



## In-group favouritism and social norms: Public goods experiments in Tanzania

Lucille Kok<sup>a,b</sup>, Veerle Oosterbaan<sup>a,b</sup>, Hester Stoker<sup>a,b</sup>, Jana Vyrastekova<sup>a,\*</sup>

<sup>a</sup> Radboud University, Elinor Ostrom Building, Heyendaalseweg 141, The Netherlands

<sup>b</sup> University College Utrecht, Utrecht University, Heidelberglaan 8, 3584 CS Utrecht, The Netherlands

### ABSTRACT

The inhabitants of two Tanzanian villages participate in a public goods experiment. Each village consists of multiple sub-villages. Villagers share a social norm of cooperation at the village level. We put emphasis on the sub-village identity in the experiments, and let individuals from the same or from various sub-villages to be matched into a group. In-group favouritism predicts that participants cooperate more when they are in a group from the same sub-village (In-group treatment) than when they are in a group composed of members from different sub-villages (Out-group treatment). We reject this hypothesis. Participants' expectations of contributions of others do not differ across treatments. However, they respond differently to own expectations across treatments. They contribute on average more than what they expect others to contribute in the Out-group treatment, but less than what they expect others to contribute in the In-group treatment. This is consistent with the activation of the village-level social norm only in the context in which the norm exists, in interactions with other villagers. We emphasise that existing social norms of cooperation need to be considered when making a specific sub-group identity salient with the aim to promote public goods provision.

### 1. Introduction

The ability to mobilise citizens for voluntary public goods provision is crucial, especially in developing countries where the quality of centrally provided government services is low. However, empirically driven guidelines on how to induce local participation have yet to be finalised (Mansuri & Rao, 2012), and decentralisation efforts may have ambiguous results (Bouma, Joy, Paranjape & Ansink, 2014). A better understanding of local community involvement is also needed to prevent externally developed solutions for public goods provision from crowding out existing informal solutions or from remaining ineffective (Bowles & Gintis, 2002; Vyrastekova & Soest, 2003). In this study, we pose the question of whether contributions to a public good can be stimulated by organising provision at the lowest level of the administrative hierarchy via stressing the local community's group identity.

Attempting such an approach may involve multiple arguments. Because of in-group favouritism, cooperation could be more likely amongst members of small local communities if their group identity is made salient. Social identity theory (Tajfel & Turner, 1979, 1985) maintains that group identity prompts in-group favouritism and that humans are more likely to cooperate with people who are members of the same group. Indeed, group identity was proposed to play an important role in countries with weak institutions (Hruschka & Henrich, 2013). Moreover, local communities at the lowest level of administrative hierarchy are likely to be more homogenous groups,

with a stronger group identity (Andreoni, Payne, Smith & Karp, 2016; Miguel & Gugerty, 2005), tapping easier into identity-driven incentives for cooperation.

Additionally, making group identity salient at the lowest administrative hierarchy level—the local community level—implies that the groups making decisions about public goods provision are smaller. This might strengthen reciprocity because people are more likely to meet and interact with others in the future, creating even more reasons for organising the provision of public goods in developing countries at the local community level. Stressing the local group identity could be an attractive approach for governmental and nongovernmental organisations when attempting to intervene with citizens' willingness to provide public goods.

Despite all these arguments, the considerations in favour of making group identity salient at the local level do not account for existing social norms of cooperation in communities (Ostrom, 2000). How do the strategies of stressing a specific group identity interact with the role that social norms play? Suppose we start from a situation in which a norm of cooperation exists at the village level. What is the effect if we restrict the interaction to sub-villages, smaller parts of the whole village? Based on the previous arguments, especially the theory of cooperation amongst in-group/out-group members, making the sub-village salient should result in greater cooperation. On the other hand, if this sub-village identity made salient is perceived as different from the identity relevant for the activation of an existing social norm of

\* Corresponding author.

E-mail address: [j.vyrastekova@fm.ru.nl](mailto:j.vyrastekova@fm.ru.nl) (J. Vyrastekova).

cooperation, say at the village level, the result is unclear.

This is because social norms are intricately connected to the identity of the group they govern and may be triggered only in the context in which they naturally operate (Bernhard, Fehr & Fischbacher, 2006; Goldstein, Cialdini & Griskevicius, 2008; Hogg & Reid, 2006). Contributions to a public good are a good example of behaviour that can be affected by an injunctive norm of the type ‘what is the right thing to do’, the local norm of cooperation (Cristina Bicchieri & Xiao, 2009). However, there is no good reason to assume that such social norms only operate at the lowest level of the administrative hierarchy or that they would be triggered on that level when another group identity is salient for an existing social norm.

To understand the impact of making group identity salient when a social norm operates on a different level, we consider the case of Tanzanian villages, which are administratively divided into smaller units of sub-villages (Ewald, 2011). Villages are often geographically dispersed, and the several sub-villages they are composed of represent concentrated sub-groups of inhabitants. Villagers therefore have their village identity, but they also belong to one of the sub-villages. These sub-villages form communities where people share public facilities, such as local church, small restaurants or a neighbourhood centre. Sub-village identity is salient and relevant for people's daily life.

For our study, we conduct in-depth interviews in two North Tanzanian villages and identify that a strong social norm of cooperation exists at the village level. In this context, we ask whether we could increase cooperation in the voluntary provision of public goods in these villages by organising public goods provision at the sub-village level rather than the village level, and by making the sub-village level identity salient for public goods provision.

Empirically, measuring the impact of group identity on cooperation in public goods provision is a complex task. When looking at the public goods provided by groups with various identity characteristics, we are bound to find that other relevant characteristics of these groups vary as well. Smaller, more localised groups are more likely to be homogenous and share the same preferences on the public goods to be provided (Alesina, Baqir & Easterly, 1999). They also might be sharing similarities in preferences or reciprocal tit-for-tat strategies resulting from long-run interactions that are unrelated to the group identity itself.

We therefore identify the impact of group identity by using incentivised economic experiments, in which we can control and systematically vary the composition of the group providing a public good. By placing the participants in a controlled environment and by observing their decisions, we identify the impact of group composition (Braaten, 2014; Cardenas, Stranlund & Willis, 2000). In our experiments, villagers interact anonymously and they face an exogenously occurring opportunity to provide a public good, which has the same value for all participants. In this way we control for selection effects and preference differences. Participants make a single decision in the experiment, excluding any reciprocal motivations for contributions to the public good.

To identify the impact of group identity on public goods provision, we implement two experimental treatments. In the In-group treatment, the groups are formed of participants coming from the same sub-village. In the Out-group treatment, the groups are formed of participants coming from different sub-villages of the same village. To evaluate the impact of group identity—being from the same sub-village—on public goods provision, we compare the public goods provision in the In-group treatment with that in the Out-group treatment. We also collect data on the participants' expectations about the contributions of others in their group. This enables us to explain individual contributions to the public good in relation to the participants' expectations.

## 2. Theory and hypothesis

We address group identity as a source of incentives for public good provision in a naturally occurring situation where social norms of

cooperation exist on a village level, and each village consists of several sub-villages. Can we increase cooperation of the villagers, by using the sub-village identity as a source of incentives? Two sources of incentives meet here: the in-group favouritism and the incentives to follow a social norm.

First, we know that people are sensitive to group identity and treat in-group members differently from out-group members. In particular, they tend to favour in-group members (Turner & Tajfel, 1986). This is reflected in a higher trust towards in-group members and/or in higher contributions to the public good in in-group interactions (Balliet, Wu & De Dreu, 2014; Ben-Ner, McCall, Stephane & Wang, 2009; Y. Chen, Li, Liu & Shih, 2014; Eckel & Grossman, 2005; Everett, Faber & Crockett, 2015; Falk & Zehnder, 2013; Nier et al., 2001). These effects have been observed when group identity was created ad hoc in experiments (Berkman, Lukinova, Menshikov & Myagkov, 2015; Chen & Li, 2009; Eckel & Grossman, 2005; Ruffle & Sosis, 2006; Weng & Carlsson, 2015), as well as with naturally occurring groups (Goette, Huffman & Meier, 2006, 2012).

Empirical evidence also supports that people's expectations about cooperation of others depend on group membership (Hewstone, Rubin & Willis, 2002). In-group members are expected to be more cooperative than out-group members (M. B. Brewer, 2008; T. Yamagishi & Mifune, 2008; Toshio Yamagishi, Jin & Kiyonari, 1999). And, group membership affects the enforcement of social norms of cooperation. The willingness to punish freeriders, and the beliefs about who sanctions whom and to what extent vary with group identity (Abbink, Brandts, Herrmann & Orzen, 2012; Bernhard et al., 2006; Fehr & Gächter, 2000). A shared in-group identity increases the willingness to enforce the social norm of cooperation within the group, as well as cooperation in the group (Goette et al., 2006). Therefore, group identity additionally affects cooperation via the way social norms are expected to be enforced in-group and out-group interactions.

If categorization into groups supports cooperation with in-group members, could we use it as a source of incentives for cooperation? We propose that existing social norms have to be accounted for in order to answer this question. Social norms are behaviours that are acceptable within a group, and that are expected to be followed by group members (Bicchieri & Xiao, 2009; Elster, 1989). Failure to obey expectations implied by a social norm may expose those who free-ride on the social norm to sanctioning by the norm-followers (Fehr & Gächter, 2000; Ostrom, Walker & Gardner, 1992). Social norms are context specific and activated only when the decision-making context corresponds to the context in which the norm usually operates (C. Bicchieri, 2002). The identity of a group in which an interaction takes place is one such context. The activation of a social norm is stronger when the relevant group membership is more salient (Rimal & Lapinski, 2015). Hence, when the salient group identity differs from the group identity in which the norm usually operates, the activation of the norm might be mitigated or prevented completely.

Therefore, making a sub-group identity salient within a group that already shares a social norm of cooperation poses a puzzle. The pure impact of group identity means that people will cooperate more readily with their in-group members than with out-group members. We refer to this as the *pure in-group favouritism hypothesis*. Consistent with this hypothesis, we expect in our experiment that the participants will provide public goods more readily in the In-group treatment than in the Out-group treatment. However, what if the out-group identity corresponds to the context in which a social norm of cooperation operates? As we demonstrated through in-depth interviews, the sites of our study are specific by having a social norm of cooperation at the village level. This norm could be activated when out-group members interact but not when in-group members interact in the experiments. Stressing group identity at the sub-village might be counterproductive if the positive impact of in-group favouritism is not strong enough in comparison with the missing impact of the social norm of cooperation, arising only when the village level identity is salient.

To obtain insight into social norm relevance, we collect in our experiments data on incentivised public goods contributions, as well as data on the participants' beliefs about others' contributions. These data come from a questionnaire distributed immediately after the contribution decision has been made but before the participants received their earnings and learnt about the decisions of others. This allows us to address the participants' beliefs about others' cooperation across the treatments. According to the pure *in-group favoritism hypothesis*, the participants are expected to report beliefs that others are more cooperative in the In-group treatment than in the Out-group treatment.

### 3. Methods and materials

#### 3.1. Location and participants

We conducted our study in two villages located in Arusha Chini Ward, in Moshi Rural District in Tanzania's Kilimanjaro region. Village 1 has 2200 inhabitants and is divided into four sub-villages. Village 2 has 4500 inhabitants and is divided into five sub-villages. Each sub-village exists from the formation of the villages onwards and represents an administrative unit decided upon by the district government. Every village has a village leader, as well as sub-village leaders. To obtain an understanding of the prevailing social norms in the villages, prior to the experiment, we interviewed a group of six key informants from both villages; we asked them questions about village- and sub-village-level interactions of people.<sup>1</sup>

We then recruited participants for the incentivised experiments with the help of village leaders and the members of a local nongovernmental organisation. This resulted in a total of 249 participants, all aged 18 years and above. Prior to the actual experiment, we conducted a training and a practice session with people from two villages that are different from the experiment locations. We also conducted in-depth interviews in each village. In both experiment locations, we conducted one village-wide Out-group session and one In-group session per sub-village (see Table 1). To minimise the spread of information about the experiment, we first completed all sessions in village 1, followed by village 2.<sup>2</sup>

All sessions lasted for approximately two hours and were implemented using the same protocol. The sessions were conducted by the same experimenter, who was fluent in English and in the local language, Swahili, and took place at quiet and easily accessible venues. At the start of each session, the participants received a participant number and indicated their name on the consent list, together with the name of their sub-village, their gender, age, occupation, religion and tribal affiliation (if applicable). Subsequently, the experimenter read out the instructions. The participants were informed that they were free to leave at any point in the study if they no longer wished to participate. The instructions were provided in Swahili and accompanied by examples. Finally, the participants completed the questionnaire and were paid individually.

#### 3.2. The game

We implemented a four-person linear one-shot public goods game in the experiment (Ledyard, 1994). Each participant was only allowed to join one session in our between-subject design. The participants were assigned to groups at random, and the only characteristic they knew about the three other group members was whether these individuals were from the same or other sub-villages. In the In-group sessions, we

**Table 1**  
Session table.

Session	Village	Sub-village(s)	Treatment	N
1	1	1, 2, 3, 4	Out-group	29
2	1	1	In-group	20
3	1	2	In-group	20
4	1	3	In-group	20
5	1	4	In-group	20
6	2	5, 6, 7, 8, 9	Out-group	40
7	2	5	In-group	20
8	2	6	In-group	20
9	2	7	In-group	20
10	2	8	In-group	20
11	2	9	In-group	20

informed the participants that the three other group members were from the same sub-village. In the Out-group sessions, we informed the participants that each of the three other group members was from another sub-village of the same village. This information was provided in the experiment instructions that we read out loud (see Appendix 1).

Each participant received 3000 Tanzanian shillings (TZS); this amount is approximately equivalent to the average income of a daily labourer in the part of Tanzania where we conducted our study. Each participant also received envelopes with his/her participant number. One envelope was marked with 'yangu (A)', Swahili for 'mine (A)', with a drawing of one puppet. The second envelope was marked with 'kundi (B)', Swahili for 'group (B)', and a drawing of four puppets. In this way, we ensured that all participants, regardless of their literacy level, could identify and distinguish between the two envelopes.

The participants had to decide how they would allocate TZS 3000, which they received in the form of six TZS 500 banknotes, between the two envelopes. They get to keep the money placed in envelope A. The money they would put in envelope B would then be collected by the researchers. The researchers doubled the money placed in the B envelopes of all four members of the group together, and distributed this amount evenly amongst the four envelopes. The participants then received back their B envelope and went home with both their A and B envelopes, including the money inside them.

The participants decided on the allocation in a sheltered place to guarantee anonymity. After these decisions but before receiving any feedback on the payments and behaviour of others, all participants filled out a questionnaire (see Appendix 2). In this questionnaire, we included questions which verified their understanding of the game. They also reported about their expectations as to how many other participants in the group would contribute something to the public good (envelope B) and how much they expected others would contribute jointly to the public good. We further included questions on general trust (Kawachi et al. 1997) and the participants' trust in others at the sub-village and village levels, which were derived from the social cohesion items of the collective efficacy scale by Sampson et al. (1997). Lastly, we included questions on expected help from others from their sub-village, as well as from their village, in situations of need. We used these questions to compare the sub-samples of participants across the treatments and thus exclude sampling bias with respect to the trust-related issues.

The participants of our study all agreed to participate in the experiment and post-experiment questionnaires. We obtained their informed consent verbally and by recording their names on a participant list. We chose this method because many participants were unable to write their own name. In such a case, we explicitly asked whether they agreed to their name being written down on the form to indicate their consent for participation. Approval for these procedures was obtained from the ethical committee of Radboud University Nijmegen, the Netherlands, and from the village authorities at the location of our study.

<sup>1</sup> See Supporting online materials: Interview transcripts.

<sup>2</sup> In session 1, the number of participants was not divisible by four. When matching the participants into groups in this session, one randomly selected participant's decision was used to determine the outcome in his/her group and in one additional group.

## 4. Results

### 4.1. The interviews

The interviews we conducted before our experiments gave support for the existence of a strong social norm of cooperation at the village level, enforced by reciprocity and informal sanctioning. The interviewees described that when people are having a difficult time, a group of selected individuals commonly visits the households in a village. They ensure that villagers help the sick person or contribute to a funeral. They go from house to house, and people can write down in a book what they contribute, either in money or in kind, such as firewood or food. The norm is to always contribute something. When a person is in need of support, other people will look at the book, see how much this person has contributed to others and, based on this, make their decision on how much to give him/her. This social norm of cooperation is widely accepted at the village level and is a way of life for the villagers. Sub-village identity does not play a prominent role in this norm.<sup>3</sup>

Villagers meet other villagers during village meetings, where they discuss matters important for the entire village. Importantly, an effort is made to ensure that all voices are heard in these meetings. Everyone is encouraged to voice their opinion—women are asked for their opinion first in the meetings, and when someone does not dare to speak in front of the others, someone else will voice that person's opinion. Because of this, the villagers said in the interviews that they experience these meetings as a means through which they exert influence on the outcomes that affect their lives.

The interviewees also shared with us that people from different backgrounds easily mingle with the other villagers, with one saying that it 'is not easy to see the differences between people in a village; however, it is easy to see the differences between people from different villages'. Based on these interviews, we conclude that the community has a strong village-level social norm of cooperation, in which sub-village interactions do not play a dominant role in creating a social norm of cooperation.

We also probed the role of ethnic affiliations in the villages. In Tanzania, there are more than 120 tribes, 38 of which are represented in this study and mingle with both the villages in the study (*Nations Encyclopedia*, n.d.). The key informants shared in the interviews that the only distinction the inhabitants of the villages themselves make is between Maasai and non-Maasai; the latter are referred to as Swahili. To account for this, we later controlled for Maasai identity in our analysis. In terms of religion, the villagers are a mix of Muslims (minority) and Christians of various denominations (majority), ranging from Lutherans to Roman Catholics. The two villages in our study are similar in this aspect.

<sup>3</sup>Next to this norm of cooperation at the village level, there is also an organized form of local community cooperation called Msaragambo (*Hunter, 2015*). Msaragambo takes place both at the village and sub-village levels, but it occurs more frequently at the sub-village level because of the local nature of the tasks it deals with. The content of Msaragambo can range from maintaining water canals to building a road or repairing a public building. When there is a problem in the community, the village leader, together with the sub-village leaders, announce Msaragambo, a day of collective action. Participation in Msaragambo is not voluntary, and nonparticipation is sanctioned by imposed fines. In the interviews we conducted with the villagers after we completed our experimental study, the participants argued that Msaragambo is not an example of cooperation, saying that 'Msaragambo is ordered from above; it does not come from the heart'. Or that 'Msaragambo is [a] part of cooperation, but is not cooperation itself'. We conclude from these statements that Msaragambo does not represent a social norm of cooperation. Instead, it is perceived as a centrally implemented obligation and does not inspire cooperation at the sub-village level.

### 4.2. The experiment

**Table 2** summarises the baseline characteristics of the 249 participants of the experiment. About half of the participants were female. Most of the participants were farmers or animal holders. Consistent with the local context, the majority identified themselves as Swahili, and a small minority identified themselves as Maasai.

The distribution of the contribution decisions, which are the amounts put into envelope B, can be found in **Fig 1**. On average, the participants contributed TZS 1817 to the public good (in envelope B) in the In-group treatment. Although this is more than half of their endowment, it is significantly less than what they contributed in the Out-group treatment, averaging TZS 2304 (Mann-Whitney U test,  $p = 0.000$ ).<sup>4</sup> Contrary to the pure in-group favouritism hypothesis, the contributions were higher in the Out-group treatment, in which we informed the participants that each of the other group members was from a different sub-village of their village. We therefore reject this hypothesis. We can also see that although the majority of the participants from both treatments contributed half or more of their endowment to the public good, the modal decision to contribute the full endowment occurred more frequently in the Out-group treatment.

To shed more light on these observations, we need to discuss the expectations that the participants held about others' contributions. In the post-experimental questionnaire, we asked the participants two questions about these expectations. First, we asked how many others from their group they expect to have contributed anything to the public good; second, we asked how much they expect the others in their group would contribute jointly. These questions were presented in a questionnaire after all the participants had made their decisions but before they received feedback about the behaviour of the others and how much they earned. We chose not to incentivise the beliefs reported by the participants to simplify the experimental procedure in the field. In comparison with the incentivised reports, our data on this might therefore be noisier (*Gächter & Renner, 2010*). At the same time, we avoid hedging and interactions of the reported beliefs with the incentives provided for the contribution decision (*Blanco, Engelmann, Koch & Normann, 2010*).

Based on the answers to the two questions, we can identify those participants who report expectations that are inconsistent with our experiment design. These are the participants who expect that the per-person contribution in their group is higher than the maximal possible contribution of TZS 3000 per person, or the participants who expect nobody else to contribute but report expecting a joint contribution of others higher than zero. Overall, we find 35 participants reporting such inconsistent expectations. The remaining 214 out of the 249 participants (85.9%) have expectations that are consistent with our experiment design. In the subsequent analysis of contributions to the public good, we only include data of participants holding consistent expectations. We allow for the possibility that those with inconsistent expectations did not understand the design of the experiment. As a robustness check, we also repeat our analysis including all participants, and report it in the Appendix. This inclusion does not affect our results.

Overall, we observe that the participants hold high expectations about the contributions of others. This justifies the frequency of high contributions in the experiment. Nearly all, or 88% (189/214), of the consistent participants expect that all three other participants in the group contributed at least something to the public good, whereas about half of all the participants expect that the three other participants contributed everything to the public good (see **Fig 2** for the expected per-person contribution in both treatments).

One explanation for the difference in contributions observed between the In-group and the Out-group treatments could be a difference

<sup>4</sup>The standard deviations of the contributions were 791.6 ( $N = 180$ ) and 997.1 ( $N = 69$ ) in the In-group and Out-group treatments, respectively.

**Table 2**  
Summary table.

Sex	
Female	48,6%
Male	51,4%
Treatment	
Out-group	27,7%
In-group	72,3%
Age, mean (std.dev.)	39,7 (19,98)
Religion	
Christian	79,0%
Muslim	21,0%
Location	
village 1	43,8%
village 2	56,2%
Tribe	
Maasai	8,4%
Swahili	91,6%
Occupation	
Farmer	74,7%
Animal holder	8,8%
Other	16,5%
Number of participants	249

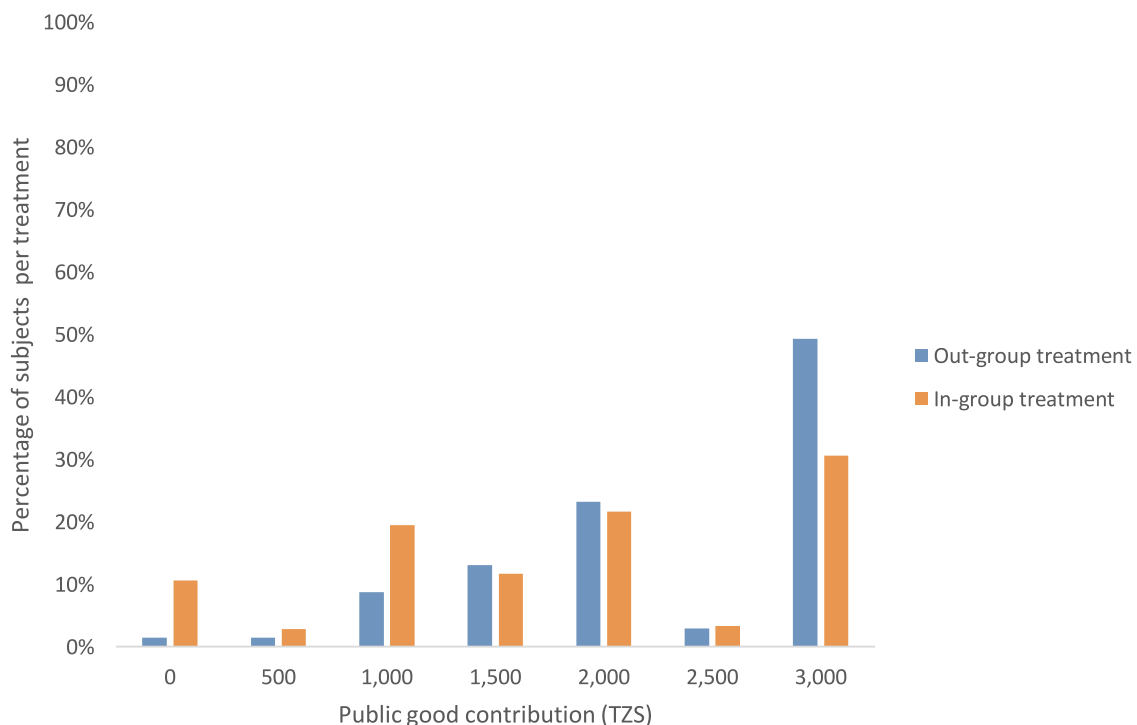
in beliefs about behaviour of others. In previous public goods experiments, researchers showed that people usually behave as conditional cooperators (Bechtel & Scheve, 2014; Fischbacher, Gächter & Fehr, 2001; Greig & Bohnet, 2009; Kocher, Cherry, Kroll, Netzer & Sutter, 2008); they contribute more to the public good when they expect others to contribute more. Moreover, these conditional contributions are usually selfish biased so that a person contributes just a bit less than he/she expects others would contribute. If the participants in our study hold different expectations about the behaviour of others in the two treatments, in particular, if the participants in the Out-group treatment have more cooperative expectations about others than the participants in the In-group treatment, then we could explain the contribution pattern observed. However, the mean expected per person contribution amongst the consistent participants is 2200 in Out-group treatment ( $N = 53$ , stdev. 964.5), and 2227 ( $N = 161$ , stdev. 829.4) in In-group

treatment. On average, the participants thus expect that others will contribute the same across the treatments (Mann-Whitney U test,  $p = 0.913$ ). We find no support for the pure in-group favouritism hypothesis when analysing the reported expectations. Furthermore, we cannot explain the higher contributions in the Out-group treatment using differences in the expected contributions.

Interestingly, however, the participants respond differently to their own expectations in the two treatments. In Table 3, we summarise mean contributions of the participants per category in which their beliefs fall. Contributions are higher in the Out-group treatment than in the In-group treatment in each category of beliefs about behaviour of others. This difference is not driven only by a few individual responses, it is systematic, see Table 4. Fewer participants contributed less than they believed others to contribute on average in the Out-group treatment than in the In-group treatment (25% and 40%, respectively), and those that contribute more than they believe others contributed exceed their own expectations much more in the Out-group treatment than in the In-group treatment, see Table 4. On average, the contribution exceeds the per-person expectation by 150 in the Out-group treatment, and it falls short by 370 in the In-group treatment. This treatment difference is significant (Mann-Whitney U test,  $p = 0.026$ ,  $N = 214$ ).

We summarize Tables 3 and 4 observing that the participants in the In-group treatment—the participants who interact with others from the same sub-village—are more likely to behave in a manner typical of selfish biased conditional cooperators, which was found earlier in public goods game experiments (Bechtel & Scheve, 2014; Fischbacher et al., 2001; Greig & Bohnet, 2009; Kocher et al., 2008). Their contributions fall short of what others are expected to contribute. These selfish biased conditional cooperation strategies are frequently observed in public goods game experiments, and they have been implied in explaining the decay of cooperation over time in repeated public goods games (Neugebauer, Perote, Schmidt & Loos, 2009). By contrast, we find that the participants in the Out-group treatment are more cooperative, on average, relative to what they expect from others. How can we explain this?

We propose that the social norm of cooperation is triggered in the Out-group treatment because this interaction resembles a context in



**Fig. 1.** Public good contributions.

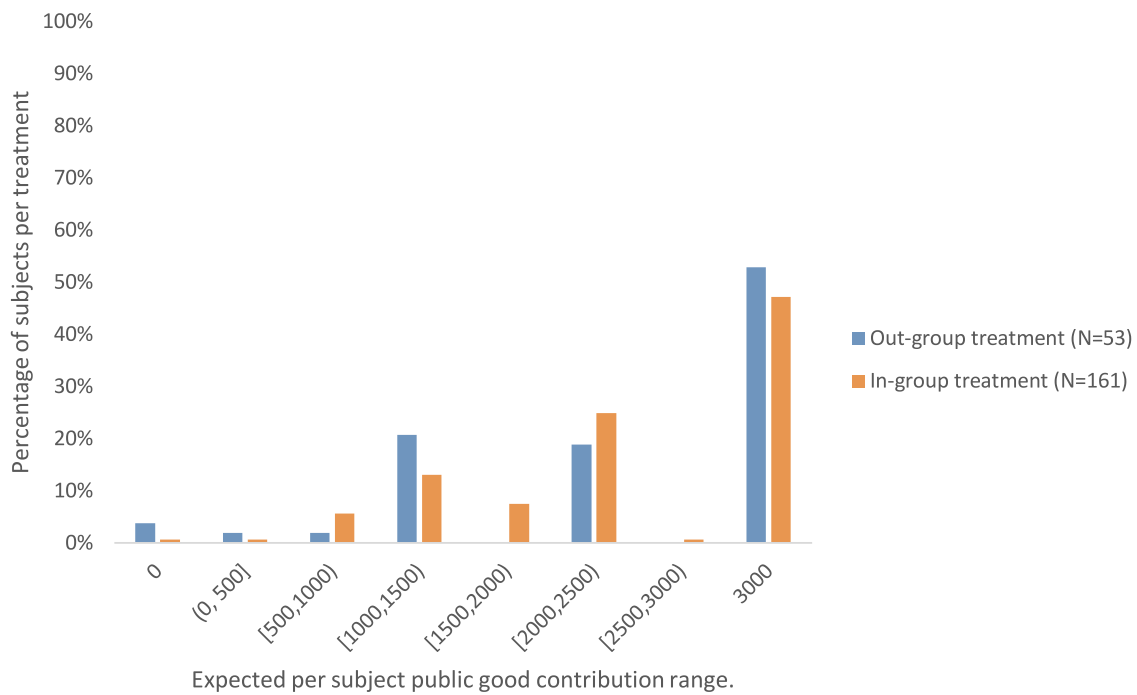


Fig. 2. Expected per subject public good contributions.

Table 3  
Average contribution per category of beliefs about the average contribution of others.

Belief about the average contribution of others	Out-group treatment contribution			In-group treatment contribution		
	Mean	Std. dev.	N	Mean	Std. dev.	N
[0,1000)	3000,0	0,00	2	1250,0	1060,66	2
[1000, 2000)	3000,0	0,00	2	1272,7	684,24	11
[2000, 3000)	1950,0	955,98	10	1357,1	1001,78	21
3000	2384,6	764,87	39	2000,0	942,81	127
All	2349,1	806,14	53	1857,1	968,94	161

which this norm usually operates—the village context. The interactions in the In-group treatment trigger a typical form of behaviour for a public goods game: selfish biased conditional cooperation. Similarly, other researchers found that the interactions between kin-based community members are more strategic than those amongst community members from resettled villages; this seemingly paradoxical observation is explained by the strong community-level norm of cooperation generated in community-building processes during resettlement (Barr, 2003).

To further support our explanation that the social norm of cooperation at the village level outweighs any in-group favouritism at a lower level (the sub-village level), we now explain the contribution decisions by using regression analysis (see Table 5). We account for the censoring of the contribution decisions between TZS 0 and TZS 3000

Table 4  
Own contribution minus the belief about the average contribution of others.

Own contribution minus the belief about the average contribution of others	Out-group treatment				In-group treatment			
	Mean	Std. dev.	N	%	Mean	Std. dev.	N	%
Negative	-1231	525,0	13	25%	-1429	807,0	65	40%
Zero	0	0,0	25	47%	0	0,0	60	37%
Positive	1600	844,7	15	28%	926	575,2	36	22%
All	151	1161,7	53	100%	-370	1103,7	161	100%

Table 5  
Tobit regression explaining contributions.

	(1) Both treatments	(2) InGroup treatment	(3) OutGroup treatment
InGroupTreatment	-857.8** (261.8)		
Female	-283.7 (216.4)	-261.2 (241.6)	-363.3 (492.2)
Maasai	-345.8 (332.3)	-293.3 (390.2)	-376.9 (620.0)
ExpectedContribution	0.422** (0.128)	0.473** (0.144)	0.295 (0.267)
Constant	2174.6*** (387.5)	1186.3*** (318.2)	2507.3*** (667.6)
N	214	161	53

Robust standard errors in parentheses.

\*p < 0.05.

\*\* p < 0.01.

\*\*\* p < 0.001.

(McDonald & Moffitt, 2013), and we estimate a Tobit model. The variable *InGroup treatment* takes a value of 1 for In-group sessions and a value of 0 for Out-group sessions, *Female* takes a value of 1 for female participants and a value of 0 for male participants, and *Maasai* takes a value of 1 for Maasai participants and a value of 0 for non-Maasai participants. The expectations that the participants held about the contributions of their group members are captured by the variable *ExpectedContribution*. Our results remain unchanged if we include all

participants, also those who might have incomplete understanding of the experiment and reported expectations that are inconsistent with our design.<sup>5</sup>

The regression analysis supports previous findings. We observe that the *InGroup treatment* variable in the model including both treatments is significant but with a sign opposite to that predicted by the *in-group favouritism hypothesis*. The participants contributing strictly between TZS 0 and TZS 3000 actually contribute about TZS 857 less in the In-group treatment than in the Out-group treatment. We also find that the *ExpectedContribution* variable affects participants differently in the two treatments (see models 2 and 3). The participants behave as selfish biased conditional co-operators in the In-group treatment; for every unit they expect, on average, to be contributed more by others, they contribute less than half of a unit themselves. The participants do not show such conditional selfish biased behaviour in the Out-group treatment, in which the coefficient is insignificant.

## 5. Discussion

We tested the pure *in-group favouritism* hypothesis for public goods contributions in an experiment amongst villagers in rural Northern Tanzania. We implemented incentivised public goods experiments with groups composed of participants from various sub-villages (Out-group treatment) and groups composed of participants from the same sub-village (In-group treatment). Contrary to the predictions of the *in-group favouritism* hypothesis, the contributions in the one-shot public goods game were significantly higher in the Out-group treatment than in the In-group treatment, whereas the expectations about the behaviour of others were indistinguishable across the treatments. We therefore reject the pure *in-group favouritism* hypothesis.

We argue that social norms of cooperation operating at the village level need to be considered when evaluating whether a lower level of hierarchy (the sub-village) can be turned into a salient group identity to promote public goods provision via in-group favouritism. This is in line with previous research suggesting that existing social norms affect behaviour even in the controlled context of an experiment and that their presence needs to be considered when explaining behaviour (Ensminger, 2005; Habyarimana, Humphreys, Posner & Weinstein, 2007; Ostrom, 2000; Tusicisny, 2013).

In-group bias occurrence in relation to the prevailing social norms has previously been experimentally demonstrated by priming subjects with various social norms, either norms linked to the group-membership (loyalty), or universal norms (equality) (Hertel & Kerr, 2001). Our study relies on naturally occurring social norms, and demonstrates that their presence affects in-group favouritism. Using semi-structured interviews with the key informants before the experiments, we identified an active village-level social norm of cooperation in the two villages where we conducted our experiments. We argue that this social norm is triggered in the village-level context of interactions but not at the level we made salient in our In-group treatment, which is the sub-village level.

This is supported by linking the participants' behaviour to their expectations about the behaviour of others. Whilst the participants report beliefs about others' cooperation, that do not differ across the treatments, they behave as selfish biased conditional cooperators in the In-group treatment. By contrast, in the Out-group treatment, they contribute, on average, even more than they expect others to contribute, which is consistent with an internalised norm of cooperation at the village level.

We cannot exclude that multiple other mechanisms might be involved in the processing of group identities in the experiment. For example, the experiment participants could have been influenced in the Out-group treatment by the existence of a social identity at the village

level. We implemented our experiments in villages that are populated by people with various tribal backgrounds, means of income, and religions. In the pre-experiment interviews, one informant noted that in a village, 'people from different backgrounds easily mix with each other and live together. It is not easy to see the ethnic difference between people. It is, however, easy to see the differences between people from different villages'. This suggests a distinctive social identity at the village level, not on the sub-village level. This social identity might have contributed to the activation of village-level norms of cooperation.

Additionally, in order to be loyal to a group, people must not only have a sense of belonging to that group, but there must also be clear boundaries that distinguish this group from other groups (Barth, 1969; M. Brewer, 1991). In this sense, our experimental implementation of group identity at the sub-village level could have been weakened by the fact that people in daily life do not perceive their sub-village identity as relevant. At the same time, this critique does not explain the differences in how the participants respond to their belief about the behaviour of others in the public goods experiment and why they show selfish bias in the In-group treatment but not in the Out-group treatment.

Finally, we also have to account for the possibility that the level of political participation affects one's willingness to cooperate. We conducted our experiments in villages where the individuals are used to political participation at the village level, mainly by frequently joining village meetings. In this way, the villagers might associate important decision making with village-level rather than sub-village-level interactions, and they behave more responsively towards the needs of others in the village context of the Out-group treatment.

To summarise, we do not observe a positive impact of in-group favouritism induced by emphasising the sub-village group identity in our In-group treatment. We propose that the existence of the local norm of cooperation at the village level explains why stressing the shared sub-village identity does result in greater cooperation than when each group member is from a different sub-village but the same village. This is because the village-level norm of cooperation is only activated when interacting in a context that resembles that where this norm operates, which is, in the present case, the context of the Out-group treatment (people from various sub-villages interact together). Our experiments caution that appealing to a group identity with the goal of generating in-group favouritism and increasing cooperation could be ineffective in the presence of social norms existing at another level of community organisation. Accounting for the existing social norms is necessary when investing into the decentralisation of the provision of public goods and appealing to the group identities created by these processes.

## Acknowledgments

This research was made possible by a grant from the NGO FT Kilimanjaro (<http://www.ftkilimanjaro.org/>). The data reported in this paper are upon request made available by the corresponding author. We express our gratitude towards the members of the local NGO for their extensive connections with the local communities, input, materials and support that allowed for this study to be conducted, and also to Tamari Moses, our interpreter for this study.

## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.soccec.2019.101509](https://doi.org/10.1016/j.soccec.2019.101509).

## References

- Abbink, K., Brandts, J., Herrmann, B., Orzen, H., 2012. Parochial altruism in inter-group conflicts. *Economics Letters* 117 (1), 45–48. [http://doi.org/10.1016/j.econlet.2012.04.083](https://doi.org/10.1016/j.econlet.2012.04.083).
- Alesina, A., Baqir, R., Easterly, W., 1999. Public goods and ethnic divisions. *The Quarterly Journal of Economics* 114 (4), 1243–1284. [http://doi.org/10.1162/003355399556269](https://doi.org/10.1162/003355399556269).

<sup>5</sup> See Supporting online materials: Regression analysis.

- Andreoni, J., Payne, A.A., Smith, J., Karp, D., 2016. Diversity and donations: the effect of religious and ethnic diversity on charitable giving. *Journal of Economic Behavior & Organization* 128, 47–58. <http://doi.org/10.1016/j.jebo.2016.05.010>.
- Balliet, D., Wu, J., De Dreu, C.K.W., 2014. Ingroup favoritism in cooperation: A meta-analysis. *Psychological Bulletin* 140 (6), 1556–1581. <http://doi.org/10.1037/a0037737>.
- Barr, A., 2003. Trust and expected trustworthiness: Experimental evidence from zimbabwean villages. *Economic Journal* 113 (489), 614–630. <http://doi.org/10.1111/1468-0297.t01-1-00150>.
- Barth, F., 1969. Ethnic groups and boundaries. In *ethnic groups and boundaries*. The Social Organization of Culture Difference 9–38. <http://doi.org/10.2307/588416>.
- Bechtel, M.M., Scheve, K.F., 2014. Public goods, reciprocity, and the causal effect of expected cooperation in representative samples. Working Paper. <http://doi.org/10.13140/RG.2.1.3108.2085>.
- Ben-Ner, A., McCall, B.P., Stephane, M., Wang, H., 2009. Identity and in-group/out-group differentiation in work and giving behaviors: Experimental evidence. *Journal of Economic Behavior and Organization* 72 (1), 153–170. <http://doi.org/10.1016/j.jebo.2009.05.007>.
- Berkman, E.T., Lukinova, E., Menshikov, I., Myagkov, M., 2015. Sociality as a natural mechanism of public goods provision. *PLoS one* 10 (3), e0119685. <http://doi.org/10.1371/journal.pone.0119685>.
- Bernhard, H., Fehr, E., Fischbacher, U., 2006. Group affiliation and altruistic norm enforcement. *American Economic Review* 96 (2), 217–221. <http://doi.org/10.1257/000282806777212594>.
- Bicchieri, C., 2002. Covenants without swords: Group identity, norms, and communication in social dilemmas. *Rationality and Society* 14 (2), 192–228. <http://doi.org/10.1177/1043463102014002003>.
- Bicchieri, C., Xiao, E., 2009. Do the right thing: But only if others do so. *Journal of Behavioral Decision Making* 22 (2), 191–208. <http://doi.org/10.1002/bdm.621>.
- Blanco, M., Engelmann, D., Koch, A.K., Normann, H.-T., 2010. Belief elicitation in experiments: Is there a hedging problem? *Experimental Economics* 13 (4), 412–438. <http://doi.org/10.1007/s10683-010-9249-1>.
- Bouma, J.A., Joy, K.J., Paranjape, S., Ansink, E., 2014. The influence of legitimacy perceptions on cooperation – A Framed field experiment. *World Development* 57, 127–137. <http://doi.org/10.1016/j.worlddev.2013.12.007>.
- Bowles, S., Gintis, H., 2002. Social capital and community governance\*. *The Economic Journal* 112 (483), F419–F436. <http://doi.org/10.1111/1468-0297.00077>.
- Braaten, R.H., 2014. Land rights and community cooperation: Public goods experiments from peru. *World Development* 61, 127–141. <http://doi.org/10.1016/j.worlddev.2014.04.002>.
- Brewer, M., 1991. The social self: On being the same and different at the same time. *Personality and Social Psychology Bulletin* 17, 474–482.
- Brewer, M.B., 2008. Depersonalized trust and ingroup cooperation. *Rationality and responsibility: Essays in honor of Robyn Mason Dawes* 215–232. <http://doi.org/10.4324/9780203889695>.
- Cardenas, J.C., Stranlund, J., Willis, C., 2000. Local environmental control and institutional crowding-out. *World Development* 28 (10), 1719–1733. [http://doi.org/10.1016/S0305-750X\(00\)00055-3](http://doi.org/10.1016/S0305-750X(00)00055-3).
- Chen, B.Y., Li, S.X., 2009. *American Economic Association Group Identity and Social Preferences Author (s): Yan Chen and Sherry Xin Li Source : The American Economic Review* 99. *American Economic Association*, pp. 431–457.
- Chen, Y., Li, S.X., Liu, T.X., Shih, M., 2014. Which hat to wear? impact of natural identities on coordination and cooperation. *Games and Economic Behavior* 84, 58–86. <http://doi.org/10.1016/j.geb.2013.12.002>.
- Eckel, C.C., Grossman, P.J., 2005. Managing diversity by creating team identity. *Journal of Economic Behavior & Organization* 58 (3), 371–392. <http://doi.org/10.1016/j.jebo.2004.01.003>.
- Elster, J. (1989). Social norms and economic theory. Retrieved June 6, 2016, from [http://www.jstor.org/stable/1942912?seq=1#page\\_scan\\_tab\\_contents](http://www.jstor.org/stable/1942912?seq=1#page_scan_tab_contents).
- Ensminger, J. (2005). Market integration and fairness: Evidence from ultimatum, dictator, and public goods experiments in east africa : Foundations of human sociality - oi. Retrieved May 27, 2016, from <http://oxfordindex.oup.com/viewindexcard/10.1093/002f0199262055.003.0012?print>.
- Everett, J.A.C., Faber, N.S., Crockett, M., 2015. Preferences and beliefs in ingroup favoritism. *Frontiers in Behavioral Neuroscience* 9, 15. <http://doi.org/10.3389/fnbeh.2015.00015>.
- Ewald, J. (2011). African books collective: Challenges for the democratisation process in Tanzania. Retrieved May 27, 2016, from <http://www.africanbookscollective.com/books/challenges-for-the-democratisation-process-in-tanzania>.
- Falk, A., Zehnder, C., 2013. A city-wide experiment on trust discrimination. *Journal of Public Economics* 100, 15–27. <http://doi.org/10.1016/j.jpubeco.2013.01.005>.
- Fehr, E., Gächter, S., 2000. Cooperation and punishment in public goods experiments. *American Economic Review* 90 (4), 980–994. <http://doi.org/10.1126/science.151.3712.867-a>.
- Fischbacher, U., Gächter, S., Fehr, E., 2001. Are people conditionally cooperative? Evidence from a public goods experiment. *Economics Letters* 71 (3), 397–404. [http://doi.org/10.1016/S0165-1765\(01\)00394-9](http://doi.org/10.1016/S0165-1765(01)00394-9).
- Gächter, S., Renner, E., 2010. The effects of (incentivized) belief elicitation in public goods experiments. *Experimental Economics* 13 (3), 364–377. <http://doi.org/10.1007/s10683-010-9246-4>.
- Goette, L., Huffman, D., Meier, S., 2006. The impact of group membership on cooperation and norm enforcement: Evidence using random assignment to real social groups. *American Economic Review* 96, 212–216. <http://doi.org/10.1257/000282806777211658>.
- Goette, L., Huffman, D., Meier, S., Sutter, M., 2012. Competition between organizational groups: Its impact on altruistic and antisocial motivations. *Management Science* 58 (5), 948–960. <http://doi.org/10.1287/mnsc.1110.1466>.
- Goldstein, N.J., Cialdini, R.B., Griskevicius, V., 2008. A room with a viewpoint: Using social norms to motivate environmental conservation in hotels. *Journal of Consumer Research* 35 (3), 472–482. <http://doi.org/10.1086/586910>.
- Greig, F., Bohnet, I., 2009. Exploring gendered behavior in the field with experiments: Why public goods are provided by women in a Nairobi slum. *Journal of Economic Behavior and Organization* 70 (1–2), 1–9. <http://doi.org/10.1016/j.jebo.2008.12.006>.
- Habyarimana, J., Humphreys, M., Posner, D.N., Weinstein, J.M., 2007. Why does ethnic diversity undermine public goods provision? *The American Political Science Review* 101 (4), 709–725. <http://doi.org/10.1017/S0003055407070499>.
- Hertel, G., Kerr, N.L., 2001. Priming in-group favoritism: The impact of normative scripts in the minimal group paradigm. *Journal of Experimental Social Psychology* 37 (4), 316–324. <http://doi.org/10.1006/jesp.2000.1447>.
- Hewstone, M., Rubin, M., Willis, H., 2002. Intergroup bias. *Annual Review of Psychology* 53, 575–604. <http://doi.org/10.1146/annurev.psych.53.100901.135109>.
- Hogg, M.A., Reid, S.A., 2006. Social identity, self-categorization, and the communication of group norms. *Communication Theory* 16 (1), 7–30. <http://doi.org/10.1111/j.1468-2885.2006.00003.x>.
- Hruschka, D.J., Henrich, J., 2013. Institutions, parasites and the persistence of in-group preferences. *PLoS One* 8 (5). <http://doi.org/10.1371/journal.pone.0063642>.
- Hunter, E., 2015. Voluntarism, virtuous citizenship, and nation-building in late colonial and early postcolonial Tanzania. *African Studies Review* 58 (02), 43–61. <http://doi.org/10.1017/asr.2015.37>.
- Kocher, M.G., Cherry, T., Kroll, S., Netzer, R.J., Sutter, M., 2008. Conditional cooperation on three continents. *Economics Letters* 101 (3), 175–178. <http://doi.org/10.1016/j.econlet.2008.07.015>.
- Ledyard, J.O., 1994. Handbook of experimental economics. Public goods: A survey of experimental research, pp. 112–193. [http://doi.org/10.1016/0037-7856\(73\)90129-7](http://doi.org/10.1016/0037-7856(73)90129-7).
- Mansuri, G., Rao, V., 2012. Localizing development: Does participation work? World Bank Publications Retrieved from. <https://books.google.nl/books?hl=nl&lr=&id=ZrXliG07o2MC&oi=fnd&pg=PP1&dq=Localizing+development:+Does+participation+work%253F&ots=bDvsa9sOkf&sig=0uoTF1BqKfrcbue3cOrxPfvQBtA>.
- McDonald, J.F., Moffitt, R.A., 2013. The uses of tobit analysis. *The Review of Economics and Statistics* 62 (2), 318–321. <http://doi.org/10.2307/1924766>.
- Miguel, E., Gugerty, M.K., 2005. Ethnic diversity, social sanctions, and public goods in Kenya. *Journal of Public Economics* 89 (11), 2325–2368. <http://doi.org/10.1016/j.jpubeco.2004.09.004>.
- Nations Encyclopedia. (n.d.). Tanzania, ethnic groups. Retrieved from <http://www.nationsencyclopedia.com/Africa/Tanzania-ETHNIC-GROUPS.html>.
- Neugebauer, T., Perote, J., Schmidt, U., Loos, M., 2009. Selfish-biased conditional cooperation: On the decline of contributions in repeated public goods experiments. *Journal of Economic Psychology* 30 (1), 52–60. <http://doi.org/10.1016/j.joep.2008.04.005>.
- Nier, J.a., Gaertner, S.L., Dovidio, J.F., Banker, B.S., Ward, C.M., Rust, M.C., 2001. Changing interracial evaluations and behavior: The effects of a common group identity. *Group Processes & Intergroup Relations* 4 (4), 299–316. <http://doi.org/10.1177/1368430201004004001>.
- Ostrom, E., 2000. Collective action and the evolution of social norms. *Journal of Economic Perspectives*. <http://doi.org/10.1257/jep.14.3.137>.
- Ostrom, E., Walker, J., Gardner, R., 1992. Covenants with and without a sword: Self-governance is possible. *American Political Science Review* 86 (02), 404–417. <http://doi.org/10.2307/1964229>.
- Rimal, R.N., Lapinski, M.K., 2015. A re-explication of social norms, ten years later. *Communication Theory* 25 (4), 393–409. <http://doi.org/10.1111/comt.12080>.
- Ruffle, B.J., Sosis, R., 2006. Cooperation and the in-group-out-group bias: A field test on Israeli kibbutz members and city residents. *Journal of Economic Behavior and Organization* 60 (2), 147–163. <http://doi.org/10.1016/j.jebo.2004.07.007>.
- Tajfel, H., Turner, J.C., 1979. An integrative theory of intergroup conflict. *The Social Psychology of Intergroup Relations* 33–47. [http://doi.org/10.1016/S0065-2601\(05\)37005-5](http://doi.org/10.1016/S0065-2601(05)37005-5).
- Tajfel, H., Turner, J.C., 1985. The social identity theory of group behaviour. *Psychology of Intergroup Relations* 2, 7–24.
- Turner, J.C., Tajfel, H., 1986. The social identity theory of intergroup behavior. *Psychology of Intergroup Relations* 5, 7–24.
- Tuscisny, A., 2013. Reciprocity and prejudice: An experiment of Hindu-Muslim cooperation in the slums of mumbai. ProQuest Dissertations and Theses 204. xxx(xx). <http://doi.org/10.1111/pops.12340>.
- Vyrastekova, J., Soest, D.van, 2003. Centralized common-pool management and local community participation. *Land Economics* 79 (4), 500–514. <http://doi.org/10.3368/le.79.4.500>.
- Weng, Q., Carlsson, F., 2015. Cooperation in teams: The role of identity, punishment, and endowment distribution. *Journal of Public Economics* 126, 25–38. <http://doi.org/10.1016/j.jpubeco.2015.03.007>.
- Yamagishi, T., Jin, N., Kiyonari, T., 1999. Bounded generalized reciprocity: Ingroup boasting and ingroup favoritism. *Advances in Group Processes* 16.
- Yamagishi, T., Mifune, N., 2008. Does shared group membership promote altruism?: Fear, greed, and reputation. *Rationality and Society* 20 (1), 5–30. <http://doi.org/10.1177/1043463107085442>.