

Online Supporting Information  
for  
Reducing Prejudice Towards Refugees in Uganda:  
Evidence that Social Networks Influence Attitude Change

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## Appendices

### A Intervention Details

Following Broockman and Kalla (2016), our intervention proceeded in several steps and allowed for some flexibility to allow for a natural exchange rather than a fully scripted one. We trained the survey team to carry out the intervention with great care, to ensure that they thoroughly understood each component and had ample opportunity to practice the intervention. All research team members who conducted interviews were from West Nile (but not the villages we studied) and spoke the local language (Lugbara).

#### **Step 1. Create Non-Judgmental Context**

Intervention begins: Research team members engage in a series of strategies to elicit participants' opinions in a non-judgmental manner. Research team members should ask respondents about their opinion on the just-asked baseline questions about their own attitudes and ask them to explain their position in a non-judgmental manner, not indicating they were pleased or displeased with any particular answer, but rather to appear genuinely interested in hearing the subject think about the question. This is intended to encourage reflection and to build rapport.

For example, the research team member could say, "I see you said that you somewhat agreed that refugees would be a burden on the resources of your community. That's interesting. I'm curious to hear more. Could you please tell me more about why you feel that way?" After hearing the response, the research team member should not affirm that

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the respondent's opinion is "correct" but should convey understanding and empathy, for example: "I see. That sounds like a very difficult situation when (repeat back some of what you heard about what the respondent experienced or heard)."

### **Step 2. Exchange Narratives**

The enumerator should reference back to an earlier baseline question: "Have you ever met a refugee living in Uganda?" If the respondent knows someone who is a refugee, the enumerator would have the respondent talk about how they know this person, their refugee story (e.g. how and why they came to Uganda), and how it must feel to be a refugee (e.g. "wow, do you think that was difficult for this person? What challenges did they face?"). Whether or not the respondent knows a refugee, the enumerator would always share a story about a refugee they know (we always used the name Gift).

For example, after hearing about the respondents' experiences with a refugee, the enumerator would say: "Oh, that is interesting. I know a refugee named Gift who lives in [name of nearest refugee settlement.] She left South Sudan a few years ago when her village was burned by rebels. They cannot find her husband, and her mother was raped and killed. She and her 3 young kids walked the whole way to Uganda, hiding from rebels in the bush along the way. They are so grateful to be here in Uganda. Gift works as a translator now in the refugee camp where she lives, to earn enough food to for her family. Even still, she is usually only able to give her children one meal per day and life is very difficult.

The enumerator would end this section by asking the respondent if there is anything about the story that they can relate to, encouraging perspective taking. For example, "Have you ever experienced anything like that, such as not being able to feed your family as much as you would like? Or insecurity in your community?"

### **Step 3. Exchange narratives about a personal experience with compassion.**

Enumerators ask respondents to share a time when someone showed them compassion. If necessary, enumerators should tell their own stories of being shown compassion in order to make respondents feel comfortable sharing a story of their own. Enumerator's goal is for this non-judgmental exchange of narratives to end with individuals self-generating and explicitly stating aloud implications of the narratives that ran contrary to their previously stated exclusionary attitudes.

An example of a story an enumerator could share about experiencing compassion is: "Once, in school, I fell far behind because my mom was sick and I had to stay home and care for her. My teacher came to my home to tutor me every evening for 3 weeks to help me catch up. I never forgot what my teacher did for me. I appreciated this so much. Has such a thing ever happened to you – a time when someone showed you compassion and helped you?" Then: "Do you think this kind of compassion should apply to refugees? How should we do that?"

### **Step 4. Address Concerns.**

At this point, the enumerator would return to any concerns about refugees that the respondent may have mentioned earlier. The enumerator would talk through these concerns

and, where applicable, provide talking points to refute them. Enumerators will be trained not to address concerns until this point in the conversation so that respondents would not feel threatened by this section. Only after rapport had been established, stories shared, and the value of compassion activated would enumerators address concerns.

For example, if the respondent surfaced a concern about refugees using their land for gardening or firewood, the enumerator could say: “I hear you that sometimes it feels like they are using up our land. But did you know that during the 1980s, after Idi Amin was pushed out and many Ugandan people fled West Nile to South Sudan, many South Sudanese shared land with Ugandans? Also, I know that most of the South Sudanese refugees are very respectful and try not to overuse our land. They hoping to return back to their land as soon as it is safe.” See also the information sheet provided to the research team for additional factual information about refugees in Uganda.

If respondents surface a personal negative experience with refugees, it’s important to acknowledge that experience, and to share sympathy about the difficult experience. This can be followed by statements about most refugees not behaving in that negative way.

#### **Step 5. Make the Case.**

The enumerator should then reiterate for the enumerator why they hoped the respondent would become more supportive of refugees.

For example, the enumerator could say, “I wanted to exchange stories about refugees because I have this knowledge about them – what they have been through and how they are trying to do good things for their families and how they respect Uganda – and I felt that if I shared it with you, it may help you come to understand them and support them better.”

## B Supporting Figures and Tables

### B.1 Baseline Attitudes and Individual Response to Treatment

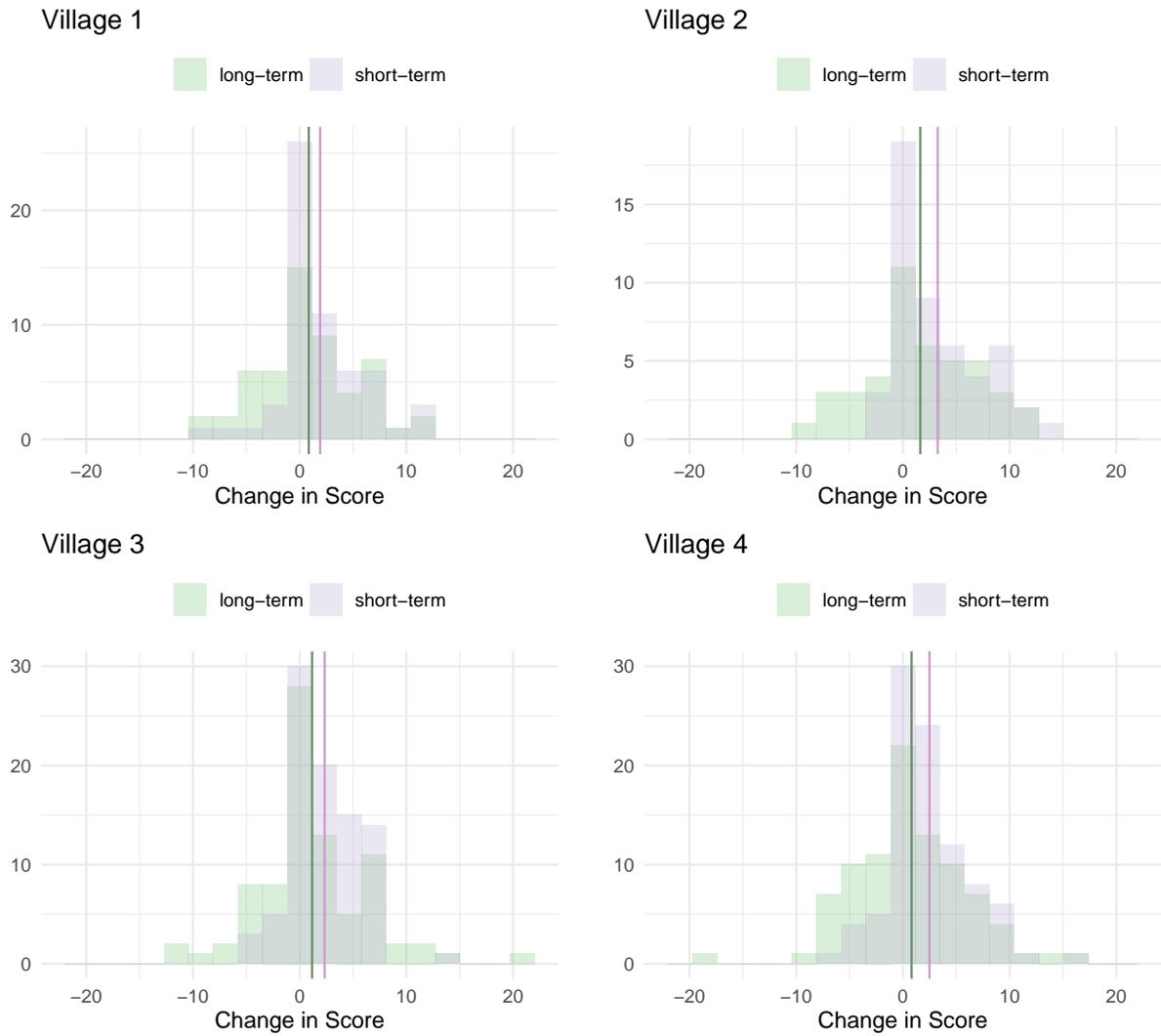


Figure 1: Change in attitude score of the treated in the short- and long-term, separated by village.

	V1 T	V1 C	V2 T	V2 C	V3 T	V3 C	V4 T	V4 C	All T	All C
Pro-ref bl	21.4	20.2	20.0	19.5	24.3	21.6	23.3	23.6	22.6	21.3
Pro-ref bl2	23.3		23.3		26.7		25.8		25.1	
Pro-ref el	22.2	22.4	21.6	20.5	25.6	24.6	24.1	24.4	23.8	23.1
Short-tm ch.	1.9		3.3		2.3		2.5		2.5	
Long-tm ch.	0.9	2.2	1.6	1.4	1.2	3.0	0.8	1.0	1.1	1.9
Prop s.t.=0	0.24		0.16		0.22		0.18		0.20	
Prop s.t.>0	0.59		0.70		0.65		0.70		0.66	
Prop s.t.<0	0.17		0.14		0.14		0.12		0.14	
Prop l.t.=0	0.09	0.10	0.09	0.00	0.19	0.09	0.13	0.02	0.14	0.06
Prop l.t.>0	0.50	0.68	0.53	0.62	0.46	0.62	0.52	0.66	0.50	0.65
Prop l.t.<0	0.41	0.23	0.37	0.38	0.35	0.29	0.35	0.32	0.36	0.30
n	59	68	50	48	88	58	92	58	289	232

Table 1: Response to treatment by village and treatment condition. Showing the average score in the baseline (bl), post-treatment baseline (bl2), and endline (el); the average difference between bl2 and bl for the treated (short-term change), the average difference between e and bl for everyone (long-term change); and the proportion of each treatment condition that experienced no, positive, or negative change in the short- and long-term.

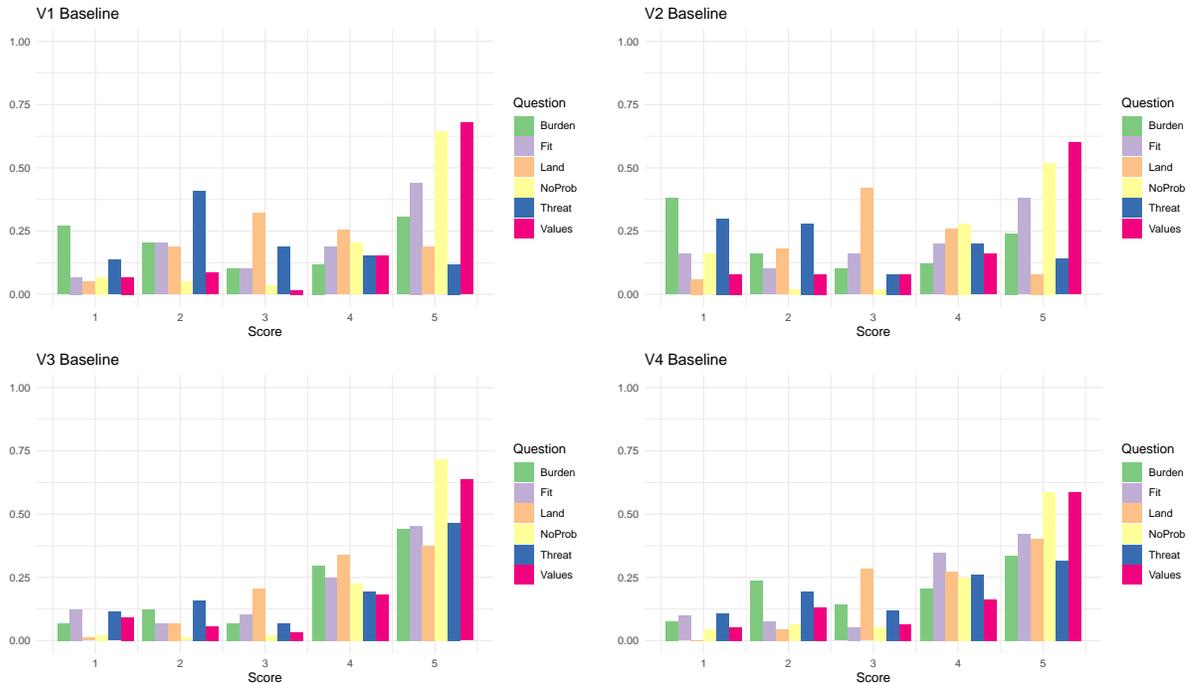


Figure 2: Baseline attitudes for the treated in each of the four villages.

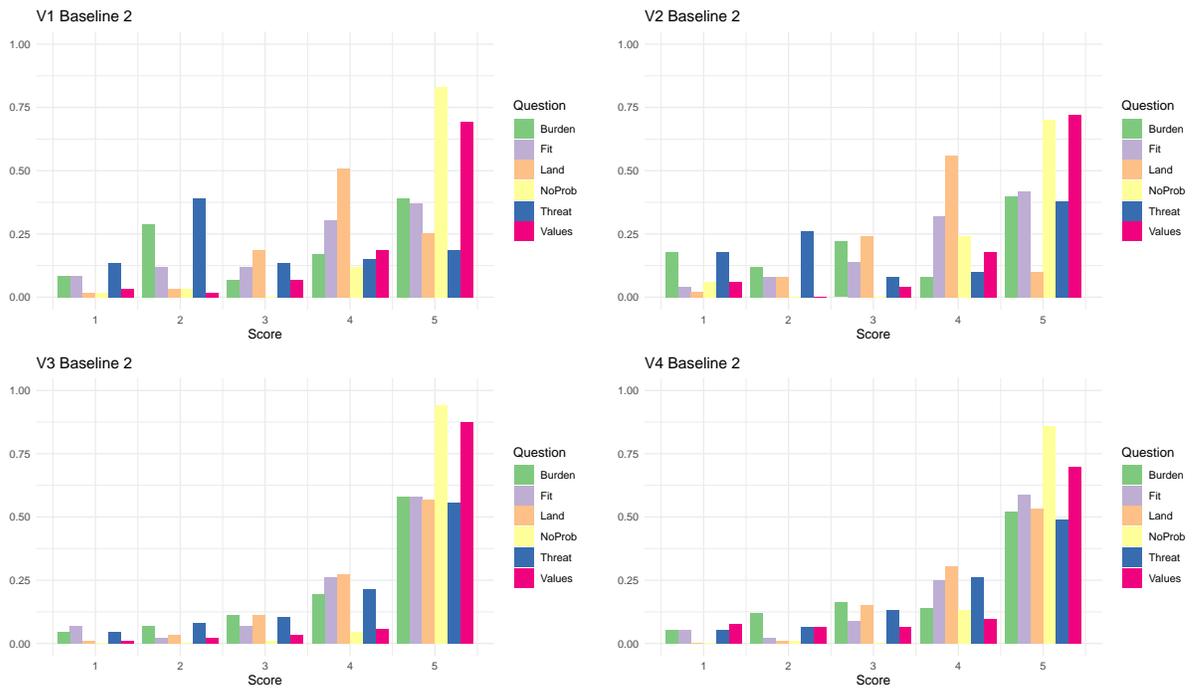


Figure 3: Baseline 2 (post-treatment) attitudes for the treated in each of the four villages.

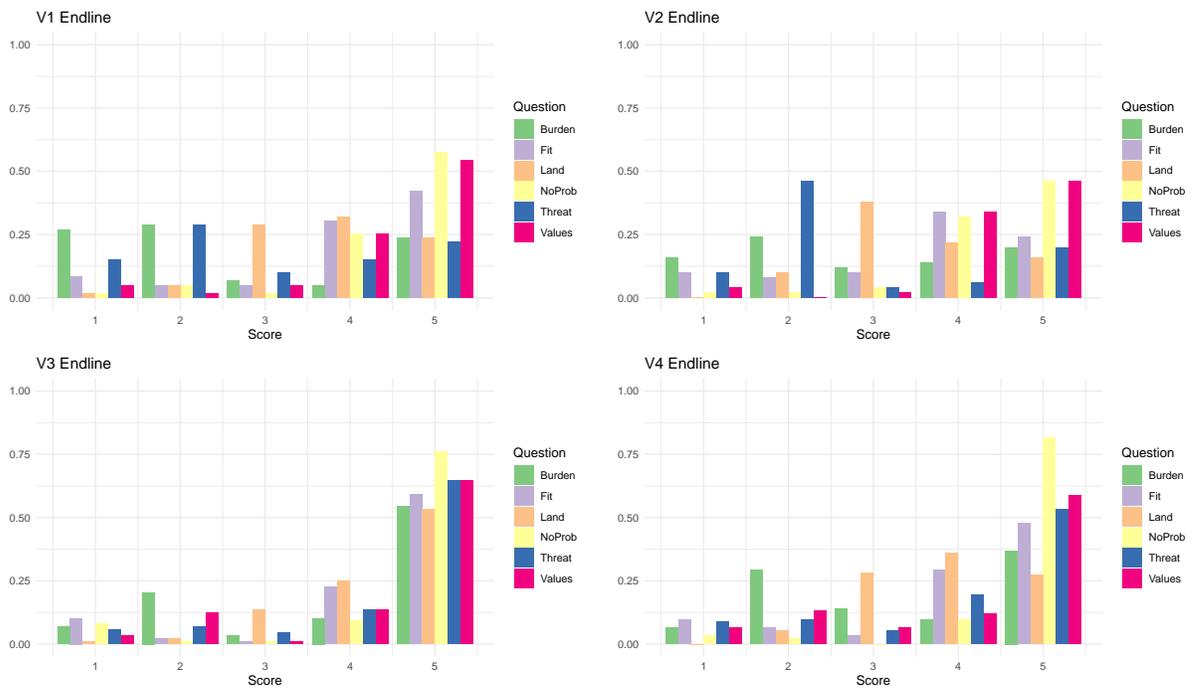


Figure 4: Endline attitudes for the treated in each of the four villages.

## B.2 Network Differences

	V1	V2	V3	V4
AbsDifAvg1	5.48	4.58	5.92	4.75
AbsDifAvg_e	5.34	4.54	5.51	4.66

Table 2: Placebo test for network differences. Instead of real endline score, replace everyone's with a simulated level shift equal to the mean village change. This placebo uses real baseline data. Endline proref scores are replaced with simulated ones that naively guess everyone has a level shift equal to their village's mean change (1.56, 1.52, 1.93, .88 respectively). Those who would be above the index ceiling of 30 have their score replaced with 30. Hitting the cap appears to be a small part of the increase in network similarity in V1 - V3. It could be most of the increase in V4, where lots of people were closer to the cap to start.

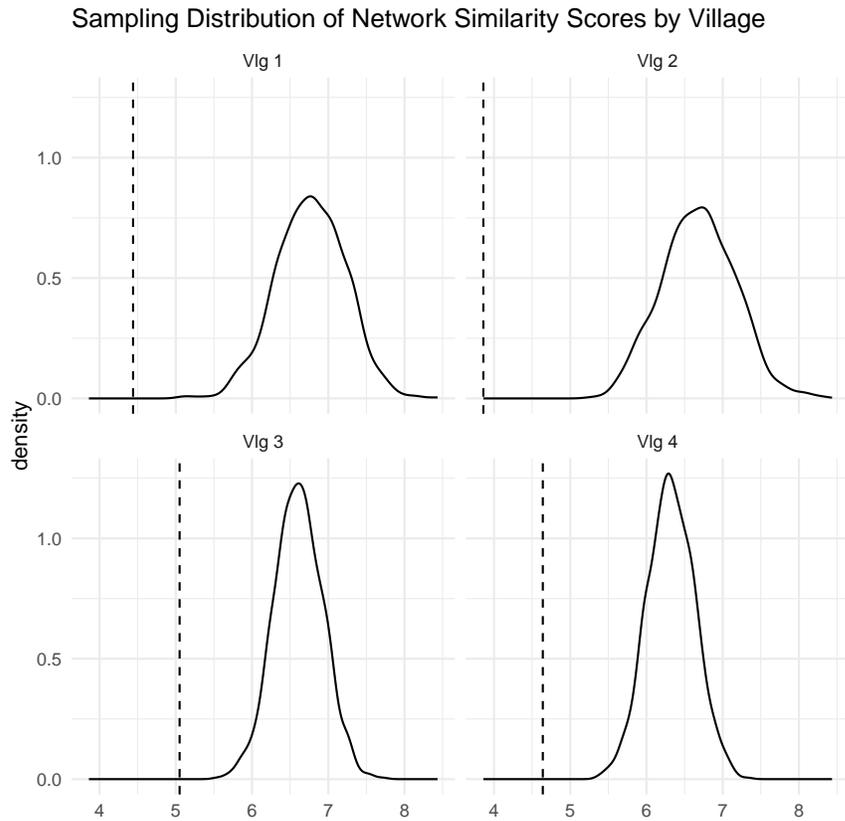


Figure 5: Distribution of average network neighborhood difference (average absolute difference between ego and neighbors in union network) in the endline when endline prorefugee scores are simulated according to a shuffle test: each iteration randomly shuffles the real long-term change values observed in the village and adds them to the real baseline scores, respecting the ceiling of the index of 30. If the observed individual level changes were arrived at independent of the network (purely at random), we would observe much greater neighborhood difference in the endline than we do. The amount in our data would be observed fewer than one time in 1000 by chance.

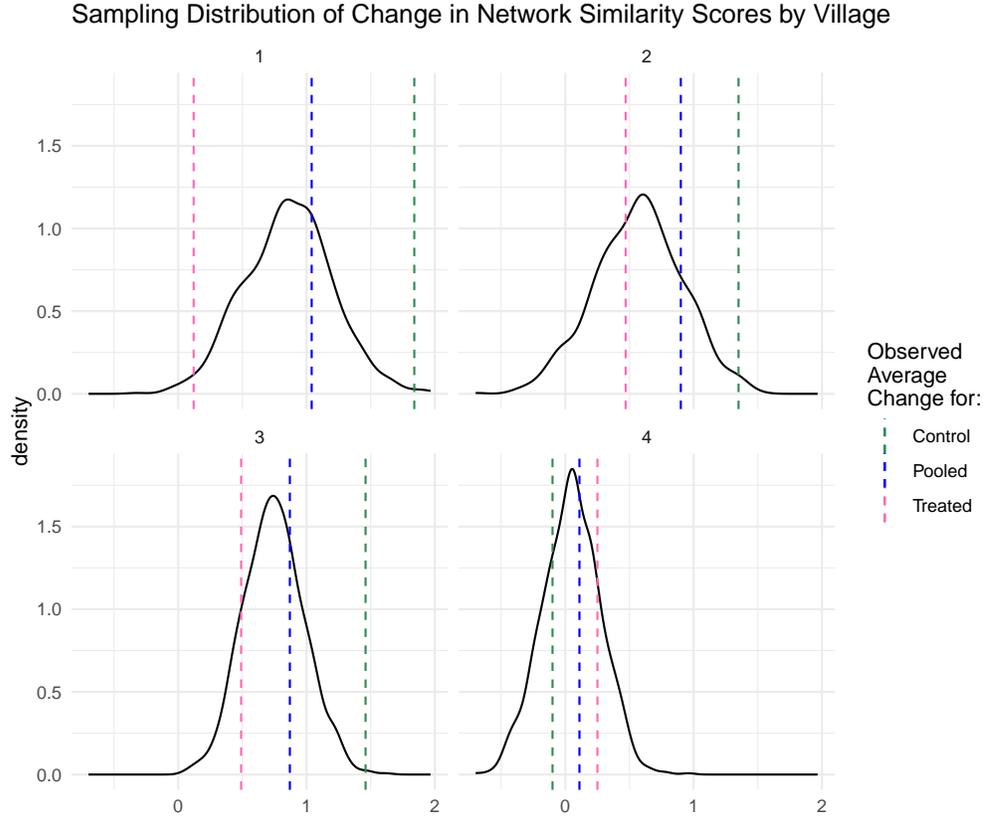


Figure 6: Sampling distribution of the change in network similarity score when the pairs of (baseline,endline) scores are randomly shuffled in our observed networks. Specifically, these sampling distributions are constructed in the following way for each village: take the network and the treatment assignment as given. Randomly shuffle the pairs of observed baseline, endline scores in the network to new, randomly chosen nodes. That is, no baseline, endline pairs are broken, but the node to which they are assigned is selected at random. For each new attitude pair assignment, calculate the network similarity in the baseline, the network similarity in the endline, and the difference between the two. Repeat 1000 times. In villages 1-3, the control become much more similar to their network neighbors than would be expected by chance. Implied p-values: .023, .053, and .033, respectively. The same does not hold in village 4. (Of course this could be an artifact of some baselines being measured over a month later there, as does indeed appear to be the case in the next figure.)

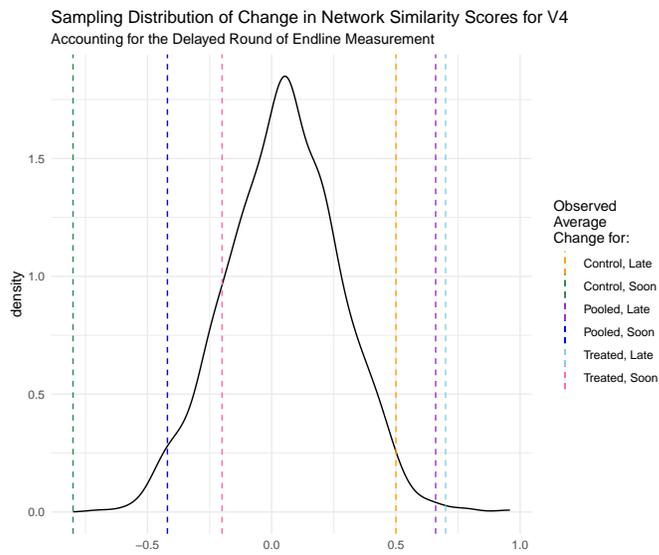


Figure 7: Indeed, in village 4, there is a large difference in the network similarity gains of those who were measured on schedule and those measured much later. Given more time, respondents, especially the control ones, adopted attitudes much more similar to their network neighbors.

## Social Processing in Simpler Specification

	DV: Endline Pro-refugee Score		
	(1)	(2)	(3)
Baseline Atts	0.378*** (0.038)	0.366*** (0.038)	0.370*** (0.040)
Treatment	0.108 (0.376)	0.114 (0.379)	0.013 (0.401)
# Treated Neighbs	0.234* (0.128)	0.176 (0.129)	0.213 (0.135)
# Neighbs	-0.089 (0.076)	-0.065 (0.076)	-0.083 (0.079)
Neighbs Bl Atts		0.190*** (0.073)	0.241*** (0.091)
Neighbs Change			0.045 (0.087)
Switched to Phone			-1.084** (0.545)
Constant	14.842*** (0.879)	10.992*** (1.721)	9.820*** (2.167)
Observations	488	474	439
R <sup>2</sup>	0.188	0.203	0.204

*Note:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table 3: Explaining endline scores for all villagers as a function of their network characteristics using a simpler specification. Even controlling for own baseline attitudes, the baseline attitudes of network neighbors are consistently related to a respondent's own endline attitudes.

DV: Endline Pro-refugee Score						
	Treated Only			Control Only		
	(1)	(2)	(3)	(4)	(5)	(6)
Baseline Atts	0.421*** (0.055)	0.418*** (0.055)	0.419*** (0.058)	0.329*** (0.052)	0.309*** (0.052)	0.314*** (0.056)
# Treated Neighbs	0.180 (0.188)	0.145 (0.190)	0.227 (0.201)	0.315* (0.173)	0.237 (0.172)	0.229 (0.181)
# Neighbs	-0.034 (0.108)	-0.028 (0.109)	-0.060 (0.114)	-0.155 (0.105)	-0.119 (0.104)	-0.120 (0.109)
Neighbs Bl Atts		0.089 (0.105)	0.127 (0.126)		0.307*** (0.098)	0.387*** (0.133)
Neighbs Change			0.047 (0.112)			0.064 (0.141)
Switched to Phone			-1.050 (0.770)			-0.958 (0.786)
Constant	13.760*** (1.320)	11.996*** (2.530)	11.013*** (3.044)	16.065*** (1.148)	9.810*** (2.321)	8.006** (3.162)
Observations	270	263	246	218	211	193
R <sup>2</sup>	0.192	0.200	0.207	0.180	0.214	0.213

*Note:*

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table 4: Explaining endline scores for all treated villagers (left three columns) and for all control villagers (right three columns), again with the simpler specification. The network relationships are substantially driven by those in the control condition. For them, the number of treated network neighbors is positively related to a higher endline score, even controlling for the total number of network neighbors. The attitudes of their network neighbors are consistently positively related to endline attitudes, even controlling for own baseline attitudes. The social process seems to entail ultimately moving in the direction of network neighbors' attitudes for those in the control condition. Switched to phone is an indicator for the 75 respondents in village 4 who indicated their baseline beliefs in an in-person survey, but whose survey mode was switched to phone for the endline due to abrupt COVID restrictions.

	DV: End of Baseline Pro-refugee Score		
	(1)	(2)	(3)
Baseline Attitudes	0.508*** (0.037)	0.508*** (0.037)	0.511*** (0.040)
# Treated NW Neighbs	0.114 (0.128)	0.114 (0.128)	0.014 (0.141)
# NW Neighbs	-0.009 (0.074)	-0.009 (0.074)	0.037 (0.080)
NW Neighbs Atts			0.050 (0.087)
NW Neighbs Change			-0.057 (0.077)
Switched to Phone			0.174 (0.541)
Constant	13.236*** (0.890)	13.236*** (0.890)	12.277*** (2.109)
Observations	289	289	255
R <sup>2</sup>	0.404	0.404	0.413

*Note:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table 5: Placebo test in the simpler specification, again using the baseline post-treatment pro-refugee score as the outcome. Network attributes predicting this outcome would be suspicious since the respondent had not yet had the chance to consult their networks. As expected, these attributes' relationship to the baseline attitude measure are small and imprecisely estimated.

### B.3 Social Processing and Network Distance Measures

Our network distance measures are calculated as the length of the shortest path in the village network between each household and a reference set of households. We use four reference sets: the households with the respondent with the warmest baseline attitudes, the coldest baseline attitudes, the largest positive change in response to treatment, and the largest backlash to treatment measured as having the coldest second baseline score after treatment among those who reacted negatively to treatment.

Each village has its own reference sets. For each village and each reference set, we selected the cutoff value of the relevant variable such that at least three villagers were included. Then we accepted into the set all villagers with a value that extreme, which often resulted in more than three in the top set due to ties. For instance, in villages 1, 3, and 4, the top three warmest baseline scores were all 30. In village 4, the third warmest baseline score was the max of 30. Collecting everyone who had a baseline of 30 into the reference set led to 9 members of village 4 serving as the reference set. In village 2, the third warmest score was 27. Collecting everyone with a score at least as large as 27 led to just the 3 included in the reference set.

Once the reference sets were established in each village, the minimum distance between each household and any member of this set is stored as the value of the distance variable. The maximum (finite) distance any household is to their nearest member of the reference set is 5. Villagers who are in their own component (only relevant for villages 1 and 2) are dropped because their paths to any member of the reference set are infinitely long. The values of the resulting distance variables become:

	0	1	2	3	4	5
Dist to Warmest	33	159	210	80	16	2
Dist to Coldest	14	82	258	123	21	0
Dist to Persuaded	16	87	219	152	26	1
Dist to Backlash	15	99	260	104	18	4

Table 6: Distribution of network distance variable values. Those with 0 distance are the reference set.

The observations with distance 0 are the members of the reference set. For the analyses above, we confirm that the results are not sensitive to leaving in the reference set. Below, we drop them from the full analyses to show that the results hold. When we compare treatment and control, we add an indicator variable for membership in each of these reference sets. That allows us to distinguish the role of the distance 0-s (being a person with the warmest score, say) and the distance to them.

	Vlg 1	Vlg 2	Vlg 3	Vlg 4	All
Treated	0.46	0.51	0.60	0.61	0.55
# Treated Neighbs	2.18	3.11	6.45	4.06	4.09
Treated Neighbs	0.74	0.84	0.99	0.97	0.89
Baseline Atts	20.75	19.77	23.22	23.43	22.03
Neighbs Bl Atts	21.25	19.84	22.43	23.50	21.99
Dist to Warmest	2.04	2.21	1.26	1.85	1.79
Dist to Coldest	2.05	2.04	1.78	2.55	2.12
Dist to Persuaded	2.72	2.11	1.91	2.08	2.18
Dist to Backlashed	2.55	1.65	1.75	2.22	2.05
Warmest	3	3	18	9	33
Coldest	5	3	3	3	14
Most Persuaded	3	3	4	6	16
Most Backlash	3	4	4	4	15
Baseline hhs	127	98	146	150	521
Endline hhs	116	85	142	145	488

Table 7: Summaries of main variables in regression analyses. Mean values of: treatment status, a count of the number of treated neighbors, an indicator for having at least one treated neighbor, baseline pro-refugee score, mean neighborhood pro-refugee scores, network distance to one of the warmest households at baseline, network distance to one of the coldest households at baseline, network distance to one of treated households most persuaded by treatment, and network distance to one of the treated households who responded most negatively to treatment. Also displays count of the reference households to which distance variables are calculated in the village, as well as the number of households in baseline and endline.

DV: Endline Pro-Refugee Score					
	(1)	(2)	(3)	(4)	(5)
Treatment	5.912* (3.431)	5.827* (3.312)	4.772 (3.323)	6.254* (3.236)	7.085** (3.399)
Treated Neighbs	-0.403 (1.102)	-0.158 (1.071)	-0.226 (1.063)	0.056 (1.052)	-0.907 (1.056)
# Neighbs	-0.017 (0.043)	-0.004 (0.042)	-0.013 (0.042)	0.013 (0.041)	-0.043 (0.044)
Baseline Atts	0.344*** (0.043)	0.365*** (0.042)	0.395*** (0.040)	0.371*** (0.038)	0.383*** (0.048)
Neighbs Bl Atts	0.266** (0.113)	0.353*** (0.114)	0.324*** (0.108)	0.317*** (0.106)	0.218* (0.115)
Dist to Warmest	-0.681** (0.289)				-1.202*** (0.324)
Dist to Coldest		-0.346 (0.293)			0.280 (0.344)
Dist to Persuaded			-0.467* (0.270)		-0.619** (0.296)
Dist to Backlashed				0.028 (0.263)	0.316 (0.298)
Trt * Treated Neighbs	-1.366 (1.628)	-1.138 (1.570)	-1.352 (1.561)	-1.059 (1.568)	-0.544 (1.665)
Trt * # Neighbs	0.003 (0.064)	0.057 (0.060)	0.029 (0.060)	0.049 (0.060)	-0.009 (0.065)
Trt * Neighbs Bl Atts	-0.213 (0.153)	-0.225 (0.149)	-0.177 (0.150)	-0.240* (0.145)	-0.295* (0.153)
Constant	11.866*** (2.801)	8.548*** (2.489)	9.066*** (2.524)	8.133*** (2.477)	13.842*** (2.839)
Observations	438	456	456	455	398
R <sup>2</sup>	0.171	0.189	0.224	0.219	0.218

Note:

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table 8: Replicating the analyses in the main article, holding out the reference category households (the warmest, the coldest, the most persuaded, and the most backlash. Results are qualitatively the same.

	DV: Endline Pro-Refugee Score				
	(1)	(2)	(3)	(4)	(5)
Treatment	4.403 (3.258)	4.163 (3.274)	3.926 (3.255)	4.533 (3.266)	4.593 (3.213)
# Treated Neighbs	0.205 (0.188)	0.240 (0.188)	0.210 (0.187)	0.257 (0.188)	0.201 (0.185)
# Neighbs	-0.133 (0.114)	-0.138 (0.115)	-0.144 (0.114)	-0.109 (0.114)	-0.135 (0.113)
Baseline Atts	0.347*** (0.039)	0.376*** (0.039)	0.379*** (0.038)	0.364*** (0.038)	0.341*** (0.040)
Neighbs Bl Atts	0.256** (0.109)	0.314*** (0.109)	0.306*** (0.108)	0.298*** (0.108)	0.232** (0.109)
Dist to Warmest	-0.578** (0.236)				-0.846*** (0.260)
Dist to Coldest		-0.300 (0.259)			0.197 (0.283)
Dist to Persuaded			-0.634*** (0.235)		-0.751*** (0.243)
Dist to Backlashed				0.486** (0.236)	0.788*** (0.243)
Trt * # Treated Neighbs	-0.062 (0.259)	-0.063 (0.260)	-0.067 (0.258)	-0.108 (0.260)	-0.103 (0.255)
Trt * # Neighbs	0.066 (0.154)	0.075 (0.155)	0.078 (0.153)	0.102 (0.154)	0.082 (0.152)
Trt * Neighbs Bl Atts	-0.212 (0.147)	-0.199 (0.147)	-0.196 (0.146)	-0.213 (0.147)	-0.221 (0.144)
Constant	11.508*** (2.682)	9.024*** (2.465)	10.149*** (2.493)	7.657*** (2.514)	12.325*** (2.713)
Observations	470	470	470	470	470
R <sup>2</sup>	0.216	0.208	0.218	0.213	0.245

Note:

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table 9: Replicating the analyses in the paper using a count of the number of treated neighbors instead of an indicator for the presence of at least one treated neighbor. The results remain the same.

DV: Endline Pro-Refugee Score	
Treatment	5.580* (3.205)
Neighb Treat	-0.027 (1.064)
# Neighbs	-0.046 (0.043)
Baseline Atts	0.326*** (0.041)
Neighbs Bl Atts	0.233** (0.111)
Dist to Warmest	-0.765*** (0.260)
Dist to Coldest	0.336 (0.283)
Dist to Persuaded	-0.892*** (0.247)
Dist to Backlashed	0.837*** (0.248)
Age	0.002 (0.016)
Muslim	0.523 (1.654)
Catholic	-0.980 (1.629)
Protestant	-1.509 (1.717)
Some Primary	-0.946 (0.580)
Some Secondary	-1.406* (0.741)
Some College	-0.131 (0.846)
Farmer	-0.550 (0.451)
Male	-0.192 (0.424)
Been a Refugee	0.146 (0.501)
Lived > 5	-0.369 (0.505)
Trt * Neighb Treat	-1.984 (1.518)
Trt * # Neighbs	0.044 (0.059)
Trt * Neighbs Bl Atts	-0.188 (0.144)
Constant	14.392*** (3.275)
Observations	470
R <sup>2</sup>	0.290

*Note:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table 10: Main analysis with demographic controls added. The network results are unchanged.