Social Policy Instruments and the Compliance Environment

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Abstract

Two types of social policy instruments — making group behavior public to the individual and making individual behavior public to the group — are used by charities to encourage giving and by policymakers to incentivize other prosocial behaviors. However, models of social norms suggest that the effects of such interventions are theoretically ambiguous and may even backfire in low-compliance environments. We examine these questions in the context of a public good game. Exploiting a unique experimental design, we show that initial contributors’ giving decisions are sensitive to the behavior of the group while initial non-contributors’ decisions are not. In contrast, making own behavior public to the group increases contributions for all group types, even those comprised entirely of initial non-contributors. These findings suggest that publicizing contributions causes individuals to respond to a common understanding of prosocial behavior that is not defined solely by the initial group norm.

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1 Introduction

Encouraging prosocial behavior is of great interest to policymakers. Just one form of such behavior — charitable giving from individuals and households — was over $400 billion in the United States in 2018 (Giving USA Foundation, 2019). This giving is widespread, with approximately 90% of individuals in the U.S. making charitable donations (Independent Sector, 2001). Beyond charitable giving, individuals engage in environmental protection; donate blood and organs; vote when they surely are not pivotal; wash their hands and wear masks to curtail disease; and take many other prosocial actions, such as privately contributing to public goods (Olken and Singhal, 2011; DellaVigna et al., 2012; Bice and Hoyt, 2000; Ferris, 1984).

A rich literature has explored how social forces motivate charitable giving and other forms of prosocial behavior. This literature has identified two types of social policy instruments. The first instrument, providing “peer information,” involves giving information about what others are doing to a decision maker. The second instrument, providing “social recognition,” involves making public what a decision maker does (i.e., making the decision maker’s actions identifiable and observable to others). These types of interventions have been used in both field and lab settings, and interventions often combine both instruments. For example, publicizing all gifts to a public good provides information about contributions of others and identifies each individual’s giving decision.

While there are many examples of these interventions being deployed successfully in practice, some models of behavior suggest that the efficacy of these instruments depends fundamentally on baseline contribution levels. In addition, effects may be heterogeneous for those initially engaging in the desired behavior (contributors, voters, tax compliers) and
those failing to do so. Both of these issues point to the relevance of examining how these two policy levers interact with the compliance environment — the proportion of individuals engaging in the prosocial action in the absence of the social intervention.

For example, providing information about peer behavior can encourage contribution when others give more than expected but can also discourage contribution when others give less than expected (see, e.g., Croson and Shang (2008) for empirical evidence). This pattern may arise because individuals respond to information in others’ decisions (Vesterlund, 2003), because they are motivated by reciprocity (Sugden, 1984), or due to conformity (Bernheim, 1994). Similarly, some models that aim to explain the effects of social recognition also predict that baseline contribution levels interact with the efficacy of making an individual’s contribution public. If the individual cares about being perceived as fair or norm-compliant (Andreoni and Bernheim, 2009) or is more likely to conform to the actions of others when his or her actions are public (Bernheim, 1994), then making contributions public in low-giving environments may reinforce low levels of giving and fail to increase contributions.

Our knowledge of how these social policy levers interact with the compliance environments is limited. Field studies utilizing these interventions tend to focus on contexts in which baseline compliance is high or target only initial non-prosocial actors, and observational variation in the compliance environment does not allow causal identification. And while there are numerous laboratory studies examining how group behavior affects individual decisions (often referred to as “conditional cooperation” in this context) and how various forms of social recognition or social pressure affect behavior, this study is the first — to the best of our knowledge — to focus explicitly on how the compliance environment interacts with these interventions in a public good setting.

In this paper, we use an innovative experimental design to vary the compliance envi-

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3 Alternative models of social recognition suggest that making prosocial decisions public would generally increase giving. These models suggest social recognition induces contribution because agents seek social approval (Hollander, 1990); because it allows agents’ choices to signal their underlying generosity (Bénabou and Tirole, 2006), wealth (Glazer and Konrad, 1996), or both (Bracha and Vesterlund, 2013).

4 In particular, we explore a repeated contribution environment in which individuals are asked to give repeatedly. While there are a number of papers about publicizing contributions in repeated settings — see Soetevent (2005) on charitable giving; Gerber et al. (2008) on voting; and Andreoni and Petrie (2004), Filiz-Ozbay and Ozbay (2014), Samek and Sheremeta (2014), and Samek and Sheremeta (2016) on repeated laboratory public goods — we are unaware of any previous work explicitly examining how making contributions public affects behavior across different compliance environments.
ronment (i.e., the baseline level of prosocial behavior). Subjects play a repeated binary public good game in groups of four. Our algorithm for group assignment generates exogenous variation in the number of contributors each individual is paired with, conditional on own contribution decision at baseline. In all treatments, this information is provided to all individuals in the group. That is, we always provide subjects with peer information, but the information they receive is exogenously varied via the group composition.

To vary social recognition, we inform all participants that there will be a snack break after the session while the experimenters organize payments. In the social recognition treatment, subjects are told they will wear name tags during the snack break that link them back to their contribution decisions during the experiment. We see advantages of this design innovation, as discussed in Section 2.1.5

We introduce variation in both peer information and the presence of social recognition only after subjects have made their first-round contribution decisions. This feature of our design allows us to explore how behavior responds among two types of decision makers — baseline contributors and baseline non-contributors — and to investigate which types of agents respond to which social policy instruments.

We present three main results. First, subjects randomly put in groups with more contributors give at significantly higher rates, consistent with the literature on conditional cooperation. We find, however, that only individuals who contribute in the first round (i.e., before they observe the contributions of others) respond to the number of other contributors in their group; initial non-contributors do not appear to respond to peer behavior.

Second, we find that social recognition significantly increases individual contributions. This effect is driven initially by the subjects who do not contribute in the first round. Later in the game, however, there is a substantial treatment effect of social recognition for initial contributors, encouraging them to maintain a high level of giving.

5There is significant experimental evidence that monetary punishment and reward can influence behavior in public good games. For example, games where group members can punish one another between each round can increase contribution to the public good (Fehr and Gächter 2000). Even non-monetary punishment (akin to scolding) can increase contribution, but more severe punishment (i.e., monetary rather than non-monetary) generates more contribution to the public good (Masclet et al. 2003). Here, we do not impose a specific punishment technology and do not allow for punishment between rounds of the game. Instead, we investigate how individuals respond to the threat of organic social reward and punishment, which will be imposed after all choices are made. In this way, we reveal how subjects respond to the treatment without round-by-round feedback about what type of punishment they have received.
Third, we find that social recognition increases contributions from groups at every initial contribution level, even those with zero baseline contributors. This result demonstrates that while peer information has differential effects across compliance environments, the reaction to social recognition appears to be based on a more inherent sense of what behavior is socially desirable.

Our results underscore the significant appeal of using social recognition to increase public good contribution. While financial incentives like subsidies for contribution can be quite costly and may need to be in place continuously to be effective, social recognition can potentially be implemented at a low cost but still deliver substantial positive effects, even for initially low-contribution groups. In addition, our results speak to the different motivations for responding to social recognition. Our results imply that publicizing contributions induces individuals to respond to a common understanding of prosocial behavior that is not defined solely by the initial group norm. This suggests our findings are more consistent with models focusing on social approval or signaling positive traits than models focusing on conformity to others’ actions.

2 Experimental Design

The experiment involved subjects in groups of four making binary contribution decisions in a finitely repeated public good game. Subjects were told that they would play 16 rounds of the public good game in the same group. In each round, each subject had a $5 endowment and could either contribute nothing or contribute the whole endowment \( g_i \in \{0, 5\} \) \( \forall i \). Binary contribution of $5 to the public good generated a payoff of $2 for each of the four group members. Payoffs (in U.S. dollars) thus took the following form (where \( i \) is one of the four participants in the group, and so the contribution of \( i \) is included in the summation indexed by \( j \)):

\[
\pi_i = 5 - g_i + 0.4 \sum_{j=1}^{4} g_j
\]

\[6\] The cost of implementing a policy and its efficacy are only two inputs into the policy’s overall welfare effects. For work on the welfare effects of social recognition, see [Butera et al. (2019)]; for work on the welfare effects of peer information, see [Allcott and Kessler (2019)].
The payoffs of the public good were explained to subjects and, before any choices were made, they were allowed to spend up to two minutes making hypothetical contribution choices for four players and observing the resulting payoffs for all group members.\footnote{The wording of the experiment called the public good a “group pot” and the decision was whether or not to “allocate” their $5 to the group pot. While used throughout the paper, the words “public good” and “contribute” were not used in the instructions, which can be found in Appendix A.1.} Subjects were told that they would be paid for the results of one randomly selected round of the 16. Finally, subjects were told that the rules of the game might change and they would be informed if they did.\footnote{At the end of the experiment discussed here, we introduced a surprise restart for a second 16 rounds in which we changed the payoff structure of the game. Because this was unknown to subjects ex ante, it cannot have impacted the experimental results here. Instructions and data from these rounds is available on request.}

All sessions included 16 subjects, and subjects were assigned to groups of four within that session. We introduce several unique design features to test the impact of peer information and social recognition on behavior.

**Random assignment to compliance environment**  The experimental design generated variance in initial group cooperation levels by randomly assigning subjects to groups. To ensure that we are powered to measure behavior in very low and very high compliance groups, we generated excess variance by making group assignments conditional on first period giving. We did this by informing subjects that they would play in the same group for all 16 rounds, but (unknown to the subjects) we placed them into groups as a function of their first round choice. This allowed us to create more “extreme” groups (e.g., of all defectors or all cooperators) than would have occurred if groups had been assigned before the first round decision.\footnote{When using this technique, we were careful not to deceive subjects by telling them anything inaccurate. For example, we told subjects they would be playing all rounds of the game in the same group (which was true, since payoffs for the first round were determined based on the assigned group); but we did not state that the group had been formed prior to a subject’s first-round contribution decision (since they were not yet in a group when they made that contribution decision). This experimental design feature is related to, but slightly different from, experimental designs that create more-generous and less-generous groups based on how subjects play in games preceding the public good game of interest (see, e.g., \cite{Aksoy and Krasteva(2020)}.} Since subjects receive information about the number of other contributors in their group after making their initial contribution decision, they can respond to the number of other contributors in their group after making their initial contribution decision, they can respond to the number of other contributors in their group starting in round 2.
**Provision of peer information**  All subjects received information about the contribution decisions of others in their group from the prior rounds. After first-round contribution decisions were made, each subject was given a unique ID and told that, going forward, their contribution decisions would be associated with this ID and shown to the other members of their group. After round 1, subjects only learned the number of subjects in their group who had contributed. After round 2, and throughout the rest of the study, subjects received more detailed information, namely the specific history of play for each particular group member. This data allowed subjects to determine whether the same participants were contributing in each round. A table showing the allocation choice for each ID in their group (for each round starting with round 2) was displayed continuously on each subject’s screen for the next fifteen rounds (see an example in Appendix Figure A7).

**Random assignment to social recognition treatment**  Subjects were randomly assigned to the peer information only treatment or to the social recognition treatment in a between-session design. In the peer information only sessions, subjects’ unique ID numbers were private information. In the social recognition sessions, subjects were told that their ID numbers, and thus their contribution decisions, would be associated with their real identities. This variation was introduced at the same time as the ID numbers were introduced, starting in round 2, allowing round 1 to serve as a baseline and balance check.

In both the peer information only and social recognition treatments, subjects were told that at the end of the study, they would have two minutes to look over the contributions of all their group members by ID and then spend 15 minutes at the back of the laboratory having drinks and snacks with the other 15 subjects in the session. In the social recognition treatment, however, subjects were informed that their ID number would be made public to the other group members (see screenshots in Appendix Figure A6). In particular, subjects were told that after all decisions were made in the experiment, subjects would: (1) stand up at the same time as their other group members, (2) announce their ID number, and (3) receive a name tag with their ID number that they would wear during the 15 minutes of drinks and snacks at the back of the laboratory.

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10Since social recognition is implemented at the end of the game, this design requires subjects to anticipate the costs and benefits associated with having their contribution decisions made public.
2.1 Comments on experimental design

This experimental design allows us to make several important advances. First, as noted above, the design generates exogenous and excess variation in peer contributions, conditional on a subject’s first round contribution decision. This allows us to measure how subjects respond to different levels of peer information.

Second, the excess variation in our group formation generates more than the expected number of groups at extreme contribution levels (e.g., 0 initial contributors out of 4 and 4 initial contributors out of 4) allowing us to be well powered to explore low-compliance and high-compliance environments. Previous experiments on making contributions public have looked for average effects on contributions and found that public revelation leads to higher contributions. We are explicitly interested in heterogeneity in compliance environment and, in particular, how social recognition works in low-contribution environments, since it is for groups with 0 and 1 initial contributors that the models discussed in the Introduction predict that social recognition might not increase giving.

Third, choices are binary and subjects make their first contribution decision without knowing the contributions of others and without any threat of social recognition. We consequently can identify two different types of subjects: (1) initial non-contributors who, faced with a public good game played with a fixed group for 16 rounds, choose not to contribute in the first round; and (2) initial contributors who, faced with the same game, choose to contribute in the first round. We can therefore test for heterogeneity in behavioral responses by subject type.

Fourth, the design allowed for subjects to face the threat of social recognition but for subjects to make all their contribution decisions before they learned the identities of their group members. Keeping identities private until the end of the game allows for the effect of social reward and punishment to be measured in a repeated setting without confounding information, coordination, empathy, or solidarity that might arise from protocols that allow individuals to see pictures of or interact with other members of their group before making all their contribution decisions.

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11 Seeing group members or interacting with group members has the potential to alter subjects’ beliefs about the types of individuals with whom they are playing or create feelings of kinship or solidarity that might affect contribution decisions. For example, Reinstein and Riener (2012) finds that individuals respond more to another donor’s gift when the donor’s identity is known and finds that individuals respond more to
Fifth, because we observe individuals playing repeatedly in the same group for 16 rounds, we can investigate the dynamics of repeated play under the threat of social recognition.

Sixth, we use a snack break at the end of the experiment to construct an environment where the consequences of social recognition can organically arise. This allows our experiment to approximate the types of normal social interactions through which recognition or shame may occur in practice.

3 Results

The results section proceeds as follows. Section 3.1 presents results from the peer information only treatment that are based on exogenously varied group composition. Section 3.2 examines the impact of introducing social recognition by making contributions public. Section 3.3 discusses heterogeneity in the social recognition treatment results.

3.1 Peer Information

We can identify the causal effect of varying others’ contributions on one’s own subsequent behavior since subjects are randomly assigned (conditional on their own first round decision) to groups with different numbers of contributors. The cleanest test arises from examining round 2 behavior in the peer information only treatment, where individuals learn how many other individuals in their group contributed the previous round, and then choose whether or not to contribute.

Table 1 demonstrates the strong impact of others’ giving on own contributions when given peer information. As shown in the first column, having one additional person in your group contribute in the first round leads to a 10 percentage point increase in the likelihood of female donors than male donors. Our design focuses on how making contribution public affects behavior through the possibility of social reward and punishment, isolated from these other forces. In a similar spirit, Andreoni and Petrie (2004) have a control condition in which they provide pictures of subjects in the group, but do not provide information about how much each subject contributed to the public good, which helps control for some of the other forces that might affect behavior when contributions are public. The repeated nature of the design contrasts with previous studies that make contributions public but look at one-shot decisions, as in Rege and Telle (2004) and Linardi and McConnell (2011).

12We condition on own first round decision since the experiment was designed to generate excess variance in group composition, so initial contributors are more likely to be grouped with other initial contributors and initial non-contributors are more likely to be grouped with other initial non-contributors.
of giving in the second round. This suggests that the effect of providing peer information depends significantly on the content of that information.

There is also significant heterogeneity by whether subjects were initial contributors. Figure 1 shows that for initial non-contributors, exogenously varied round 1 giving appears to have little effect on round 2 contribution behavior. On the other hand, initial contributors' round 2 contributions are strongly affected by the number of other initial contributors in their group. Those in groups with no other initial contributors choose to contribute less than 50% of the time, while those in groups with 2 or 3 other contributors give almost universally.

The second column of Table 1 shows that among initial contributors, the influence of being in a group with an extra contributor in round 1 is a 14.9 percentage point increase in round 2 contribution. The third column shows the effect is small and insignificant for initial non-contributors. The fourth column shows that the influence of others’ contributions is marginally statistically significantly different for initial contributors and initial non-contributors, with a p-value of 0.055.

These results show that individuals do on average condition their round 2 giving on others’ contribution decisions. However, the results also highlight important heterogeneity in conditional cooperation. In particular, simply placing non-contributors with other contributors may not motivate these individuals to change their behavior. Those initially inclined to give are the ones who demonstrate conditionally cooperative subsequent giving.

3.2 Social Recognition

We next turn to examining the effect of social recognition on individual behavior. The effects of social recognition are theoretically ambiguous. Various models of behavior predict that making individuals’ contributions public could amplify the conditional cooperation effects seen above, induce individuals to comply with a group norm, or directly encourage individuals to engage in prosocial behavior.

Figure 2 shows the impact of social recognition of contributions on average across all groups: an immediate increase in giving in round 2, a more stable level of contributions as the game progresses, and no steep drop-off in round 16 contribution (a steep drop is visible in the peer information only treatment, where contributions are not identifiable).
Table 1: Effect of Round 1 Contribution on Round 2 Contribution

<table>
<thead>
<tr>
<th></th>
<th>Dependent Variable: Round 2 Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) Initial Combined</td>
</tr>
<tr>
<td>Initial Contributors in Group</td>
<td>0.0982*** (0.0344)</td>
</tr>
<tr>
<td>Own Initial Contribution</td>
<td>0.621*** (0.0741)</td>
</tr>
<tr>
<td>Group × Own</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.0702 (0.0602)</td>
</tr>
<tr>
<td>Observations</td>
<td>160</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.601</td>
</tr>
</tbody>
</table>

*** p<0.01, ** p<0.05, * p<0.1

Notes: Robust standard errors in parentheses, clustered by group. Initial Contributors in Group is round 1 contributors in subject’s group, excluding own contribution, and thus ranges from 0 to 3. Own Initial Contribution is a binary variable indicating own round 1 giving. Group × Own interacts those two variables. Data is from the peer information only treatment.
Figure 1: Effect of Group Composition in the *Peer Information Only* Treatment

Notes: Standard error bars are shown around each mean. Data is from the *peer information only* treatment.
This indicates that individuals both immediately anticipate the effects of individual identifiability and respond even though there is no specific punishment or recognition technology within the game (i.e., all potential social reward and punishment will only occur during the post-game snack break).

**Figure 2: Average Effect of Social Recognition Treatment**

Notes: Figure shows mean proportion contributing by treatment averaged across all groups. Round 1 is before the treatment is introduced, so the proportion contributing is nearly equal across the two treatments in round 1.

A regression in Table 2 further illustrates these dynamics. Column (1) shows that the social recognition treatment creates an overall 22 percentage point increase in contribution rates across the 15 treated rounds of the game relative to the peer information only treatment. Column (2) considers round 2, when the exogenous treatment effect is first introduced, and shows a 16 percentage point increase due to the social recognition treatment.
In the peer information only treatment, contributions decline significantly between rounds 2 and 16, as the reciprocity motive (i.e., the hope to create subsequent giving by others by contributing in this round) diminishes. This decrease is mitigated in the social recognition treatment, resulting in a 35 percentage point effect of the social recognition treatment in round 16, as shown in column (3). This pattern can be seen in column (4), where the coefficient on Round is significantly negative, but the interaction on Social Recognition × Round is significantly positive.

Table 2: Effect of Social Recognition Treatment

<table>
<thead>
<tr>
<th>Dependent Variable: Contribution</th>
<th>(1) Rounds 2-16</th>
<th>(2) Round 2</th>
<th>(3) Round 16</th>
<th>(4) Rounds 2-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Recognition</td>
<td>0.222***</td>
<td>0.355***</td>
<td>0.138*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0742)</td>
<td>(0.0749)</td>
<td>(0.0756)</td>
<td></td>
</tr>
<tr>
<td>Round</td>
<td>-0.0244***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.00315)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Recognition × Round</td>
<td>0.00936**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.00442)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.469***</td>
<td>0.625***</td>
<td>0.688***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0572)</td>
<td>(0.0591)</td>
<td>(0.0637)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>5,280</td>
<td>352</td>
<td>352</td>
<td>5,280</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.050</td>
<td>0.032</td>
<td>0.130</td>
<td>0.081</td>
</tr>
</tbody>
</table>

*** p<0.01, ** p<0.05, * p<0.1

Notes: Robust standard errors in parentheses, clustered by group. There are 88 clusters in each regression. Social Recognition is a binary variable indicating the subject was assigned to the social recognition treatment. Round is a variable indicating the round of the game and ranges from 2 to 16. Social Recognition × Round interacts those two variables.

Given that information on peer giving appeared to have a little impact on initial non-contributors, one might wonder whether the effects of social recognition also vary by initial contribution status. Figure 3 shows that the increase in round 2 giving is large for initial non-contributors, whose contributions in the social recognition treatment are more than
double those in the peer information only treatment. While these initial non-contributors are not responsive to peer information, they do respond to the possibility of social reward or punishment by becoming more likely to give in round 2. Next, we explore this effect across compliance environments.

3.3 Heterogeneity in Social Recognition Effects

As noted in the Introduction, it is unclear whether we should expect social recognition to increase public good provision across all groups. Making individual behavior public could theoretically increase conformity to a prevailing group norm of no contribution. We have already seen that the social recognition treatment can be effective at getting even non-contributors to give, but that effect could be driven by non-contributors who fear shame for not giving in high contribution groups. Groups with very low levels of initial contribution could be unaffected, or even negatively affected, by the social recognition treatment. To examine this, we look at the impact of the social recognition treatment by initial group composition. Figure 4 shows that there is, in fact, a very large initial increase in contributions in the social recognition treatment even among groups with 0 or 1 initial contributors. In the case of groups with one initial contributor, this is driven by both increasing the giving of non-contributors and sustaining the giving of the initial contributor (see Appendix Figure A8). In groups with 0 initial contributors, this is necessarily driven by converting initial non-contributors into contributors.

Thus, the social recognition treatment is effective even for low-performing groups. These results demonstrate that individuals appear to respond to an internal sense of socially acceptable behavior, even when empirically they are in a low compliance environment. Thus, individuals appear to know that even though there was little-to-no contribution in their group initially, contributing is still the right thing to do. In addition, results suggest that social recognition can be a motivator even when individuals who might “judge” a subject’s behavior were initial non-contributors themselves.

Another result that is apparent from Figure 4 is that initially high-performing groups

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13The increase for initial contributors may be mechanically small because the contribution level is already so high. Note that the figure re-weights the observations to counteract the fact that initial contributors are more likely to be in groups with other contributors and thus have stronger conditional cooperation motives to give in round 2.
Figure 3: Effect of Social Recognition Treatment, by Initial Contribution Status

Notes: Standard error bars are shown around each mean. Means and standard errors are weighted to have equal representation of each group type (i.e., for non-contributors, groups with each of 0 to 3 initial contributors are equally weighted; for contributors, groups with each of 1 to 4 initial contributors are equally weighted). This re-weighting provides the cleanest test of the effect of social recognition treatment in round 2, since initial contribution is correlated with others’ round 1 contribution, and others’ round 1 contributions can influence subsequent own contribution.
Figure 4: Effect of *Social Recognition* Treatment by Group

Notes: Figure shows mean proportion contributing by treatment and control condition, with one panel for each initial group composition, averaged across all groups with that initial group composition. For the label “(X,Y) Group,” X represents the number of round 1 contributors and Y represents the number of round 1 non-contributors. Note X + Y = 4 for all groups. Round 1 is before the treatment is introduced, so the proportion contributing is identical and equal to X/4 for each panel.
see the largest benefit of the social recognition treatment at the end of the game, when they experience a much smaller drop-off in contribution. This is due in part to a ceiling effect, since initial contributors in high compliance group contribute at high rates early in the game.

Table 3 shows how the number of initial contributors per group interacts with the social recognition treatment in round 2 (the first round of the treatment) and in round 16 (the last round). In round 2, having additional initial contributors has a negative interaction with the social recognition treatment, suggesting the effect of the treatment is larger in low-contribution groups than in high-contribution groups. However in round 16, this effect is reversed, and additional initial contributors strengthens the impact of the social recognition treatment.

4 Conclusion

This paper examines two policy instruments regularly used to increase contributions to public goods: making group behavior public to the individual (peer information) and making individual behavior public to the group (social recognition). We use a public good game to test the impacts of peer information and social recognition interacted with the compliance environment.

Our novel experimental design assigns individuals to groups and reveals treatment status after first-round contribution decisions have been made. This allows us to identify two “types” of subjects — those who contribute in the first round of a finitely repeated public good game and those who do not — and to control the compliance environment. We create excess variation in group composition to measure the impact of the two policy tools in both high-compliance and low-compliance environments. Because subjects’ first round decisions matter for their assigned groups, we are able to execute this without deception, truthfully telling subjects they are playing in the same group for all 16 rounds.

Peer information is provided to all subjects in the form of information on the number of contributors in a group. By randomly assigning subjects to groups with more or fewer

\[14\text{However, we also do not see a strong effect of lone initial non-contributors increasing their giving in high-performing groups. Groups with one non-contributor paired with three initial contributors do not immediately respond to the social recognition treatment.}\]
<table>
<thead>
<tr>
<th></th>
<th>Dependent Variable: Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group Level</td>
</tr>
<tr>
<td></td>
<td>Round 2</td>
</tr>
<tr>
<td><strong>Social</strong></td>
<td>1.364***</td>
</tr>
<tr>
<td></td>
<td>(0.321)</td>
</tr>
<tr>
<td><strong>Initial Contributors in Group</strong></td>
<td>0.915***</td>
</tr>
<tr>
<td></td>
<td>(0.0657)</td>
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<tr>
<td><strong>Social × Init. Contrib. in Group</strong></td>
<td>-0.320***</td>
</tr>
<tr>
<td></td>
<td>(0.0872)</td>
</tr>
<tr>
<td><strong>Own Initial Contribution</strong></td>
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<td></td>
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<tr>
<td><strong>Constant</strong></td>
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<td>(0.242)</td>
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</tr>
<tr>
<td><strong>R-squared</strong></td>
<td>0.797</td>
</tr>
</tbody>
</table>

*** p<0.01, ** p<0.05, * p<0.1

Notes: Robust standard errors in parentheses, clustered by group in columns 3 and 4. **Social** is a binary variable indicating the subject was assigned to the social recognition treatment. **Initial Contributors in Group** is round 1 contributors in subject’s group, excluding own contribution, and thus ranges from 0 to 3. **Social × Init. Contrib. in Group** interacts these two variables. **Own Initial Contribution** is a binary variable indicating own round 1 giving.
contributors, we can causally identify the impact of peer information on own subsequent contribution decisions. Consistent with work on conditional cooperation, we find a strong impact of the compliance environment (i.e., the number of contributors in a group) on the efficacy of providing peer information.

Replacing one initial non-contributor with one initial contributor increases contribution rates by 10 percentage points. We find that the effect of this peer information also depends on own initial contribution status. Initial non-contributors are not impacted by others’ initial contributions, while initial contributors do respond. In other words, initial contributors’ continued giving is conditional on others doing the same. Consequently, peer information alone cannot transform a low-contribution or mixed-contribution group into a high-contribution group. This result suggests that in the absence of a mechanism for increasing the contributions of free riders, total public good giving may decline when only information about others’ contributions is available.

Half of the sessions were randomly assigned to the social recognition treatment. We utilized a snack break at the end of the experiment to generate an environment where social reward and punishment could be meted out in an organic way. Subjects in the social recognition treatment knew their real identities would be associated with their giving decisions, creating the anticipation of social reward or punishment during the snack break. We find that the social recognition treatment increases contributions by 16 percentage points in the second round, and an average of 22 percentage points over the 15 treated rounds of the experiment.

The social recognition treatment affected both initial non-contributors and initial contributors, and, importantly, the results show a strong impact of the social recognition treatment even among the groups with no initial contributors. Indeed, the social recognition treatment generated an immediate effect on initial non-contributors, generating a large increase in contribution from low performing groups starting in round 2. In contrast, the social recognition treatment affects behavior in high performing groups by helping them sustain cooperation at the end of the finitely repeated game.

In other words, social recognition works even in a low compliance environment. Our findings thus mitigate a theoretical concern that making contributions public might encour-

\[15\]

Indeed, conditional cooperation has been used to explain the declining profile of contribution across rounds of a finitely repeated public good game (Ambrus and Pathak [2011]).
age conformity to low-contribution or no-contribution norms. Instead, we find that social recognition increases contributions from initial non-contributors, even among groups with low levels of giving overall. Moreover, social recognition helps initially high-performing groups sustain contribution even as dynamic incentives dissipate. These findings suggest that publicizing contributions causes individuals to respond to a common understanding of prosocial behavior that is not defined solely by the initial group norm.

We thus highlight two effective mechanisms for encouraging public good contributions. For those naturally inclined to contribute, witnessing high contribution by others is encouraging, and helps to sustain giving. However, peer information should be disbursed with caution, as its effectiveness is strongly dependent on the level of group compliance. Social recognition appears to be effective at increasing contributions irrespective of initial group compliance. It is particularly effective at bringing into the fold those not inclined to contribute while sustaining giving for those who initially do so. Thus, social recognition can be a powerful tool to motivate individuals to change behavior toward what is commonly accepted as socially desirable, even when such socially desirable behavior is empirically absent.
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A Appendix

A.1 Experimental Instructions

The experiment was run on z-tree (Fischbacher 2007). The screens shown to the subjects in the experiment appeared in the order shown below. All screens were identical between the treatments, except for the screen shown in Figure A6, which differed between the peer information only and social recognition treatments. The instructions were read aloud to subjects as they proceeded through the study, so there was common knowledge of all instructions. (One session designated to be in the social recognition treatment was excluded from analysis because of an error in how the instructions were read by a research assistant running the sessions.)
Figure A1: Introduction

(a) Welcome Screen

WELCOME

This is a study of decision making and behavior. Along with your $10 show up fee, money earned will be paid to you in cash at the end of the study.
Please put away any outside materials and do not talk while completing this part of the study.
If you have a question at any time, please raise your hand and someone will come over to answer it.

(b) Introduction to the Study

THE STUDY

In this study you will make a series of decisions on the computer.

After you have completed the decisions, you and the other participants in the room today will be escorted next door where you will spend 15 minutes while you wait for your payment.
While next door, you will be provided with drinks and snacks and you will have an opportunity to talk to other participants in this session.
Figure A2: Decision Task

(a) Description of Decision Task

THE DECISION TASK

You will make decisions as part of a group of four people.
Each time you make a decision, we will call that a “round.”
The decision task will be similar in each round.
At the start of each round, you will have $5.
In each round, you will choose whether or not to allocate your $5 to the group pot.
Each $5 allocated to the group pot (by you or anyone else in your group) generates $2 of payout for each person in the group, including you.
So, if you allocate $5 to the group pot, then $2 of payout is generated for each person in the group, including you.
If you do not allocate $5 to the group pot, then $0 of payout is generated for each person in the group, including you.
If you allocate $5 to the group pot, you will earn your payout from the group pot in that round.
If you do not allocate $5 to the group pot, you will earn your $5 plus your payout from the group pot in that round.
The other people in your group have the opportunity to make the same decision to allocate $5 to the group pot as you do.

(b) Decision Task Trial

THE DECISION TASK

To make sure you understand how the decision task works and how earnings are determined, please take up to 2 minutes to make allocation choices for the four participants in the box below and see what the earnings are for the participants. (If you are done before the two minutes, click the NEXT button below.)

<table>
<thead>
<tr>
<th>Participant 1</th>
<th>Participant 2</th>
<th>Participant 3</th>
<th>Participant 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allocate $5</td>
<td>Allocate $5</td>
<td>Allocate $5</td>
<td>Allocate $5</td>
</tr>
<tr>
<td>Do not allocate $5</td>
<td>Do not allocate $5</td>
<td>Do not allocate $5</td>
<td>Do not allocate $5</td>
</tr>
</tbody>
</table>

For the allocation choices made above, this table shows (in dollars) the amount contributed to the Group Pot, the Payout from the Group Pot (if Group Pot), and the earnings for each of the four participants.

<table>
<thead>
<tr>
<th>Group Pot</th>
<th>Payout</th>
<th>Participant 1 Earnings</th>
<th>Participant 2 Earnings</th>
<th>Participant 3 Earnings</th>
<th>Participant 4 Earnings</th>
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NEXT
Figure A3: Introduction of 16 Rounds

THE DECISION TASK

In this part of the study, you will make the allocation decision 16 times with the same group.

One of these 16 rounds will be randomly selected for payment, and you will receive your earnings in cash from only that round.

Since each decision you make is equally likely to be selected for payment, you should treat each decision as if it is the decision that is selected for payment.

At the end of each round, the number of people who allocated $1 to the group pot will be shown to all the members of your group, including you.

You will also be shown your earnings for that round (the amount of cash you would receive if that round were randomly selected for payment).

The rules of the decision task may change during the course of the study, and you will be informed if they do.
Figure A4: Round 1

(a) Round 1 Decision Screen

Round One

Please decide whether you would like to allocate $5 to the group pot.

- Allocate $5 to group pot
- Do not allocate $5 to group pot

(b) Round 1 Outcome Screen

Round One Outcome

In your group, 1 person allocated $5 to the group pot.
In your group, 3 people did not allocate $5 to the group pot.
The group pot payout for each person in your group was $2.
If this round is selected for payment, you will earn $2.
THE STUDY

While any of the 16 rounds may be selected for payment, from round 2 on your decision for each round will be shown to the other members of your group.

You have been assigned to Group A and Participant #1. You are A1 in the table below.

The table below shows each participant in your group and that participant's decision of whether or not to allocate $5 to the group pot in each round of the study, starting with round 2.

At the end of the study, everyone in Group A will spend 2 minutes reviewing the table and all the decisions made by the people in Group A during the study, starting with round 2.

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Figure A6: Treatment

(a) *Peer Information Only* Treatment

**THE STUDY**

Your group letter and participant number are private information. No other participant will know which group you are in, what participant number you are, or what decisions you made. After you have made all the decisions in the study, you will be escorted next door for drinks and snacks and have an opportunity to talk to other participants in the session for 15 minutes while you wait for your payment.

This table displays “Yes” if the participant allocated $5 to the group pot and “No” otherwise.

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(b) *Social Recognition* Treatment

**THE STUDY**

After you have made all the decisions in the study, each group will be asked to stand up one at a time, starting with Group A, then Group B, and so on. When your group stands, you will turn to face the other members of your group. While standing up, each group member will say their participant number, one at a time, starting with Participant #1, then Participant #2, and so on.

After you say your participant number, an experimenter will come over and give you a nametag that says your group letter and participant number, which you will wear during the snack break and which you will trade for payment after the snack break.

After every group has stood up and every participant has said this or her participant number and received a nametag, you will be escorted next door for drinks and snacks and have an opportunity to talk to other participants in the session for 15 minutes while you wait for your payment.

This table displays “Yes” if the participant allocated $5 to the group pot and “No” otherwise.

<table>
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Figure A7: Round 2 and Subsequent Rounds Decision Screen

Round Two

As a reminder, in round 1:
In your group, 1 person allocated $5 to the group pot.
In your group, 3 people did not allocate $5 to the group pot.
The group pot payout for each person in your group was $2.
If round one is selected for payment, you will earn $2.

Please decide whether you would like to allocate $5 to the group pot.

Allocate $5 to group pot
Do not allocate $5 to group pot

This table displays "Yes" if the participant allocated $5 to the group pot and "No" otherwise.

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A.2 Additional Results

Figure A8: Effect of Social Recognition Treatment on Round 2 Contributions, by Group and Initial Contribution

(a) Initial non-contributors

(b) Initial contributors

Notes: Standard errors are shown around each mean.