Supplementary Online Material for: Identifying communication spillovers in lab in the field experiments

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A All Results for Distance of 2 km

This section replicates all of the tables of the analysis in the main paper for the distance of 2 km rather than 1.75 km. All of the results are consistent, regardless of whether 1.75 km or 2 km distance thresholds for determining whether a village has neighbors who previously participated.

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Table A1: Summary of Village Level Variables

	Mean	Std. Dev.	Min.	Max.
Average Contribution	254.92	65.89	91.7	400.0
Average Contribution (Round 2)	247.58	69.33	75.0	400.0
Proportion Female	0.74	0.14	0.4	1.0
Average Age	35.39	3.38	27.0	45.3
Average Years of Education	4.47	1.29	0.8	8.5
Average Number current Participants Known	2.56	1.09	0.7	6.8
Community Cooperation Index	0.81	0.13	0.3	1.0
Community Effort Index	0.79	0.16	0.3	1.0
General Trust Index	0.73	0.15	0.3	1.0
Distance to base (km)	13.14	7.98	1.0	38.8
Village Size (# HHs)	131.68	42.84	43.0	345.0
# Villages $\leq$ 2 km	2.78	1.65	0.0	7.0
Distance to paved road (km)	4.73	3.81	0.0	14.1
Observations	147			

Table A2: Logit regression for treatment: Past participating neighbors within 2 km

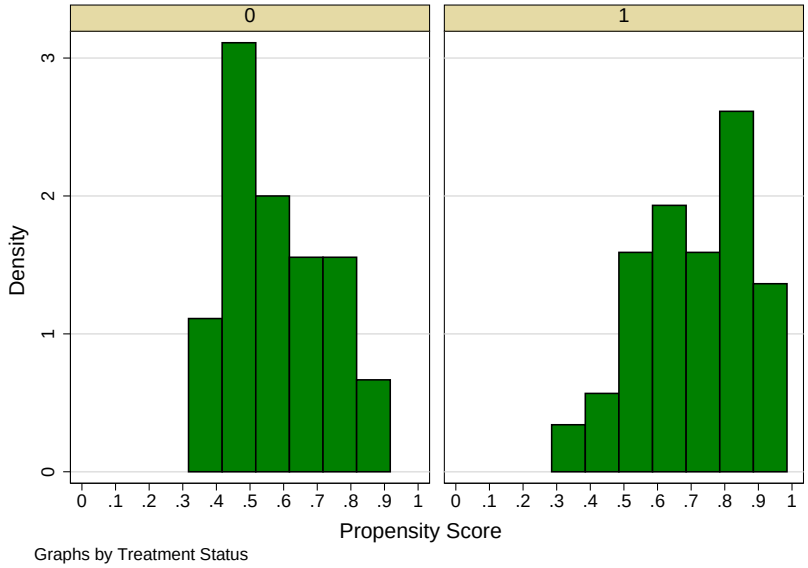
Logit Regression	**Treatment**
	(1)
Distance to base (km)	-0.040
	(0.117)
Village Size (# HHs)	0.002
	(0.006)
# Villages $\leq$ 2 km	0.894***
	(0.195)
Distance to paved road (km)	-0.125
	(0.135)
Observations	143
Sector Fixed Effects	Yes

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are reported in parenthesis.

Table A3: Balance of treatment: Past participating neighbors within 2 km

	Treatment	Control	Difference
Available to planner			
Distance to base (km)	11.91	15.02	-3.10**
Village Size (# HHs)	131.32	132.24	-0.92
# Villages $\leq$ 2 km	3.38	1.84	1.54***
Distance to paved road (km)	4.60	4.93	-0.33
Unavailable to planner			
Average Contribution	266.50	237.15	29.35***
Proportion Female	0.74	0.74	0.00
Average Age	35.27	35.56	-0.29
Average Years of Education	4.49	4.44	0.05
Community Cooperation Index	0.81	0.82	-0.00
Community Effort Index	0.79	0.79	-0.00
Average Number current Participants Known	2.51	2.64	-0.14
General Trust Index	0.73	0.73	-0.00
Observations	89	58	147

Figure A1: Propensity Scores by Treatment Status



Distribution of propensity score. $N = 134$.

Table A4: ATE of Presence of Past Participating Neighbors Within 2 km

	(1) Standard Matching	(2) Exact Matching
Contribution	36.642***	36.700**
	(11.569)	(16.038)
Observations	112	88

Analysis uses nearest neighbor propensity score matching, with 2 neighbors, with replacement. Significantly different from zero at * 0.1; ** 0.05; *** 0.01. Abadie-Imbens Robust Standard Errors in parentheses. Values of propensity score outside common support range are dropped. Exact matching excludes sectors with only 0 or 1 village in either treatment or control groups.

Table A5: Effect of Presence of Past Participating Neighbors Within 2 km

	(1)	(2)	(3)
Treatment Status	29.355***	33.085***	31.483**
	(10.518)	(10.992)	(13.075)
Distance to base (km)		−0.067	−0.392
		(0.862)	(3.224)
Distance to paved road (km)		4.108*	0.570
		(1.824)	(4.617)
Village Size (# HHs)		−0.031***	0.065***
		(0.113)	(0.141)
# Villages ≤ 2 km		−2.396	0.443
		(4.474)	(5.354)
Years of Education		1.824	−0.997
		(5.401)	(6.815)
Female		94.355**	79.481*
		(39.533)	(43.673)
Age		9.105	13.268
		(26.208)	(25.072)
Age^2		−0.107***	−0.170***
		(0.363)	(0.351)
Controls		✓	✓
Sector Fixed Effects			✓
R^2	0.05	0.20	0.29
Observations	147	146	146

Analysis uses OLS regression. Significantly different from 0 at * 0.1; ** 0.05; *** 0.01. Robust standard errors in parentheses. Controls includes all remaining variables found in Table 3 in main paper.

Table A6: Counterfactual Tests

	(1) Matching	(2) Exact Matching	(3) OLS
Distance to base (km)	−33.329	−30.595	−25.984
	(45.798)	(20.406)	(16.675)
Reverse order	31.144	51.894	26.709
	(24.378)	(36.642)	(17.957)
Distance to paved road (km)	−0.749	−17.835	−0.468
	(17.582)	(16.408)	(14.311)
Reverse order	−13.197	28.286	−7.090
	(27.775)	(22.003)	(16.884)
Village Size (# HHs)	−8.626	12.660	−13.288
	(16.139)	(14.030)	(13.916)
Reverse order	5.885	−0.214	−0.082
	(15.459)	(19.339)	(13.143)
# Villages $\leq$ 2 km	10.645	13.567	6.200
	(15.484)	(15.384)	(14.287)
Reverse order	−18.370	−20.009	−16.914
	(20.784)	(26.872)	(14.595)

Average Effect of Presence of Past Participating Neighbors, for counterfactual orders of village visits. Order of visit is simulated for low to high values for odd rows, and the reverse (high to low values) for even rows. Analysis uses OLS regression and matching, following the empirical strategy in the main paper. Significantly different from 0 at * 0.1; ** 0.05; *** 0.01. Abadie-Imbens or standard robust standard errors in parentheses respectively. Observations vary.

Table A7: The Role of Conditional Cooperators (CCs)

	(1)	(2)	(3)
Treatment Status	−0.858	−1.685	−10.123
	(13.864)	(15.060)	(17.091)
Conditional Cooperator (CC)	108.026***	87.630**	80.114**
	(34.121)	(35.596)	(32.640)
CC × Treatment	59.178	71.191*	84.818**
	(37.493)	(38.725)	(37.455)
Distance to base (km)		−0.242*	−2.425
		(0.685)	(2.593)
Distance to paved road (km)		1.415	0.328
		(1.439)	(3.938)
Village Size (# HHs)		−0.028***	0.071***
		(0.102)	(0.115)
# Villages ≤ 2 km		−2.657	0.718
		(3.223)	(3.557)
Years of Education		−1.956	−4.184
		(4.643)	(5.108)
Female		67.818**	42.670
		(32.076)	(32.869)
Age		−0.328	7.995
		(17.671)	(18.003)
Age^2		0.014***	−0.100***
		(0.245)	(0.253)
Controls		✓	✓
Sector Fixed Effects			✓
R^2	0.41	0.48	0.56
Observations	147	146	146

Analysis uses OLS regression. Significantly different from 0 at * 0.1; ** 0.05; *** 0.01. Robust standard errors in parentheses. Treatment defined as having past participating neighbors within 2 km. Controls includes all remaining variables found in Table 3 in main paper.

Table A8: Heterogeneous Effects of Treatment: Past participating neighbors within 2 km

	(1) OLS	(2) N
By Conditionally Cooperative		
More Conditionally Cooperative	27.845	58
	(22.577)	
Less Conditionally Cooperative	−6.684	71
	(13.613)	
P-Value (Chow test)	[0.041]**	
By Age		
Older	39.346	73
	(27.152)	
Younger	36.379*	71
	(19.923)	
P-Value (Chow test)	[0.951]	
By Education		
More Educated	40.837*	72
	(21.503)	
Less Educated	26.860	69
	(26.588)	
P-Value (Chow test)	[0.660]	
By Number Others Known		
More People Known	50.107***	70
	(18.547)	
Less People Known	43.997*	72
	(23.869)	
P-Value (Chow test)	[0.969]	

OLS regression of specification (3) in Table 5 in main paper. Selected covariates split by median value. Significantly different from zero at * 0.1; ** 0.05; *** 0.01. Robust Standard Errors in parentheses.

B Different Approaches to Measuring Opportunities for Communication

In this section I examine two variables which are likely to be correlated with opportunities for communication with past participants. In the section directly following, I examine two placebo tests with variables which relate to the overall number of villages (either in

the sector or in the 1.75 km radius), and show that these are not significantly related to contributions.

Table B1 presents the effect of the order that a village was visited within a sector. That is, a village that is the very first to participate in the public goods games in its sector would be coded as 1, the village that is the second to be visited within its sector would be coded as 2, and so on. Then the variable is standardized to be mean zero, standard deviation one, in order to facilitate comparison across tables in this section.

Villages that participate first in their sector will be very unlikely to have had contact with previous participants. While villages who participate after 5 villages in their sector had participated, will be much more likely to have had such contact. Consistent with this and the results of the main paper, Table B1 shows that the order of visit within sector is associated with significantly higher contributions.

The next Table B1 simply counts the number of villages within the sector which previously participated in the games. Again this variable is positive and significant in determining contributions. Again it has been standardized. As a placebo test, in the next section, Table C1 shows that the total number of villages in the sector is not driving this result.

Table B1: Effect of Ranking of Order Visited WIthin Sector

	(1)	(2)	(3)
Rank of Visit (within Sector)	16.214***	15.192***	16.469***
	(5.125)	(4.828)	(6.218)
Distance to base (km)		0.169	−1.875
		(0.893)	(3.006)
Distance to paved road (km)		3.097*	−1.471
		(1.852)	(4.455)
Village Size (# HHs)		−0.004	0.065
		(0.116)	(0.138)
# Villages ≤ 1.75 km		4.761	8.840*
		(4.540)	(4.979)
Years of Education		0.686	−0.870
		(5.320)	(7.229)
Female		97.334**	79.427*
		(39.712)	(42.347)
Age		14.246	18.887
		(25.280)	(25.595)
Age^2		−0.177	−0.248
		(0.348)	(0.357)
Controls		✓	✓
Sector Fixed Effects			✓
R^2	0.06	0.20	0.30
Observations	147	146	146

Analysis uses OLS regression. Significantly different from 0 at * 0.1; ** 0.05; *** 0.01. Robust standard errors in parentheses. Variable "Rank of Visit (within Sector)" has been standardized. Controls includes all remaining variables found in Table 3 in main paper.

Table B2: Effect of Number of Previous Participating Villages in Sector

	(1)	(2)	(3)
# Villages before in Sector	12.351**	12.796**	13.241**
	(4.903)	(5.038)	(5.976)
Distance to base (km)		0.322	−2.083
		(0.888)	(3.065)
Distance to paved road (km)		3.960**	−1.113
		(1.866)	(4.459)
Village Size (# HHs)		−0.022	0.053
		(0.116)	(0.139)
# Villages ≤ 1.75 km		5.374	9.210*
		(4.539)	(4.944)
Years of Education		1.801	−1.449
		(5.502)	(7.126)
Female		94.324**	75.439*
		(40.455)	(42.572)
Age		12.221	16.430
		(26.502)	(25.468)
Age^2		−0.152	−0.216
		(0.364)	(0.356)
Controls		✓	✓
Sector Fixed Effects			✓
R^2	0.04	0.19	0.29
Observations	147	146	146

Analysis uses OLS regression. Significantly different from 0 at * 0.1; ** 0.05; *** 0.01. Robust standard errors in parentheses. Variable "# Villages before in Sector" has been standardized. Controls includes all remaining variables found in Table 3 in main paper.

C Placebo Tests for Measuring Opportunities for Communication

This section presents two placebo tests for measuring opportunities for communication. The previous Table B2 examined the number of villages that were previously visited within the same sector, and found a strong significant relation with contributions. Table C1 examines the total number of villages in the sector, irrespective of the date of visit. One can see that this is correlated, but not significantly associated with contributions. Note that this variable is standardized to have mean zero, standard deviation one, to be comparable with the other tables in this section.

The second placebo test is in fact the variable reflecting village density, the number of villages within 1.75 km, irrespective of the date of visit. This variable is a key matching variable, but it is of note that even though it is correlated with treatment, there are not statistically significant effects of village density on contributions, shown in Table C2. While the coefficient is positive it is not significant at conventional levels. A positive coefficient is to be expected, given that the variable is correlated with treatment. It is significantly diminished when the treatment variable is added to the regression (column 4). Again note that the variable has been standardized.

Table C1: Effect of Total Number of Villages Within Sector

	(1)	(2)
# Villages in Sector	6.194	4.755
	(4.611)	(4.982)
Distance to base (km)		0.143
		(0.936)
Distance to paved road (km)		4.107**
		(1.891)
Village Size (# HHs)		−0.015
		(0.121)
# Villages ≤ 1.75 km		4.696
		(4.574)
Years of Education		0.899
		(5.589)
Female		84.170**
		(42.288)
Age		8.923
		(26.292)
Age^2		−0.118
		(0.362)
Controls		✓
Sector Fixed Effects		
R^2	0.01	0.16
Observations	147	146

Analysis uses OLS regression. Significantly different from 0 at * 0.1; ** 0.05; *** 0.01. Robust standard errors in parentheses. As there is no variation across sectors in number of villages within the sector, the specification with sector fixed effects is omitted. Variable "# Villages in Sector" has been standardized. Controls includes all remaining variables found in Table 3 in main paper.

Table C2: Effect of Number of Neighbors Within 1.75 km

	(1)	(2)	(3)	(4)
# Villages $\leq$ 1.75 km	8.245	6.707	11.358	3.188
	(5.903)	(6.353)	(6.943)	(7.873)
Treatment				29.773**
				(12.032)
Distance to base (km)		−0.146	−1.133	−1.312
		(0.888)	(3.173)	(3.188)
Distance to paved road (km)		4.163**	−0.354	−0.307
		(1.897)	(4.504)	(4.520)
Village Size (# HHs)		−0.024	0.064	0.094
		(0.123)	(0.143)	(0.142)
Years of Education		0.308	−3.409	−3.146
		(5.552)	(6.773)	(6.881)
Female		84.679**	60.287	76.834*
		(42.007)	(42.719)	(45.056)
Age		8.796	11.910	15.083
		(26.366)	(25.267)	(25.444)
Age^2		−0.115	−0.167	−0.206
		(0.364)	(0.353)	(0.354)
Controls		✓	✓	✓
Sector Fixed Effects			✓	✓
R^2	0.01	0.15	0.26	0.30
Observations	147	146	146	146

Analysis uses OLS regression. Significantly different from 0 at * 0.1; ** 0.05; *** 0.01. Robust standard errors in parentheses. Variable "# Villages $\leq$ 1.75 km" has been standardized. Controls includes all remaining variables found in Table 3 in main paper.

D Examining Potential Changes in Cooperation Norms

Table D1 examines whether the treatment, having past participating neighbors within 1.75 km, had any impact on the response to the question, "People in this community generally cooperate with one another on issues that affect the community". This question was asked before the public goods game was introduced. From this table it is evident that responses to this question were not affected, providing some evidence that community norms about cooperation were not significantly altered. Given the main results in the paper, it appears more plausible that communication changed beliefs specific to behavior in the game, rather than norms in general.

Table D1: Effect of Presence of Past Participating Neighbors Within 1.75 km on Cooperation Norms

	(1)	(2)	(3)
Treatment Status	−0.014	−0.013	−0.006
	(0.022)	(0.021)	(0.020)
Distance to base (km)		−0.001	0.001
		(0.001)	(0.006)
Distance to paved road (km)		0.001	−0.008
		(0.002)	(0.007)
Village Size (# HHs)		0.000	0.000
		(0.000)	(0.000)
# Villages ≤ 1.75 km		0.012	0.013
		(0.009)	(0.009)
Years of Education		−0.004	0.006
		(0.008)	(0.009)
Female		−0.019	0.079
		(0.066)	(0.069)
Age		0.055	0.053
		(0.034)	(0.034)
Age^2		−0.001*	−0.001*
		(0.000)	(0.000)
Controls		✓	✓
Sector Fixed Effects			✓
R^2	0.00	0.46	0.59
Observations	147	146	146

Analysis uses OLS regression. Significantly different from 0 at * 0.1; ** 0.05; *** 0.01. Robust standard errors in parentheses. Controls includes all remaining variables found in Table 3 in main paper.

E Heterogeneous Effects with Matching Strategy

Table E1 presents the analogous examination to Table 12 in the main paper, using the matching strategy. The exercise is fairly demanding, since it requires matching on very small subsamples. One can see that for standard matching there are still a moderate amount of observations (between 52 and 57) allowing for some inference - in particular the patterns in column (1) are similar to those in Table 12. However exact matching by sector is far too demanding, and there are not sufficient observations to be matched, ranging from 19 to 25. Thus the results in Column (2) are presented only for consistency, it is not possible to draw any conclusions from this data.

Table E1: Average Effect: Heterogeneous Effects

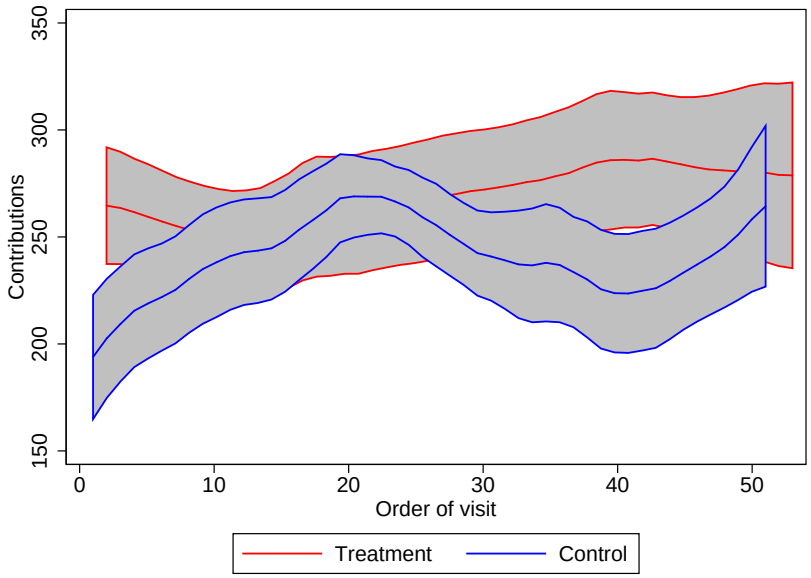
	(1) Standard Matching	(2) Exact Matching
By Conditionally Cooperative		
More Conditionally Cooperative	54.635***	6.746
	(15.633)	(17.069)
Less Conditionally Cooperative	7.809	−4.207
	(11.821)	(9.519)
N	57	19
By Age		
Older	43.453***	28.304*
	(14.260)	(15.657)
Younger	21.568	22.998
	(16.515)	(27.084)
N	56	19
By Education		
More Educated	26.965*	84.521***
	(15.915)	(15.091)
Less Educated	34.871**	20.864
	(14.801)	(27.248)
N	57	25
By Number Others Known		
More People Known	25.541	38.030
	(16.620)	(36.021)
Less People Known	22.813	21.321
	(18.009)	(26.259)
N	53	22

Analysis uses nearest neighbor propensity score matching, with 2 neighbors, with replacement. Significantly different from zero at * 0.1; ** 0.05; *** 0.01. Abadie-Imbens Robust Standard Errors in parentheses. Values of propensity score outside common support range are dropped. Exact matching excludes sectors with only 0 or 1 village in either treatment or control groups.

F Field Team Experience and Contributions

One possible concern is that the field team conducting the experiment gained experience over time, and this altered contributions among later participants relative to earlier participants. This could be a threat to identification of the treatment effects if there were a positive correlation between experience and contributions. Note however that, a priori, there does not seem to be any reason why the effect of experience would be positive or negative. In order to assess the potential for this concern to bias results, I examine the relationship of contributions over time (order of visit), by treatment and control groups separately. Figure F1 presents Epanechnikov kernal-weighted local polynomial smoothing plots regarding the relationship between order of visit and contributions. In fact in the treatment group (villages with previous participating neighbors within 1.75 km) there is only a marginal increase in contributions over time, not statistically significant. This assuages concerns that the treatment effect is driven by increases in contributions due to field team experience, rather than due to communication with past participants. With the control group (no past participating neighbors) there do appear some patterns of increasing contributions over time, though this is non monotonic. This alludes to the possibility that some villages in the control group may nonetheless have had contact with previous participants.

Figure F1: Contributions over time



Epanechnikov kernal-weighted local polynomial smoothing plot showing relationship between order of visit and contributions.