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Cooperation in local and global groups

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ABSTRACT

Multiple group memberships are the rule rather than the exception. Within a linear public good game, we experimentally investigate two possible factors that impact the decision to cooperate in a smaller, local or a larger, global group: diverging marginal per capita returns, resulting in different social returns, and social feedback information. If social returns are equal across groups, subjects prefer to contribute to the local group that offers social information on individual contributions. An increase of the social return in the global group initially attracts more contributions, but this tendency quickly unravels in favor of cooperation in the local group. Cooperation in the global public good can only be sustained if contributions of global group members can be observed. We thus identify social feedback information as a key factor for institutional design to foster cooperation.

1. Introduction and related literature

Starting point of our study is the phenomenon that individuals have typically multiple group memberships between which they divide their time or effort. One characteristic of groups is whether they operate on a local level or on a global level. Our experimental study features a linear public good game, where individuals belong to a smaller local group and a larger global group that entirely comprises the local group. Such structures are typically found in work environments, politics, situations with environmental or neighborhood engagement, and even academia. One way to think about the difference between global and local groups, except their size, is that the former may offer higher social returns of cooperation[1] while the latter may enable their members to observe the activities and contributions of others to a greater extent. We investigate whether

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[1] For instance, in line with the current political debate, the endeavor to reduce overall CO_2 emissions requires global cooperation efforts to enable large social benefits worldwide.

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individuals favor one group over the other and explore two possible sources of group favoritism: the effect of marginal per capita returns resulting in different social returns of contributions, and social feedback information.

More specifically, we employ three treatments, where we gradually vary the observability of others' contributions and the social returns of contributions.[2] In our basic treatment, the local and global exchange offer the same social return[3], while past contribution behavior of others' is observable exclusively in the local group. This condition serves as a control treatment to study the preference of a smaller, more transparent group over a larger, more anonymous one when social returns are equal. Indeed, subjects nearly exclusively cooperate in the local public good under these conditions.

In a second treatment, we increase the social return in the global public good (by increasing the global marginal per capita return) while still providing information on the contribution of group members in the local public good only. It is well established in the experimental literature on cooperation that increasing the marginal per capita return increases contributions (e.g., Isaac and Walker, 1988; Isaac et al., 1994; Fisher et al., 1995). This leads to the expectation that the attractiveness of the global public good will increase compared to the basic treatment. Yet, it has also been established in a series of public good experiments that providing feedback on individual contributions increases cooperation (e.g., Sell and Wilson, 1991; Cason and Khan, 1999; Carpenter, 2007). The same has been impressively demonstrated in the field: Chen et al. (2010) and Bolton et al. (2013) both find that social feedback information is vital for cooperation on online platforms. Thus, in our second treatment, we attempt to study whether cooperation in the global group, that offers higher social returns than the local group, is attained despite less social information. Results indicate that individuals first attempt to cooperate in the global group, but this tendency quickly unravels and cooperation for the local public good builds up and remains stable.

Finally, to identify whether social information (and not for instance, easier coordination in smaller groups) is the main driving force of favoring local cooperation in the previous two treatments, we run a third treatment with equal social feedback across the local and (the socially more beneficial) global group. Indeed, in this case, local contributions are almost completely crowded out by global contributions. In sum, our findings indicate that higher social returns alone are not sufficient for sustaining global cooperation when local groups offer social information. Social feedback, in turn, is an important institutional feature that enhances cooperation.

Few other papers have investigated simultaneous contributions to local and global public goods, and they all have a different research focus. Wachsman (2002) varies social distance and communication rules in the local group. He finds that individuals always attempt to reach cooperation in the socially more beneficial global exchange, which is seemingly in contrast to our findings. Yet, when considering the particular design differences between his and our study, the opposing findings are reconcilable: first, the global exchange in Wachsman's study offers a social return of full cooperation in the global public good that are by one third higher than in our study. Thus, the attractiveness of the global exchange can be at least partly explained by the effect of a higher marginal per capita return. Second, participants in Wachsman's study always learned who the global group members are, but they did not necessarily know their local group members. Although feedback on contributions did not vary between the local and global exchange, the reduced social distance in the global groups might enhance trust and foster cooperation.

The study that is closest related to ours has been conducted by Blackwell and McKee (2003). They examine the tension between a local and global group exchange by gradually increasing the marginal per capita return (and thus simultaneously the social return) of the global exchange. They find that under equal social returns across groups, participants favor the local public good. This is well in line with our findings. Yet, subjects respond to an increase in social return by increasing cooperation in the global public good but not at the expense of the local public good, which is not what we observe. One important difference to our study is that monitoring opportunities are absent, both in the local and global group. Thus, the global group project becomes increasingly attractive by making (conditional) cooperation less costly, which results in higher willingness to contribute. As contributions are not observable in either group, no tension between social returns on the one hand and observability of contributions on the other hand can arise. It has to be noted also that the validity of the results by Blackwell and McKee (2003) is limited by the fact that they are derived from only one independent observation per treatment.

Cherry and Dickinson (2008) have conducted another related study on simultaneous contributions to several public goods. Unlike in our study, the multiple public goods in their experiment were either completely identical or one offered increasing marginal benefits of contributions. Their findings support an increase in cooperation and achieved efficiency if public goods are split up in multiple ones. Yet, similar to Blackwell and McKee (2003), none of their treatments introduced social feedback information in either of the groups.

The remainder of the paper is organized as follows: Section 2 gives an overview of the experimental design and procedures. Section 3 presents the results and Section 4 concludes with a summary and a brief discussion.

[2] In a standard linear public good game, the social return of one unit contributed is given by the marginal per capital return (MPCR), that reflects the individual return of each unit contributed, times the number of group members n. To capture a social dilemma situation, the marginal per capita return of one unit contributed must be smaller than 1 (so that under selfish preferences a contribution of zero is a dominant strategy in the one-shot game) and the social return of one unit contributed must be greater than 1 (so that full contributions are socially efficient). In the following, we refer to the social marginal benefit of one unit contributed ($n \cdot MPCR$) as the social return in the particular (local or global) group.

[3] This is achieved by introducing a lower marginal per capita return in the global group.

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