Communication in Context.

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Supporting Information

1. STATISTICAL TESTS

We use bootstrapping techniques to correct for features of the data that may bias standard statistical tests.

Confidence intervals for means or proportions, for given treatment (1S or 2S).

Lab all-rounds data

In the lab all-rounds data, multiple observations are generated by the same subject and thus cannot be assumed to be independent. Because we do not know the nature of the within-subject correlation, we calculated the statistical tests reported in the text via bootstrapping. The technique allows for arbitrary dependence across observations from a single subject, but assumes that such dependence is the same for all subjects and maintains independence across subjects. Relative to standard procedures, the only difference is that for each subject we draw the full vector of observations associated with the subject.

Call n the number of separate subjects for which we have observations related to some variable x. For each subject i, the number of observations is k(i). We draw with replacement n subjects from the sample, and for each we consider the k(i) observations of x associated with the subject. We then calculate the mean or proportion of the bootstrapped sample. We repeat the procedure 10,000 times and construct a distribution of means/proportions. The confidence intervals reported in the text are the intervals, centered on the empirical mean, that contain 95 percent of the means from the bootstrapped samples. It is well-known that non-parametric bootstrap confidence intervals need not by symmetric around the empirical mean. (DiCiccio and Efron, 1996).

Lab first-round and MTurk data

In the lab-first round and MTurk samples, we have a single observation for each subject and consider all observations independent. (Given the standardized instructions and the constancy of the physical lab and the subject pool, we discount the likelihood of session-specific effects in the lab-first round sample). However, the confidence intervals for means or proportions reported in the text were calculated via bootstrapping to account for non-negativity constraints. We followed the same procedure described for the lab-all rounds sample.

Differences in means or proportions across the two treatments: |x(2S)-x(1S)|.

Lab all-rounds data

We apply our bootstrapping procedure to one-sided tests of differences in means or proportions across the two samples. We generate bootstrapped values for the difference under the null hypothesis that the two samples are drawn from the same population (and thus have equal means/proportions) and compare the distribution of the bootstrapped values to the difference we observe in the data. In practice, we combine the samples from the two treatments and assign to each subject a subject id. We then sample with replacement subject id's and assign each randomly to one of two groups, labelled group 1 or group 2. Call n1 the size of the 1S sample (78), and n2 the size of the 2S sample (111). We construct the two groups by assigning n1 random draws to group 1 and n2 to group 2, and we treat the samples in the two groups as if they corresponded to the two treatments. Because the assignment to the groups is random, however, subjects in the 1S treatment can be assigned to group 2, and vice-versa. When subject's id (i) is assigned to a group, all k(i) observations of x associated with the subject are assigned to the group. We then compute the variable in question in the constructed groups, m_1 and m_2, and the difference $\Delta(m)=m_2-m_1$. We repeat this procedure 10,000 times and generate a distribution of $\Delta(m)$ under the null of no difference in the population. The frequency with which the bootstrapped samples are more extreme than the observed difference in the data provides a one-sided test of difference. For example, calling $\Delta(\mu)$ the difference in means in our data, we test H0: $\Delta(\mu)\leq 0$ v/s H1: $\Delta(\mu)>0$ by computing the p-value: $p=\{\#(\Delta(m)>\Delta(\mu))\}/10{,}000$.

Difference in distributions across the two treatments: Kolmogorov-Smirnov tests

Lab all-rounds data

As above, call n1 the number of data from the 1S treatment, with population cdf F and sample cdf F_{n1}; call n_2 the number of data from 2S, with population cdf G and sample cdf G_{n2}. We compute the relevant Kolmogorv-Smirnov test statistic in the data and compare it to the distribution of the test statistics obtained from the resampling procedure described earlier. For example, when testing H0: F=G versus H1: F≠G, we compute the two-sided KS test statistic $D=\sup(t)|F_{n1}(t)-G_{n2}(t)|$ in the data. With each resampling σ, we obtain new empirical cdfs $F_{n1'(\sigma)}$ and $G_{n2'(\sigma)}$. Note that the subindices n1' and n2' will in general differ from n1 and n2: although the permutation procedure maintains the same number of subjects in the two groups, in the experiment the roles of Senders and Receivers are attributed randomly and thus are assumed by different subjects a different number of times. The result is that for given variable x we do not have the same number of observations per subject. Using the ks.test() function in R, we compute $D(\sigma)=D(F_{n1'(\sigma)}, G_{n2'(\sigma)})$ on each resampling σ. To test the difference between distributions F_{n1} and G_{n2}, we compute the p-value $p= \{\#(D(\sigma)>D)\}/10{,}000$. We follow the same permutation procedure for the one-sided KS test (calculating the relevant one-sided KS test statistics).

Lab first-round and MTurk data

Even when independence can be assumed, we calculate the KS tests via bootstrapping to account for discreteness of the samples. The adjustment for discreteness is based on Abadie (2002) and implemented with the ks.boot() function from the "Matching" R package. We proceed as in the case of the lab-all round sample, with the only difference that since we have only one observation per subject, in each resample all subjects have the same number of observations (one), and the sample sizes are fixed at n1 and n2.

Senders' and Receivers' beliefs: comparison to uniform distribution

Given an offer x, the test compares the proportion of beliefs cumulated on x and x-1 (call it $\alpha(x,x-1)$) to the fraction that would be observed if beliefs were uniformly distributed over [0,x], that is to the uniform null of $2/(x+1)$.

The test procedure is identical for all three data sets. For each offer x, we filter the data to include only subjects who received offer x (if testing Receivers' beliefs) or sent offer x (if testing Senders' beliefs). From the filtered data, we construct 10,000 resamples by bootstrapping (with replacement) the original sample. (In the case of lab-all rounds, a subject may corresponds to more than one data point if the subject has played multiple rounds in the same role at the same offer x.) From the resamples, we then construct the distribution of the proportion of beliefs cumulated on x and x-1. The p-values reported in the text test the null hypothesis H0: $\alpha(x,x-1)=2/(x+1)$ against the one-side alternative H1: $\alpha(x,x-1)>2/(x+1)$. They are calculated as $p=\{\#(\alpha(x,x-1)\leq 2/(x+1))\}/10{,}000$.

References

Abadie A (2002), “Bootstrap tests for distributional treatment effects in instrumental variable models”, *Journal of the American Statistical Association* 97:284–292.

DiCiccio, T. and B. Efron (1996), “Bootstrap Confidence Intervals”, *Statistical Science* 11: 189-228.

2. BELIEFS CONDITIONAL ON OFFER 5 IN 1S AND OFFERS 5 AND 6 IN 2S.

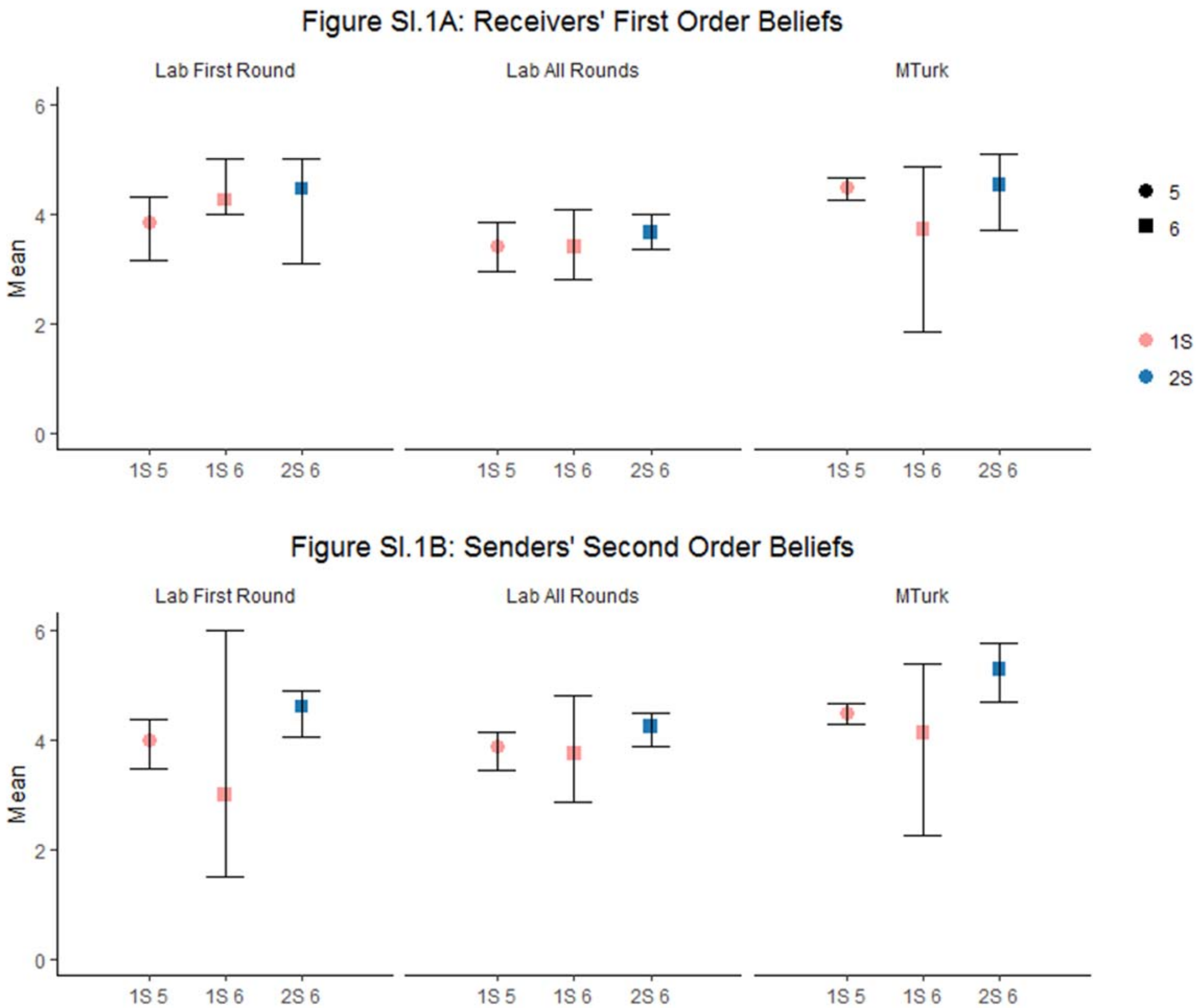


Figure SI.1. Receivers' (A) and Senders' (B) beliefs conditional on offer 5 in 1S and offers 5 and 6 in 2S. Point values and 95 percent confidence intervals. See the discussion of the statistical tests in the previous section of SI.

3. A SIMPLE MODEL WITH BINARY LYING COSTS.

A known fraction of subjects, θ, has high costs of lying; these subjects always transfer what they have offered. A fraction (1-θ) has low cost of lying; they transfer 0 no matter their offer. All subjects are risk-neutral.

(a) The 1S game.

A single Sender (S) offers the Receiver (R) an amount x between 0 and 10. R decides whether to play or not. If R plays, S sends an amount z between 0 and 10 and keeps 10-z for herself. If R does not play, both R and S receive 2.

We restrict attention to non-trivial equilibria—those in which at least one offer is accepted with positive probability.

Result 1. *If $\theta \geq 1/4$, there is an equilibrium in which S makes the same offer $\tilde{x}$ regardless of her lying cost, with $\tilde{x} \in [2/\theta, 8]$, and R chooses to play. There is no equilibrium with two different offers, $x_2 > x_1 > 2$.*

The result follows from two simple observations. First, R will accept to play following an offer $\tilde{x}$ only if he expects a transfer of at least 2. Hence he plays only if $\tilde{x} \geq 2/\theta$. But a truthful S would never offer more than 8 (because that would leave her with less than 2); hence R would not accept offers higher than 8. Thus, if R accepts to play, $\tilde{x} \in [2/\theta, 8]$. Second, we can rule out the possibility of different equilibrium offers if both are strictly higher than 2. Suppose, towards contradiction, that two different offers, $x_1 > 2$ and $x_2 > x_1$ are both used and at least one induces R to play with positive probability. If R is more likely to play after x_2 than x_1, then all untruthful S would choose x_2. Thus x_1 would be offered only by truthful Senders, and because $x_1 > 2$ it would be accepted by R with probability 1. But then R cannot be more likely to play after x_2--a contradiction. (The logic is identical if we suppose that R is more likely to play after x_1 than x_2). Hence, R must be equally likely to play after either x_1 or $x_2 > x_1$. But then a truthful S would only make the lower offer x_1, and hence R would not play after the higher offer x_2, again a contradiction.

An equilibrium with two (but not more) different offers $x_1 < x_2$ can be sustained only if $x_1 = 2$ (because in that case R can accept the offer with probability smaller than 1 even though it is made only by a truthful S). In the data, the frequency of offer 2 in in 1S is negligible: there is exactly one instance in lab-first round (out of 39) and in MTurk (out of 201), and three instances in lab-all rounds (out of 312).

(b) The 2S game.

Two Senders (S) independently and privately each offer the Receiver (R) an amount x_i (i = 1,2) between 0 and 10. R decides whether to play or not, and if so, with which S. If R plays, the chosen S sends an amount z between 0 and 10 and keeps 10-z for herself; the rejected S receives 2. If R does not play, all players, R and both S's, receive 2.

Result 2. *If $\theta > 5/6$, there is an equilibrium in which both $x_1 = 5$ and $x_2 = 6$ are offered and accepted with positive probability. R always chooses to play. If faced with two equal offers, R accepts either one of* *them with equal probability; if faced with two different offers, R accepts x_1 with probability $p \in (1/4, 1/3)$, and accepts x_2 otherwise. An untruthful S offers x_2, a truthful S randomizes between x_1 and x_2.*

The specific values for x_1 and x_2, 5 and 6, stated in Result 2 are motivated by the experimental data. The result is more general (different values of x_1 and x_2 can be supported both for a specific value of θ and across different values of θ) and the number of possible equilibrium offers need not be restricted to two. Here we describe in more detail the logic underlying the result in the case of two equilibrium offers.

If both offers are accepted with positive probability, it must be that both are made by a truthful S with positive probability. Call $\sigma > 0$ the probability that a truthful S offers x_2 (and $1-\sigma$ the probability that she offers x_1). With $x_1 < x_2$, a truthful S can be indifferent between both offers only if x_2 is accepted by R with higher probability. Hence the probability that R accepts the lower offer, p, must satisfy $p<1/2$. But if $p<1/2$, an untruthful S will only offer x_2. Hence x_1 is only offered by a truthful S, and thus the expected transfer following offer x_1 is simply x_1. It follows that $x_1 \geq 2$. We have an equilibrium if and only if R is indifferent between accepting x_1 or x_2, and a truthful S is indifferent between offering x_1 or x_2.[1] The indifference condition for R corresponds to $x_1 = E(\text{transfer}|x_2) = x_2 \, \text{Prob}(\text{S is truthful}|x_2)$, or, using Bayes rule:

$$x_1 = x_2 \, \theta\sigma/(1-\theta+\sigma\theta). \qquad (1)$$

If we denote by $U_\theta^S(x)$ the expected payoff to a truthful S of making offer x, the indifference condition for a truthful S corresponds to $U_\theta^S(x_1) = U_\theta^S(x_2)$, where:

$$U_\theta^S(x_1) = (10-x_1)\,[\theta(1-\sigma)/2 + p(1-\theta+\sigma\theta)] + 2[\theta(1-\sigma)/2 + (1-p)(1-\theta+\sigma\theta)]; \qquad (2)$$

$$U_\theta^S(x_2) = (10-x_2)\,[(1-p)\theta(1-\sigma) + (1-\theta+\sigma\theta)/2] + 2[p\theta(1-\sigma) + (1-\theta+\sigma\theta)/2]. \qquad (3)$$

The first square bracket in each equation corresponds to the probability that the offer is accepted when the competing S offers x_1, the first term in the bracket, or offers x_2, the second term (with each event weighted by its probability). The second square bracket corresponds to the probability that the offer is rejected, again depending on the competing offer. An equilibrium is a vector $\{x_1, x_2, p, \sigma\}$ such that: $x_2 > x_1 \geq 2$; $\sigma \in (0,1)$; $p \in [0,1/2)$; (1) is satisfied; and (2) equals (3). Some algebra shows that, as claimed in Result 2, there is an equilibrium with $x_1=5$ and $x_2=6$ when $\theta \in (5/6,1)$. In such an equilibrium, $p \in (1/4, 1/3)$ and $\sigma \in (0,1)$, declining from 1 to 0 as θ increases and p decreases.

4. DATA SETS

All data are available at http://columbia.edu/~ac186/datac4t/DATA.ZIP. Dataset S1 collects the lab data; dataset S2 the MTurk data; the readme file reports the series' definitions.

[1] In principle, $p=0$ is possible: R could strictly prefer x_2 when faced with x_2 and x_1. Thus (1) only needs to hold as a weak inequality: $x_1 \leq x_2 \, \theta\sigma/(1-\theta+\sigma\theta)$. With $x_1=5$ and $x_2=6$, however, no equilibrium exists with $p=0$.

5. EXPERIMENTAL INSTRUCTIONS

(a) Laboratory experiment

We report below the lab instructions for the 2S treatment.

Thank you for agreeing to participate in this decision making experiment. During the experiment we require your complete, undistracted attention, and ask that you follow instructions carefully. You may not open other applications on your computer, chat with other students, or engage in other distracting activities, such as using your phone, reading books, etc. Please turn off your cell phone.

Before we begin, please read and sign the consent form, which is located at your terminal.

You will be paid for your participation in cash at the end of the experiment. Different participants may earn different amounts. What you earn depends partly on your decisions and partly on the decisions of others.

The entire experiment, including all interaction between participants, will take place through computer terminals. It is important that you not talk or communicate with others during the experiment, except as described below.

We will start with a brief instruction period. If you have any questions during the instruction period, raise your hand and your question will be answered out loud so everyone can hear. If you have any questions after the experiment has begun, raise your hand and an experimenter will come to assist you.

The experiment you are participating in will have 8 rounds.

In each round you will be randomly matched with two other participants to form a group of three. Each group will follow exactly the same rules, and what happens in one group has no effect on the other groups. You will not know, either during the experiment or afterwards, whom you were matched with in any round: all interactions are completely anonymous. In each group of three participants, two will be assigned the role of player A and one the role of player B. In these instructions and when useful during the experiment the two A players will be called A1 and A2, but there is no meaning to the number 1 or 2; the only role of the label is to distinguish the two players. The computer will assign the roles randomly in each round, and your screen will inform you whether your role is A or B.

In each round, the two A players are each given 10 dollars that he/she may split with player B. These are real dollars. Each A Player will send a message to player B indicating how he/she intends to divide the 10 dollars with B. Player B will then decide whether to Play with one of the two A players or not to Play. If player B chooses not to Play, all three players in the group receive 2 dollars each. If player B chooses to Play, for example with A2, then Player A2 splits the 10 dollars as he/she sees fit, and the A player who has not been chosen, A1 in this example, earns 2 dollars. If player B chooses to play, he/she can only play with one of the two A players in his/her group.

The messages that Players A1 and A2 send before decisions are made will be of the form: "If you decide to play with me, I will give you x dollars". Each A player will specify x, the number of dollars, by typing a number between 0 and 10 in the appropriate box on the screen.

[Show screenshot 1:
Round: 1 out of 8.
Reminder: The number of dollars to split is 10. If B decides not to play, all players receive 2 dollars. If B decides to play, the A player who is not chosen receives 2 dollars.
(Break)
You are Player A1**. What message do you want to send to player B?**
Your matched partner will see: “A1 said: If you choose to play, I will give you x dollars, where x is the number you enter here: [Box]]

In addition to this message, each A Player will also be asked how many dollars to give B in case B decides to Play. This decision is not constrained by the message that the A player has sent, and there is no punishment or reward for following through on the message. A1 and A2 can choose to give B any number of dollars between 0 and 10, if B decides to play. The screen of the A subjects will look like this: (The exact numbers are for illustration only).

[Show screenshot 2:
Round: 1 out of 8.
Reminder: The number of dollars to split is 10. If B decides not to play, all players receive 2 dollars. If B decides to play, the A player who is not chosen receives 2 dollars.
(Break)
You are Player A1**.** Player B will see: A1 said: If you choose to play I will give you 6 dollars”**.**
How many dollars would you give B, if B chooses to play? [Box]]

Player B will receive the messages sent by the two A players and then decide whether to play at all, and if so with which one of the two A players. B will indicate this decision by clicking an appropriate button on the screen. The screen for Player B will look like this:

[Show screenshot 3:
Round: 1 out of 8.
Reminder: The number of dollars to split is 10. If B decides not to play, all players receive 2 dollars. If B decides to play, the A player who is not chosen receives 2 dollars.
(Break)
You are player B.
A1 says: “If you choose to play, I will give you 6 dollar(s)”
A2 says: “If you choose to play, I will give you 4 dollar)s)”
You can now choose to play with A1, with A2, or not to play:
Three buttons: Play with A1; Play with A2, Not Play.]

You will not be told the decisions of the other members of your group until the end of the experiment. But keep in mind the rules of the game. If B decides not to Play, then all three members of the group earn 2 dollars for that round. If B decides to Play with one of the two A players, for example A2, than B earns the number of dollars given by A2; A2 keeps the remainder out of the 10 dollars that he/she has to split, and A1, who has not been chosen, earns 2 dollars.

After these decisions have been made, you will be asked a new question that may affect your earnings. You will see a new screen. If you are Player B, the screen will ask you how much you expect A1 and A2 to actually give you if you play the game with either of them. If you are an A Player, the screen will ask you what you expect B to guess you will give him/her if B played the game with you. You will indicate your choice by typing a number between 0 and 10 in the appropriate box on the screen. The screens will look like this:

If you are B:

[Show screenshot 4:
Round: 1 out of 8.
Reminder: The number of dollars to split is 10. If B decides not to play, all players receive 2 dollars. If B decides to play, the A player who is not chosen receives 2 dollars.
(Break)
Your guess for A1 will be compared to the average number of dollars given by the A players who sent a message of 6. Your guess for A2 will be compared to the average number of dollars given by the A players who sent a message of 4.
A1 said: "If you choose to play with me, I will give you 6 dollar(s)."
A2 said: "If you choose to play with me, I will give you 4 dollar(s)."
How many dollars do you expect A1 to give you, if you choose to play with him/her? [Box]
How many dollars do you expect A2 to give you, if you choose to play with him/her? [Box]]

If you are A:

[Show screenshot 5:
Round: 1 out of 8.
Reminder: The number of dollars to split is 10. If B decides not to play, all players receive 2 dollars. If B decides to play, the A player who is not chosen receives 2 dollars.
(Break)
Your guess will be compared to the average guess made by B players receiving a message of 4. If the two numbers are within 1 dollar of each other, 2 dollars will be added to your earnings for the round.
Your message was "If you choose to play with me, I will give you 4 dollar(s)"
What do you expect B to guess you would give him/her, if he/she chooses to play? [Box]]

At the end of the experiment, your answer will contribute to your earnings from that round. If you are player B, you will earn 1 additional dollar from each of your two answers if the answer is within 1 dollar of being correct on average. That is, if your prediction is correct (+/- 1 dollar) when compared to the average, over the full experiment, of what participants in role A have indicated they would give, following the specific messages that you have received in that round. If you are an A player, you will earn 2 dollars if your prediction is correct (+/- 1 dollar) when compared to the average, over the full experiment, of what participants in role B expect their partners to give following the specific message that you have sent in that round.

For example: Suppose that in the current round, Player A1's message in your group is that s/he would give B 8 dollars. If you are B, and you reply that you expect that A1 would in fact give you 6, your answer will be compared to the average of what A's have indicated they would give during the experiment after sending a message of 8 dollars. If, on average, A's who sent a message of 8 dollars have said they would give 5 dollars, then your guess of 6 is considered correct and you earn 1 additional dollar (because 6, your guess, is within 1 dollar of 5, what A players with a message of 8 have indicated on average). You will be asked the same question about player A2. If Player A2 has sent a message of 2, and you answer that you expect A2 to send 4 dollars, then you earn another additional dollar if on average A players with a message of 2 have indicated they would give either 3, 4 or 5 dollars. If your answer is more than 1 dollar away, then you earn 0 from that answer.

Exactly the same criterion applies to the A players, with the only difference that A players will answer a single question. If your role is A and your message said that you would give B 8 dollars, you earn 2 additional dollars if your guess of what B expects you to give is within 1 dollar of the average answer from B's who have received a message of 8; and 0 if you are more than 1 dollar away.

A round is concluded when all groups have answered all their questions. We will then move to a new round. New groups of three players will be formed randomly by the computer, and because the groups are formed randomly, your partners in the group will most likely be different from round to round. Remember that all interactions are anonymous and no-one will ever know, during the experiment or in the future, the identity of the partners they are matched with in a group. Two of the members of your group will be randomly assigned to role A and one to role B, and the game will then proceed as before.

The experiment will continue in this fashion for 8 rounds. At the end of the experiment, 2 of your 8 rounds will be randomly selected by the computer program and you will be paid your total earnings for those 2 rounds, in addition to the $10 show-up fee. Remember that your earnings per round include both any earnings from decisions made about the game and any earnings from guesses. You will be paid in private and have no obligation to tell anyone how much you earned.

Are there any questions?

We will now proceed to a simple quiz that will allow you to verify that all instructions are clear. Please answer the questions on your computer; you will receive immediate feedback about your answers.

QUIZ

1. You are an A player and your message to B is "If you accept to play, I will send 4 dollars". Can you then indicate that you would send 6 dollars, should B choose to play? {Yes, No}. 2 dollars? {Yes, No}

2. A1's message to B is "If you accept to play, I will send 4 dollars". A1 then indicates that he/she would send 6 dollars. A2's message to B is "If you accept to play, I will send 6 dollars". A2 then indicates that he/she would send 5 dollars. B refuses to play. How many dollars does A1 earn? And A2? How many dollars does B earn? Suppose instead that B accepts to play with A1. How many dollars does A1 earn? And A2? How many dollars does B earn?

3. A1's message to B is: "If you accept play I will transfer 3 dollars". A1 indicates that if B agrees to play he will in fact transfer 6 dollars. B's best guess of A1's intended transfer is 5. Does B earn one additional dollar for being correct? {Yes No}

AFTER THE QUIZ: Are there any questions now?

If you have any questions from now on, raise your hand and an experimenter will come to assist you. We will now begin the experiment.

While the experiment is in progress, the screen shows the following summary slide:

- **8 rounds**; in each round you are matched with two random and anonymous partners.
- In each round, within each group of three people, one person is randomly assigned the role of ***B*** while the other two are assigned the role of ***A*** and referred to as *A1* and *A2.*
    - **Each Player *A*** has $10.
    - Sends a non-binding message of how much s/he would give *B* if *B* plays with him/her.
    - Decides how much to give *B* if *B* plays with him/her.
    - **Player *B*** sees messages from both *A* players and chooses whether to play or not, and if to play, with which *A* player.
- **Earnings from a round**
    - If *B* plays with *A1*, then *A2* gets $2 while *B* and *A1* divide $10 according to *A1*'s decision.
    - If *B* plays with *A2*, then *A1* gets $2 while *B* and *A2* divide $10 according to *A2*'s decision.
    - If B does not play, then all three players get $2 each.

In addition:

- *B* can gain an extra $1 by guessing correctly (± $1) what *A* players give on average after sending the message that *B* has received from *A1*; similarly for the message received from *A2.*
- Each *A* player can gain an extra $2 by guessing correctly (± $1) what *B* players guess on average after receiving the message that the *A* player has sent.

- At the end, for each of you, two rounds are chosen at random for payment.

(b) <u>Mechanical Turk survey.</u>

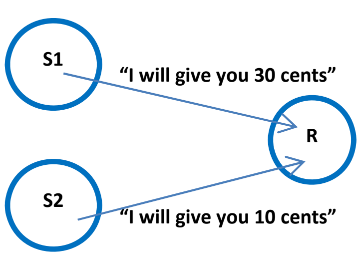
We report below the text of the screens seen by subjects in the 2S treatment.

Screen1:
Instructions:
In this task, you are matched with two other people. Keep in mind that these are real people, working on the task just like you.
The task is a survey. It should take you about 5 minutes. If you have not completed it within 10 minutes you forfeit your payment.
You will earn 50 cents for completing the survey plus a bonus that depends on what you and your partners respond.
We will now describe how the bonus works.

Screen 2:
Here is how the bonus works.
Two people will be called Senders and the third person will be called Receiver.
If the Receiver chooses to work with one of the two Senders, that Sender is given 100 cents and can share them with the Receiver if he/she wants to. The other Sender receives 20 cents.
If the Receiver chooses not to work with either Sender, then all three people receive 20 cents.
The Receiver can work at most with a single Sender.

Screen 3:
Before the Receiver makes his/her choice, each Sender sends the Receiver a message suggesting a division of the 100 cents, if chosen.
The message is not binding: a Sender, if chosen, does not need to divide the 100 cents with the Receiver in the way described in the message.
The Receiver knows that the message is not binding.

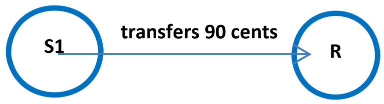
Screen 4:
Summarizing (all numbers are examples only)
1. First, both Senders send a message to the Receiver: “If you choose me, I will give you ...” For example:



2. Then the Receiver chooses.

If R chooses S1, for example, then S1 decides how much to transfer to R, out of the 100 cents. The transfer can be any amount between 0 and 100. For example:

Screen 5:



R receives a bonus of 90 cents
S1 receives a bonus of 100-90=10 cents
S2 receives a bonus of 20 cents.

If R rejects both Senders, then all three people receive a bonus of 20 cents.

Screen 6:

Comprehension check 1

We want to verify that you are a real person and have read the instructions. Please answer the questions below. Feel free to check the summary instructions at the bottom of this page if useful.
If a Sender is chosen, how much (in cents) is available for him/her to share with the Receiver? [Box]
[Show/Hide Instructions button at the bottom of the screen.]

Screen 7:

Suppose a Sender sends the message “I will give you 60 cents”. Does that Sender then need to give 60 cents? [Two buttons: Yes No]
[Show/Hide Instructions button at the bottom of the screen.]

Screen 8:

Can the Receiver choose more than one Sender? [Two buttons: Yes No]
[Show/Hide Instructions button at the bottom of the screen.]

Screen 9:

Comprehension check 2.

Suppose the Receiver rejects both Senders.
How many cents is the Receiver’s bonus? [Box]
How many cents is the bonus for each Sender? [Box]
[Show/Hide Instructions button at the bottom of the screen.]

Screen 10:

Suppose the Receiver chooses Sender 1 and then Sender 1 transfers 60 cents.
How many cents is the Receiver’s bonus? [Box]
How many cents is the bonus for Sender 1? [Box]
And for Sender 2? [Box]
[Show/Hide Instructions button at the bottom of the screen.]

For Subjects assigned the role of Sender:

Screen 11S:
You have been assigned the role of Sender.

Screen 12S:
Your message to the Receiver is of the form:
"*If you choose me, I will give you x*"
Please indicate a value for x (in cents):
You can only indicate **one** value between 0 and 100, in 10 cents units. [Eleven boxes]
0 10 20 30 40 50 60 70 80 90 100
[Show/Hide Instructions button at the bottom of the screen.]

Screen 13S:
How much do you want to transfer to the Receiver if he or she chooses you?
Please indicate a value for x (in cents):
You can only indicate **one** value between 0 and 100, in 10 cents units. [Eleven boxes]
0 10 20 30 40 50 60 70 80 90 100
[Show/Hide Instructions button at the bottom of the screen.]

Screen 14S:
Extra bonus.
How much do you think the Receiver expects you would transfer, given the message you sent?
We are asking all Receivers what they expect would be transferred.
We will compare your answer to the answers of all Receivers who received the same message you sent.
If your answer is within 10 cents of their average answer you will earn an additional 20 cents.
You can only indicate **one** value between 0 and 100, in 10 cents units. [Eleven boxes].
0 10 20 30 40 50 60 70 80 90 100

Screen 15S:
Thank you for participating in this survey.
We will match your answers to the Receivers' answers and calculate your bonus. You will receive it shortly.
CATCHA

For subjects assigned the role of Receiver:

Screen 11R:
You have been assigned the role of Receiver.

Screen 12R:
The message from Sender 1 is: “If you choose me, I will give you **${e://Field/randPromiseValueA}** cents.”
The message from Sender 2 is: “If you choose me, I will give you **${e://Field/randPromiseValueB}** cents.”
You can now choose: Three buttons: {Sender 1, Sender 2, Reject both Senders}.
[Show/Hide Instructions button at the bottom of the screen.]

Screen 13R:
Extra bonus
In the previous screen, you chose {**Choice**}
How much did you think Sender 1 would give you if you chose him/her (in cents)? [Box]
How much did you think Sender 2 would give you if you chose him/her (in cents)? [Box]
Reminder: Sender 1 said he/she would give you **$previous message A** cents.
Sender 2 said he/she would give you **$previous message B** cents.
[Show/Hide Instructions button at the bottom of the screen.]

Screen 14R
We are asking all Senders how much they want to send, before telling them whether they were chosen. If your answers are within 10 cents of what Senders with those messages replied on average, you will earn an additional 10 cents for each answer.
[Show/Hide Instructions button at the bottom of the screen.]

Screen 15R
Thank you for participating in this survey.
We will match your answers to the Senders’ answers and calculate your bonus. You will receive it shortly.
CAPTCHA