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Supplementary material

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Supplementary Material

S.1 Comparing Respondent Characteristics across Treatments

Table S.1 presents results from tests assessing the balance of socio-economic characteristics of participants across treatments. This serves as an additional test of comparability of treatment groups. We use rank-based nonparametric Kruskal Wallis tests to test comparability of continuous variables (e.g. income) across treatment groups, and Chi² tests of proportion equality between proportions for categorical variables (e.g. female) across treatment groups. The table reports p-values from these tests.

Table S.1: Comparing Characteristics of Participants by Treatment: Kwallis and Chi2 Tests

Variable	Test	p-value
% Female	Chi ²	0.428
Age ^a	KWallis	0.983
% Minimum higher secondary education (grades 11-12)	Chi ²	0.954
% Respondents Brahmin	Chi ²	0.626
% Respondents answered a survey about preferences for water 6 months earlier	Chi ²	0.727
Household size (mean no. of people)	KWallis	0.236
Gross monthly household income (mean Indian Rupees)	KWallis	0.060*

S.2 Robustness Exercise

Table S.2 presents regressions on the subsets of villages to which different treatments were assigned (as described in Section 3.2 in the main paper): subset 1 included communication and public observability treatments only (villages: Malhiwara, Amdapur, Khekadi, Hiwalini, Buti, Mendhi); subset 2 included communication, negotiation and leadership (villages: Sarkinhi, Bargaon, Hiwalani and Naiknagar) treatments. Results of pairwise tests of equality for the treatment effects are presented at the bottom of Table S.2.

Table S.2(a) Linear fixed effects panel regressions by village subset^a

	Subset 1				Subset 2			
	(1)		(2)		(1)		(2)	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
<i>Treatments</i>								
Communication	1.02*	(0.50)	0.47*	(0.50)	-0.29	(0.40)	-0.06	(0.40)
Negotiation					0.93*	(0.54)	0.87	(0.57)
Public observability	-1.47***	(0.27)	-1.57***	(0.37)				
Leadership					0.38	(0.37)	0.53	(0.39)
<i>Controls</i>								
Rest of group's contribution at <i>t-1</i>			0.04**	(0.01)			0.05***	(0.01)
Time dummies (T ₁ =ref)			Incl				incl	
Constant	3.98***	(0.14)	3.87***	(0.43)	3.79***	(0.12)	3.22***	(0.35)
N. obs.	1300		1235 ^b		1800		1710 ^b	
N. individuals (panels)	65		65		90		90	
F-test	16.57***		6.46***		1.51		26.60***	
<i>F-tests of equality of treatment effects</i>								
Communication=public	19.07***		11.32***					
Communication=negotiation					3.29*		2.97	
Communication=leadership					1.50		1.64	
Negotiation=leadership					0.72		0.40	
F-test joint hypothesis test	19.07***		11.32***		1.76		1.33	

^a Fixed effects regression with clustering of groups; robust standard errors in parentheses

^b Round 1 is not included in the dynamic regressions (model 2 in both subsets) as there are no previous contributions by others

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Regression results confirm that public observability is highly significant and has a negative effect on cooperation (subset (1) regression), whilst communication is weakly significant (10% level) in this regression. However, communication is not significant in subset (2) regressions. Negotiation has a weakly significant coefficient (10% level) suggesting the possibility that this treatment influenced cooperation with regards to the baseline.

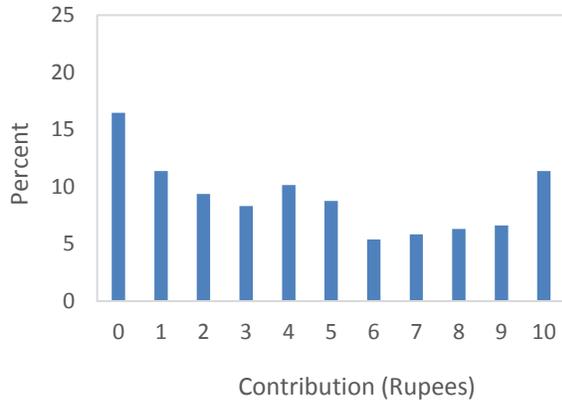
However, F-tests of joint significance of the treatment coefficients (as well as pairwise tests) indicate that, overall, the coefficients on communication, negotiation and leadership are not significantly different from each other which undermine the above finding. We note that negotiation is weakly different to communication in Subset (2) model 1 (although this is not the case in model 2). Overall, these results broadly confirm the main findings (reported in Table 3 and Table 4 in the main text) regarding the influence of the various treatments on cooperation in the villages.

S.3 Distributions of Contributions in Communication and Negotiation Treatments

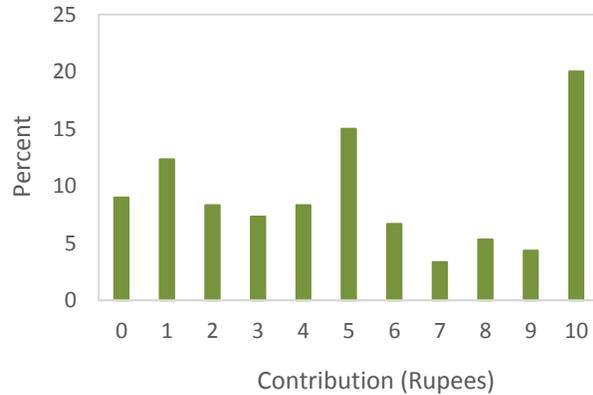
The distribution of contributions made by players in the communication and negotiation treatments are presented below. As can be observed, the negotiation treatment resulted in a higher proportion of 10 Rupee contributions (20% of players) and fewer zero contributions (9%) compared to the communication treatment (11.4% and 16.5% respectively). However, despite apparent differences, tests reported in the main paper (Table 4) suggest that, when taking into account the panel nature of the data and the effect of previous contributions by others, the apparent difference between the effect of communication and negotiation on cooperation observed below is not statistically significant.

Figure S.3 Distribution of Contributions (rounds 11-20)

a) Communication Treatment



b) Negotiation Treatment



EXPERIMENTAL INSTRUCTIONS

Basic instructions:

- ALL facilitators should be absolutely neutral in their verbal and physical expressions. The game does not have correct or incorrect decisions, and the team members should avoid any expressions that might influence players' decisions.
- The phrases in italics should not be read. They are specific instructions for the instructors.
- The instructions must always be read in order to give the same information to all players during all sessions.
- If people talk to each other during the game, please ask them to stop or they will not be allowed to continue the game.
- If people show their decision sheets to each other or try to look at other's decision sheets, please ask them to stop or they will not be allowed to continue the game.

FIRST-STAGE INSTRUCTIONS

<<Welcome everyone as they arrive, check their participant cards, make sure there are no two members of same household in same group>>

<< Seat them in order (according to participant number) from left to right>>

<< When all participants have arrived, begin to read the instructions>>

Greetings and welcome to all of you. My name is and this is my assistant You have been invited here to be part of a research project about individual decision-making.

CONSENT FORM

Before we play the game, I will need to read you something and sign a consent form. This is the paper which looks like this:

<<Show them copy of Consent Form>>

This paper is a requirement for universities that conduct activities with participation of people. On this form, we give you information about your rights as participants in research studies. If you agree to participate after I have read the form to you, please sign it at the bottom. This form is very important because it is not only a guarantee that the information you give us in this study is confidential, but it is also necessary for giving you the money at the end of the game.

<<Facilitator reads the consent form out loud. Then ask the players to sign the form if they are happy to continue>>

<< If cannot write, facilitator or assistant to help write an 'X'>>

WELCOME

We will spend about three hours on this activity, during which you will be playing a game. Depending on the decisions made by you and others in these games, you can earn some money. This is why it is very important to listen carefully to my instructions.

You also will receive 150 rupees as a thank-you for showing-up today. All payments will be made at the end of this study. The money that you will receive today comes from a research fund from an American university.

Before playing the game we will explain how to play. Please listen to these instructions very carefully. In case you do not understand the instructions please raise your hand and ask for clarification. You are not allowed to speak to each other, look at each other's papers or show them to each other, or communicate in any way with each other during the game. If you violate this rule, you may be dismissed from the game and not earn any money.

Any questions? << *Answer questions to best of your ability*>>

Remember: if you have any questions, please raise your hand and one of us can help you.

BASIC GAME INSTRUCTIONS

Now I will explain how to play the game.

As you can see, there are five of you in this room. You will play the game several times with the people in your group. At the beginning of each game, you will each receive 10 rupees. Your task is very simple: you have to decide how many of these 10 rupees you want to contribute towards a group account and how many rupees you want to keep for yourself.

Think of the group account as a water treatment plant that benefits everyone in your village - when you contribute money towards the operation and maintenance of the water treatment plant, the whole community can have access to clean and safe drinking water.

In each game, you can each contribute any number of rupees from 0 to 10 rupees to the group account. Every rupee that someone contributes to the group account will be multiplied by two and shared among everyone in the group.

At the end of each game, we will count the total number of rupees that everyone has added into the group account, and we will multiply it by two and share it equally among everyone in your group. Each of you will receive the same number of rupees from the group account, no matter how many rupees you contributed.

Every rupee that you don't put in the group account, you get to keep for yourself. However, rupees that you keep for yourself are not multiplied by two. They are also not shared with the others in the group.

This game is similar to the way you might choose to manage your money in real life: you can use your money for activities that benefit you and your family, or you can also use your money for activities that benefit everybody in the community. For instance, if you contribute to the operation and maintenance of the water treatment plant, the whole community will benefit from access to safe water.

At the end of each game you will make earnings from two things:

- 1) The number of rupees you keep for yourself
- 2) PLUS: the number of rupees that you get back from the group account.

EXAMPLES WITH PICTURES

Okay. Let's go through some examples to help you gain understanding about the game:

<<Explain the examples using laminated pictures >>

<< Example 1: all players contribute 5 rupees >>

<< Example 2: all players contribute 10 rupees >>

<< Example 3: all players contribute 0 rupees >>

<< Example 4: three players make positive contributions & two players give 0 rupees >>

Understood? Any questions?

<< Answer questions to best of your ability>>

Don't worry if you feel you don't understand. We will go over this again, and you will practice playing the game until you feel you understand it.

HOW TO PLAY THE GAME

Now, to play the game, we are not going to be handling actual rupees. You will only receive the actual money you have earned at the end of this study. Instead, you will be making your choices using a decision sheet, like this one:

<<Hold up a copy of laminated decision sheet>>

Please point to the decision sheet that we have given you, so I can see that you have located it.

<<Make sure everyone is pointing at their decision sheet. If they are not, you or assistant help them locate it>>

As you can see, the decision sheet shows 10 rupee coins for each game you will play---representing 10 rupees that you start each game with.

At the beginning of each game, you will decide how many rupees you want to contribute to the group account, and you will circle the number of rupees you would like to contribute on your decision sheet. You will play one game at a time---only making decisions for that game.

So, imagine that in Game P1, you decide to contribute 5 rupees to the group account. You find Game P1 on your decision sheet and you circle 5 rupees like this:

<<Instructor: use marker on laminated decision sheet to show how to circle 5 rupees>>

Please do the same on your own Decision Sheets: circle 5 rupees.

Great! This is just for practice, and does not count for your earnings at the end of this study.

Now imagine that in Game P2, you decide to contribute 8 rupees to the group account. You find Game P2 on your decision sheet and you circle 8 rupees like this:

<<Instructor: use marker on laminated decision sheet to show how to circle 5 rupees>>

Please do the same on your own Decision Sheets: circle 8 rupees.

And imagine you don't want to contribute any rupees in Game P3, then you do this:

<<Instructor: use marker on laminated decision sheet to show how to circle 0 rupees>>

Please do the same on your own Decision Sheet.

Now you know how to use your Decision Sheet. Remember, this is only for practice. In the actual game you are free to decide any amount you want to give between 0 and 10 rupees.

It is important that your decisions must be kept private. No-one else in your group must know what you have contributed to the group account, and how much you have kept. So do not show your sheets to other group members and do not try to look at other members' sheets.

Understood? Any questions?

<< Answer questions to best of your ability>>

For each game, once you have circled the amount on your decision sheet that you want to contribute to the group account, you put the decision sheet in the folder that we have given you like this:

<< Show them: put laminated decision sheet in folder>>

And I will come round and collect the folders from you.

My assistant will use your decision sheets to calculate the total number of rupees that everyone has contributed to the group account. We will write this amount here:

<<Point to the correct column on the "Group Account" white board>>

Then s/he will multiply this amount by 2 and divide it by 5, to calculate how many rupees each of you have earned from the group account. We will write this amount here:

<<Point to the correct column on the "Group Account" white board>>

Remember: you will all receive the same amount of benefit from the group account, no matter how many rupees you contributed.

Understood? Any questions?

<< Answer questions to best of your ability>>

GUIDED PRACTICE WITH 5 RUPEES

So now you will practice playing the game. This is only for practice, and will not count towards your earnings. If anyone has trouble understanding the decision-sheets, please raise your hand and one of us will help you.

So just for practice: Everyone locate Practice 1 on your decision sheet and please circle five rupees

<< Point to correct game number on laminated decision sheet >>

Remember, this is only for practice. In the actual game you are free to decide any amount you want to give between 0 and 10 rupees.

<<Check everyone has done this correctly >>

Great! This shows that in this game, you want to contribute 5 rupees to the group account. The remaining 5 rupees you have chosen to keep for yourself.

Now, please put the decision sheets in the folders, and I will collect them from you.

<<Collect decision sheets & hand them to assistant>>

<<Assistant: write Total contributions and Individual earnings on "Group Account" white board>>

Now, while my assistant is calculating how many rupees everyone has put into the account, and how much you will each earn, you will fill in your "Calculation sheet", which looks like this:

<<Hold up a copy of laminated calculation sheet>>

Please point to the Calculation Sheet so that I can see that you have located it.

<<Make sure everyone is pointing at their Calculation Sheet. If they are not, help them locate it>>

You will use this Calculation Sheet to keep track of your contribution decisions and earnings for each game.

As you can see there are 5 columns on this sheet. You will fill in each column for each game you play to record your decisions and calculate your earnings.

Let's do this together.

<<Instructor: guide everyone through process of completing the Calculation Sheet.>>

<<Assistant: walk around and check everyone has done this correctly. >>

<< Instructor: answer questions to best of your ability>>

Remember that if you have trouble filling out this form during the game, please raise your hand and we will assist you.

NON-GUIDED PRACTICE

Now, you will practice playing the game by yourselves. For this, I will ask you to turn your backs to each other so that you cannot see each other's decisions.

<< Make sure they are facing outwards from each other >>

<< Return their Decision Sheets inside the folders to each one >>

I have returned your folders with the Decision Sheets inside. Please take the Decision Sheets out, and we will play Game/Practice 2 for practice. If you have questions or trouble understanding what to do, please raise your hand and I will help you.

So, please locate Game 2, and circle the number of rupees, if any, that you want to contribute to the group account. Please keep your decision private!

<< Check everyone has done this correctly >>

When you have filled in the Decision Sheet, please put them in your folders, and I will collect them from you.

<< Collect decision sheets & hand them to assistant >>

<< Assistant: write Total contributions and Individual earnings on "Group Account" board >>

Now, while my assistant is calculating how many rupees everyone has put into the account, and how much you will each earn, you will fill in your "Calculation sheet".

Remember:

In the first column marked "A" for Game 1 please write down how much you have contributed to the group account in this game. In the second column marked "B" please write down how much you kept for yourself. In the third column marked "C", you will write down the amount that you earned from the group account in this game. This number is found *here << show them Group Account white board >>*. Copy this number into column "C" on your Calculation Sheet.

The last column marked "D" is your total earnings from this game. You calculate this by adding the number in column "B" (the rupees you kept) and the number in column "C" (the rupees you earned from the group account). Please write this in.

<< Instructor and assistant walk round and make sure they are doing this right >>

Any questions?

<< Answer questions to best of your ability >>

Now before we continue playing, I want you to look at the first column (A) on your calculation sheet, which shows how much you contributed to the group account in this game. And look at the last column (D) on your calculation sheet - this shows how much you earned in total from this game. You must always look at these amounts to help you decide how much to contribute in the next game.

Let's play more games until you are happy with it.

<< *Play practice games, answering questions, explaining everything*>>

THE GAME

<<*INSTRUCTOR: erase all markings on the laminated decision sheet and laminated calculation sheets*>>

We will now start the game. Please be silent and do not communicate with others during the game, or you may be dismissed from the game. If you have any questions please raise your hand and we will come to you.

To start the first game we will organize ourselves to face outwards and away from each other.

Please locate "Decision Sheet 1".

If you need help completing your Decision Sheets or Calculation sheets, please let us know and one of us will help you. And once again: no talking or communicating with each other during the game.

Let's begin.

GAME SCRIPT (to be repeated for each Game)

Please locate Game [number] on your Decision Sheet.

<< *Point to correct game number on laminated decision sheet* >>

When you found game [number] then circle the number of rupees that you want to contribute to the group account for this game only. Please keep your decision private!

When you have filled in the Decision Sheet, put them in your folders, and I will collect them from you.

<<*Collect decision sheets & hand them to assistant*>>

<<*Assistant to write Total contributions and Individual earnings on "Group Account" white board*>>

Now, while my assistant is calculating how many rupees everyone has put into the account, and how much you will each earn, you will fill in your “Calculation sheet”.

<<Instructor: hold up laminated calculation sheet>>

<<Instructor: guide participants through completion of calculation sheet>>

<<Instructor: if someone has difficulty, help them >>>

Before we continue playing, I want you to look at the first column (A) on your calculation sheet, which shows how much you contributed to the group account in this game. And look at the last column (D) on your calculation sheet - this shows how much you earned in total from this game.

You must always look at these amounts to help you decide how much to contribute in the next game.

<<START AGAIN at beginning of “Game Script”>>

<< When the first 10 games finish, stop and explain new rules>>

SECOND STAGE INSTRUCTIONS

A: Communication treatment

From now on, we are going to start a new game very similar to the past game.

For this we will use “Decision Sheet 2”.

The only difference is that you are now allowed to talk with other group members for a maximum of two minutes before each game. This communication is completely voluntary.

So, for the first two minutes of each game, you can talk to each other about whatever you want. If you prefer, you can turn around to make it easier to talk or you can stand up and walk around and talk to each other. We will not interfere with your conversations.

When the time for chatting with the rest of your group has finished, you should sit back in your seats, making sure you are facing away from each other, and make your decisions in the same way that you have been doing.

You can talk about whatever you want, about the game and the rules, but you can't make any threats or promises of side-payments to contribute during or at the end of the game. It is just an open conversation. Your decisions will continue to be private and confidential, and can't be known by the other players.

(TO BE READ OUT AT BEGINNING OF EACH ROUND)

Okay, so you have two minutes to talk amongst yourselves. Remember: do not make threats or agreements about side-payments.

<< *The instructor lets the players talk during two minutes. The instructor and the other team members must be careful about no influence the conversation*>>

<< *If you hear people making side-agreements or threats, gently ask them not to do this*>>

Okay, your two minutes are up. Please sit back in your places so that you are facing away from each other.

<< *Use Game Script to guide them through the game* >>

<< *After Decision Sheets returned to participants, read out “Communication Script” first before reading out “Game Script”*>>

<< *PLAY GAME FOR 10 ROUNDS*>>

<< *When the 10 games finish, stop and proceed to Exit Text*>>

B: Public observability

From now on, we are going to start some new games which are very similar to the past games. The only difference is that, for the next games we will have slightly different rules.

From now on, after each of you has handed in your Decision Sheet with your contribution decision for each game, the assistant will write down how much the total contribution to the group account, the amount each of you earned from the group account AND ALSO, on this page – s/he will write down how much each of you put into the group account. Like this:

<< *Show “individual contributions” white board*>>

Therefore at the end of each game, everyone in your group will know how much each person put into the group account. We will continue to enforce the not speaking to each other or making comments before, during, or after each game is played.

Okay, now we will play some more games. For this we will use “Decision Sheet 2”.

<< *Use Game Script to guide them through the game*>>

<< *Assistant to write all individual contributions on white board (as well as total contributions and individual earnings, as per previous games)*>>

<< *PLAY GAME FOR 10 ROUNDS*>>

<< *When the 10 games finish, stop and proceed to Exit Text*>>

C: Negotiation

From now on, we are going to start a new game very similar to the past game.

For this we will use “Decision Sheet 2”.

The only difference is that you are now allowed to talk with other group members for a maximum of two minutes before each game.

So for the first two minutes of each game you should negotiate with each other regarding how much everyone should give for the following game of play. To do this, everyone will turn towards the middle of the room to face one another. You should only discuss the game and contribution amounts.

When the time for chatting with the rest of your group has finished, you should sit back in your seats, making sure you are facing away from each other, and make your decisions in the same way that you have been doing.

You can talk about whatever you want, about the game and the rules, but you can't make any threats or promises of side-payments to contribute during or at the end of the game. It is just an open conversation. Your decisions will continue to be private and confidential, and can't be known by the other players.

(TO BE READ OUT AT BEGINNING OF EACH ROUND)

Okay, so you have two minutes to negotiate amongst yourselves. Remember: do not make threats or agreements about side-payments.

<< The instructor lets the players talk during two minutes. The instructor and the other team members must be careful about not influence the conversation >>

Okay, your two minutes are up. Please sit back in your places so that you are facing away from each other.

<< Use Game Script to guide them through the game >>

<<After you have returned folders with Decision Sheets to participants, read out “Communication Script” first, before reading out “Game Script”>>

<< PLAY GAME FOR 10 ROUNDS >>

<< When the 10 games finish, stop and proceed to Exit Text >>

D: Leading-by-example treatment

From now on, we are going to start some new games which are very similar to the past games. The only difference is that, for the next games we will have slightly different rules.

From now on, we will select a different group member at the start of each game to be the 'leader' of the group.

The leader will circle the amount of rupees that he or she wishes to contribute to the Group Account. Then he or she will announce his or her contribution out loud to the rest of the group members.

After the leader has announced his or her contribution to the Group Account, the rest of the group will make their own contributions in private.

Only the leader will announce his or her contribution out loud. All other contributions will be made silently in private. And no-one must make their contribution decision before the leader has announced their own contribution.

Are there any questions?

<< Answer questions to best of your ability >>

Remember: there will be a different leader for each game. Every Group member will have the chance to be a leader at least once.

We will continue to enforce the not speaking to each other or making comments before, during, or after each game is played.

Okay, now we will play some more games. For this we will use “Decision Sheet 2”.

<< Use Game Script to guide them through the game >>

<< PLAY GAME FOR 10 ROUNDS >>

<< When the 10 games finish, stop and proceed to Exit Text >>

Exit Text

We have now come to the end of the game. Please remain seated and do not communicate with others until you have left this room. For the final part of this study, you will each answer a few questions for our final survey. The way this will work is that I will call you one by one.

You will leave the room and hand in your participant card to the experimenter outside this room. The experimenter will then ask you some questions for the final survey. When you have finished answering the questions, you will learn about your total earnings. We will then ask you to sign a receipt for the payments and you will receive your earnings and the show up fee in a closed envelope.

You are then free to go home. Do not tell others what you have earned in the game, this is private information and nobody needs to know how you played the game. I would like to thank you for your participation in this game.

Decision sheets

Circle the amount you want to put into the group account:

Game 1:	<input type="text" value="0 ₹"/>	
Game 2:	<input type="text" value="0 ₹"/>	
Game 3:	<input type="text" value="0 ₹"/>	
Game 4:	<input type="text" value="0 ₹"/>	
Game 5:	<input type="text" value="0 ₹"/>	
Game 6:	<input type="text" value="0 ₹"/>	
Game 7:	<input type="text" value="0 ₹"/>	
Game 8:	<input type="text" value="0 ₹"/>	
Game 9:	<input type="text" value="0 ₹"/>	
Game 10:	<input type="text" value="0 ₹"/>	