs. NON-COMPL NON-COORD COMM, z= 4.49, p<0.001; COMPL NON-COORD COMM vs. NON-COMPL NON-COORD COMM, z=1.53, p=0.062; COMPL COORD COMM vs. NON-COMPL NON-COORD COMM, z= 4.41, p< 0.001; NON-COMPL COORD COMM vs. COMPL NON-COORD COMM, z= 3.23, p=0.001; NON-COMPL COORD COMM vs. COMPL NON-COORD NON-COMM, z= 0.33, p= 0.37; and COMPL COORD COMM vs. COMPL NON-COORD COMM, z= 3.11, p=0.001. The two set of tests are summarized graphically on Figure S.12.

Averages of the Last round. Average of the whole experiment by couple.



*** p<0.01, ** p<0.05, * p<0.1, - p>0.1

Fig. S.12 Test of differences in average faithfulness by treatment.

Table S.5 presents the probit panel regression results of faithfulness conditional on the message value and the period in each game.

VARIABLES	(M2) NON-COMPL NON-COORD	(M3) NON-COMPL COORD	(M4) COMPL NON-COORD	(M5) COMPL COORD
Mess. Value	-0.00781	-0.0137**	-0.00626	0.0233***
	(0.00706)	(0.00565)	(0.00549)	(0.00815)
Period	-0.360***	0.0281	-0.0853	-0.196***
	(0.0661)	(0.0509)	(0.0875)	(0.0752)
Constant	0.843***	0.922***	0.241	-0.784
	(0.313)	(0.303)	(0.372)	(0.478)
Observations	152	204	180	232
Wald chi2	53.54	6.466	4.832	8.763

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table S.5 Faithful behaviour by game in the COMM treatments. Results from probit panel data analysis.

On Table S.6 we show how subjects react directionally after reaching a coordination instance in each treatment, that is, decreasing their choices (relative to the previous period), maintaining or increasing them. Table S.7 replicates the same structure but excluding those cases where coordination was reached a choices of zero or 100.

Treatment	Action changes		
	Decrease	Maintain	Increase
NON-COMPL NON-COORD NON-COMM	35.7%	42.9%	21.4%
NON-COMPL NON-COORD COMM	22.5%	57.5%	20.0%
NON-COMPL COORD NON-COMM	9.5%	85.7%	4.8%
NON-COMPL COORD COMM	4.3%	81.9%	13.8%
COMPL NON-COORD NON-COMM	37.5%	37.5%	25.0%
COMPL NON-COORD COMM	33.3%	27.8%	38.9%
COMPL COORD NON-COMM	15.0%	80.0%	5.0%
COMPL COORD COMM	7.3%	65.5%	27.3%
Total	13.2%	66.8%	20.1%

Table S.6 Variation in choices after coordination is reached.

Treatment	Action changes		
	Decrease	Maintain	Increase
NON-COMPL NON-COORD NON-COMM	62.5%	12.5%	25.0%
NON-COMPL NON-COORD COMM	30.0%	50.0%	20.0%
NON-COMPL COORD NON-COMM	6.7%	86.7%	6.7%
NON-COMPL COORD COMM	4.7%	76.6%	18.8%
COMPL NON-COORD NON-COMM	37.5%	37.5%	25.0%
COMPL NON-COORD COMM	38.5%	15.4%	46.2%
COMPL COORD NON-COMM	25.0%	66.7%	8.3%
COMPL COORD COMM	16.7%	11.9%	71.4%
Total	19.1%	50.5%	30.5%

Table S.7 Variation in choices after coordination is reached excluding 0 and 100.

On Table S.8 we make the opposite analysis, that is, the resulting coordination rates conditional on subjects actions: a decrease, maintenance or an increase in their choices compared with the previous period.

Treatment	Previous actions			Total
	Decrease	Maintain	Increase	
NON-COMPL NON-COORD NON-COMM	6.7%	28.6%	1.9%	8.8%
NON-COMPL NON-COORD COMM	6.4%	61.0%	5.9%	15.2%
NON-COMPL COORD NON-COMM	8.8%	61.2%	3.4%	21.6%
NON-COMPL COORD COMM	16.3%	78.6%	14.3%	41.6%
COMPL NON-COORD NON-COMM	3.4%	14.3%	0.0%	3.2%
COMPL NON-COORD COMM	8.1%	50.0%	17.6%	15.2%
COMPL COORD NON-COMM	5.0%	44.7%	3.3%	10.4%
COMPL COORD COMM	9.6%	89.9%	35.2%	44.0%
Total	7.6%	63.9%	11.2%	20.0%

Table S.8 Coordination rates after changes in individual choices.

On Figure S.13 we plot the dynamics of the proportion of the most relevant messages over the total number of messages: 0 for NON-COMPL COMM treatments, 100 for the COMPL COMM ones, and 50 for all COMM treatments. The resulting coordination rates achieved when those messages are sent are also shown (the missing values displayed are caused by the lack of emissions of messages with the corresponding value at that particular round).

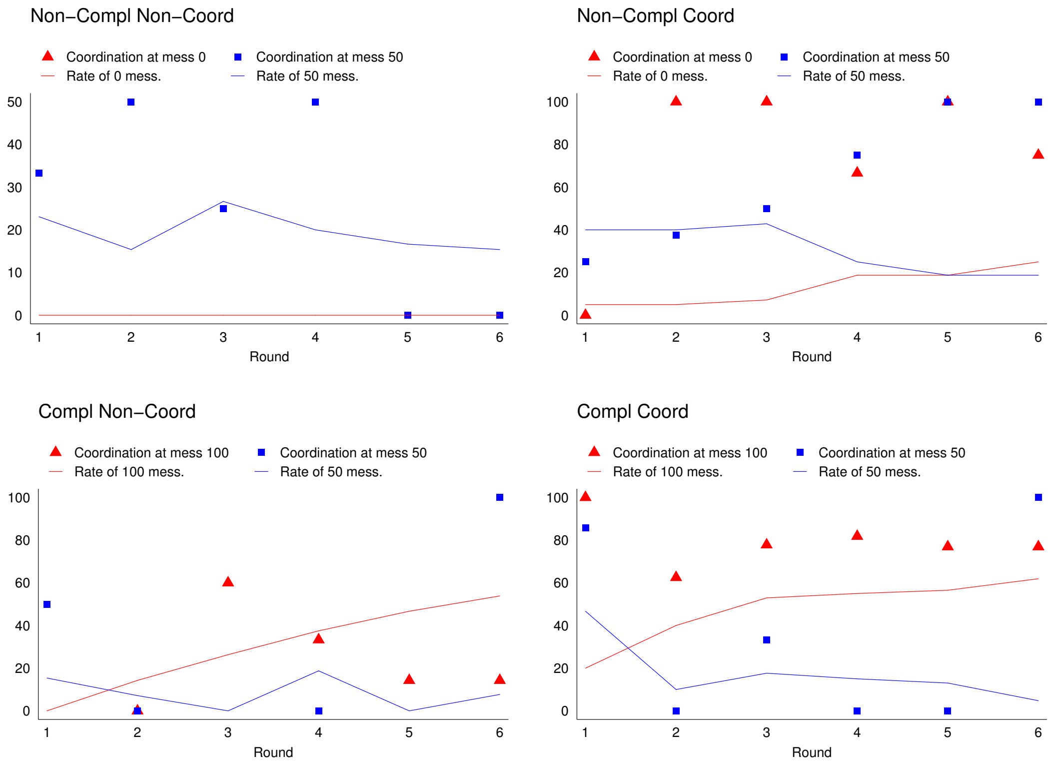


Fig. S.13 Main messages and coordination rates at those messages.

S.3 Translated Experimental Instructions

GENERAL INSTRUCTIONS

The aim of this experiment is the study of individual decision making in some contexts. The instructions are easy and, if you follow them carefully, you will receive some money at the end of the experiment. This will be confidentially given as no participant will know the earnings of the other people (thus nobody will know your earnings). You can ask any question by raising your hand first. Any communication **A** between participants is forbidden and subject to the immediate exclusion from the experiment.

GAME INSTRUCTIONS

- This experiment consists of 6 independent rounds. At the beginning of the experiment you will be randomly paired with another participant. This partnership will remain the same throughout the whole experiment, but you will never know the identity of your partner. As each group is independent, the decisions made by each group will not have any effect on the rest of the groups.
- In each round, you will have to choose a number between 0 and 100, both included. You can choose integer o decimal numbers (with a maximum of two decimals).
- In each group and round the winner will be determined. He or she will be the person whose number is closest to $2/3$ of the average of the two chosen numbers. The average will be calculated by adding the two numbers and dividing the total by two.
- Your earnings will depend on your choice and the number chosen by your partner. **B**. In case of a tie, **C**.
- After each round, you will get information about what happened in the last round: the numbers chosen by both players, the average of the group, $2/3$ of this average, the winning number and your earnings.
- **D**
- At the end of the experiment you will receive a cash amount equal to the accumulated earnings during the 6 rounds, using a conversion rate of 100 points to 6 euros.

Thanks for your participation.

The pieces of the text which change between treatments are highlighted in boldface. Their contents can be found in the table below:

Label	Condition	Phrase
A	Comm	(except the one explained below)
	NoComm	empty
B	NoCompl	The winner will receive 50 points
	Compl	The winner will receive a number of points equal to her/his choice
C	NoCompl-NoCoord	the prize will be equally shared between players, i.e., each one will receive 25 points
	NoCompl-Coord	each player will receive the prize of 50 points
	Compl-NoCoord	the prize will be equally shared between players
	Compl-Coord	each player will get a number of points equal to their choice
D	Comm	Before each round starts and after receiving information feedback of the previous round, one of the players in the group will be able to send an optional message to the other. The sender will be chosen randomly at the beginning of the experiment and will be always the same person in all the rounds. The message will have the following wording: “We should choose the number ______”
	NoComm	empty

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