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Personal norms in the online public good game☆

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ABSTRACT

This paper shows that personal norms have a prominent role in explaining pro-social contribution in an online public good game. This finding suggests that the role of social norms might be loosened when subjects are distanced and interaction occurs online and in complete anonymity. Moreover, we found no statistically significant difference between the elicited norms and the norms that were elicited in a group of subjects not facing the contribution task, thus ruling out a potential self-justification bias.

1. Introduction

The evidence that subjects tend to contribute considerable amounts in the public good game (PGG), even in one-shot anonymous interactions, has been replicated across several designs (Chaudhuri, 2011). The main explanations of such over-contribution advanced in the literature are in terms of behaviours conditional on social expectations. This is for example the case of the theory of conditional cooperators (Fischbacher et al., 2001; Thöni and Volk, 2018) or of experiments where the possibility of punishment triggers injunctive norms (Herrmann et al., 2008). However, recent studies have found that when interactions take the form of one-shot games or have a higher degree of anonymity subjects rely on their personal norms and comply with what they personally and unconditionally intend as the right thing to do (Capraro and Rand, 2018; Capraro and Perc, 2021; Bašić and Verrina, 2020; Eriksson et al., 2017; Biziou-van Pol et al., 2015).

In this paper, we present an online experiment where we study the role of personal norms as compared to social norms in motivating contribution to a public good. To measure both the personal and the social norms we apply the procedure developed by Bicchieri and Xiao (2009) and elicit Personal Normative Beliefs (PN), Empirical Expectations (EE) and Normative Expectations (NE). While PN measure one's unconditional normative conviction and thus are representative of the subjects' personal norms, the combination of EE – subjects' expectations on others' behaviour – and NE – subjects' expectations on others' normative judgements – are representative of what subjects believe the social norm is. This methodology differs from Bašić and Verrina (2020), who also study a PGG, but only elicit PN. Our results show that personal norms are indeed the stronger predictor of the contribution choice, thus providing additional evidence to the argument that, at least in one-shot online interactions, people tend to follow their individual normative judgements rather than social norms.

In addition, we also check for a potential self-justification bias in the elicitation of personal and social norms. Indeed, given that norms are elicited after the decision task, subjects may be responding to the norm elicitation questions by justifying *ex-post* their decision. To check whether this is the case, we run an additional online experiment with an independent sample where subjects faced only the norm-elicitation task, without performing the decision task (in the spirit of Krupka and Weber, 2013). With this approach, we can assess the reliability of the norms elicited in the first experiment by comparing them with those of the external sample. We found no statistically significant difference between the norms elicited in the two experiments, thus reinforcing the reliability of our main result.

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2. Experimental design and procedure

The main experiment consists of a one-shot linear PGG with the marginal per capita return (MPCR) set to 0.6 where 164 UK nationals were randomly assigned to groups of four members, endowed with 10 tokens. After the contribution decision, subjects faced some questions aimed at eliciting their norms. PN were elicited by asking each participant their opinion about how much one ought to contribute. EE were identified by asking subjects what they believed was the average contribution of the other members, while NE by asking them their opinion on how much the other members believed one ought to contribute. As standard, questions on EE and NE were incentive-based but not those eliciting PN. Participants received extra 0.10 GBP for each correct answer, i.e. when EE matched the other members' average contribution and when NE matched the other members' average PN.[1]

In the second experiment, we recruited 104 UK nationals, excluding those who took part in the previous experiment, to express their beliefs about personal and social norms. After the contribution task of the main experiment was explained to these subjects, they were asked (i) what they believe a group member ought to contribute, (ii) what was the average contribution of the group members in the main experiment and (iii) what group members in the main experiment thought others ought to contribute.

In both experiments, the conversion rate was 1 token = 0.025 GBP. In the first experiment, subjects earned on average 1.13 GBP, out of which 0.50 GBP show-up fees. In the second experiment, the average payment was 0.16 GBP, including a show-up fee of 0.10 GBP.[2]

3. Results

Fig. 1 shows the average contribution choice to the common pool as well as the average values of each elicited norm.[3]

The average contribution to the public good and the average personal normative beliefs are clearly both remarkably higher than empirical and normative expectations and reach about the same level. This evidence suggests that in the context of our experiment, PN are the main drivers of individuals' contribution decisions. This intuition is confirmed by the analysis of a set of non-parametric Wilcoxon signed-ranks tests. Indeed, on the one hand, we do not find any statistically significant difference between contribution and PN ($p = 0.3773$) as well as between EE and NE ($p = 0.8787$). On the other hand, the difference is statistically significant when it comes to comparing contribution with EE and NE ($p < 0.0001$) and PN with EE and NE ($p < 0.0001$). Furthermore, it is worth mentioning that the proportion of people whose PN is equal to their contribution choice is considerably greater (65.41%) than that whose EE or NE are (respectively, 26.42% and 25.16%).

In addition, we also run a Tobit regression where contribution is the dependent variable and norms are the regressors (see Table 1). We consider four models: three in which we include only two norms and a fourth where we include all the three. These models were run both with and without a battery of controls taking into account socio-demographic variables and individual-specific characteristics about preferences.

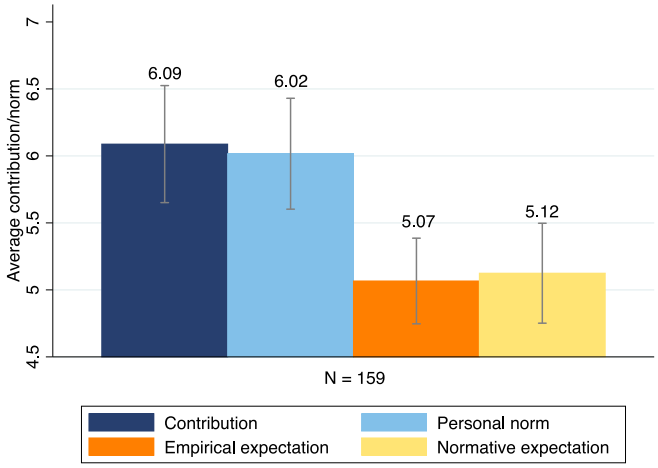

Fig. 1. Average contribution to the PGG and average personal normative belief, empirical expectation and normative expectation. CI at the 95% level.

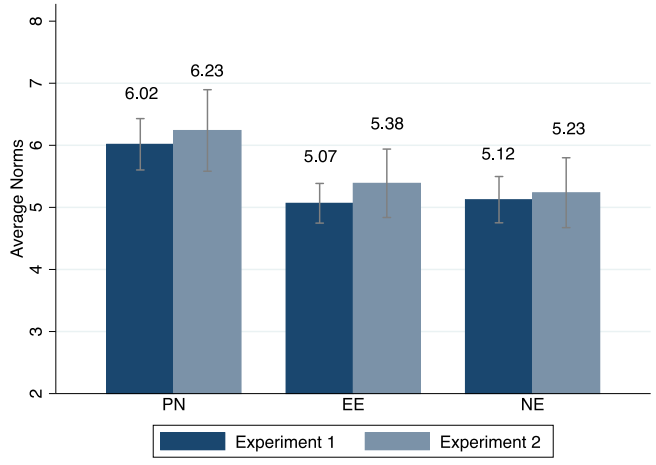

Fig. 2. Average norms in Experiment 1 vis-a-vis Experiment 2. CI at the 95% level.

Table 1 confirms our result about the relative importance of personal norms compared to social norms. In all specifications in which personal norms are included, the attached coefficients are always highly significant and their magnitudes are the strongest. This result is also very robust to the inclusion of all the controls.

4. Checking for self-confirmation

We address the problem of potential endogeneity in the answers to the beliefs' elicitation questions by means of the data collected in the second experiment.

Firstly, we check for the homogeneity of the two samples of participants employed in the experiments, as we want to exclude that the two samples are drawn from populations with different distributions for some pivotal demographic and socio-economic characteristics. Altogether, we found that there is no statistically significant difference at the 5% level of significance for any characteristic.

The comparison between the average value of each norm between the two experiments (Fig. 2) shows that subjects have

[1] We also asked participants to solve three comprehension questions, a 3-items Cognitive Reflection Test (Frederick, 2005), and to respond to some questions of the Global Preference Survey (Falk et al., 2018)

[2] Both experiments were programmed in oTree, conducted using Prolific and were part of larger preregistered experimental sessions including other treatments where subjects played a multilevel public goods game. For further details see Catola et al. (2020).

[3] We discarded 5 observations due to implausible answers.

Table 1
Tobit regressions. The controls are altruism, patience, risk, trust, negative and positive reciprocity, time spent on the task page, a score variable for comprehension, a score variable for Cognitive Reflection Test, age, gender, student status, socioeconomic status, education.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PN	0.878***	1.180***		0.992***	0.828***	1.114***		0.944***
	(0.105)	(0.098)		(0.106)	(0.0986)	(0.104)		(0.109)
EE	0.486**		1.174***	0.616***	0.423**		1.098***	0.591***
	(0.160)		(0.163)	(0.163)	(0.145)		(0.159)	(0.139)
NE		−0.084	0.233	−0.292*		−0.0969	0.128	−0.336*
		(0.104)	(0.122)	(0.118)		(0.130)	(0.144)	(0.140)
ctrl	No	No	No	No	Yes	Yes	Yes	Yes
N	159	159	159	159	158	158	158	158

Standard errors in parentheses. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

similar personal and social norms irrespectively on whether they have or not performed the contribution task. We confirm this intuition by pairwise comparisons of each norm in the two experiments through a Wilcoxon rank-sum test and we find no statistically significant difference between any of the elicited norm (PN: $p = 0.3687$; EE: $p = 0.4201$; NE $p = 0.9033$).[4]

5. Discussion

In this paper we present two main results: (a) personal norms are the main driver of contribution in a one-shot online public good game; (b) the norms collected after the task are not statistically different from the norms of external subjects that did not perform the task. This evidence is in line with Capraro and Rand (2018), which finds that PN are stronger than descriptive social norms (EE in our framework) in the context of a Prisoner's Dilemma, as well as strengthens the insights provided by Bašić and Verrina (2020) for the PGG.

Our contribution is particularly relevant in light of the recent literature underlining the potential role of the manipulation of social expectations in inducing prosocial behaviour (Bicchieri and Dimant, 2019). The circumstance that personal norms are not conditional on social expectations makes them apparently more stable, less prone to be affected by contingent information and deeply rooted in subjects' remote experience and education. This paper does not address how personal norms are formed and further research will be needed to investigate whether acting on the framework of the decision or on the efficiency of the public good can affect them so possibly sustaining pro-sociality. However, in the face of the possible long-term social and behavioural consequences of the COVID-19 pandemic, the capacity of forming, sustaining and, in case, changing personal norms held by isolate and digitalised individuals appears of absolute relevance among the objectives of future policy-making.

Appendix A. Supplementary data

Supplementary material related to this article can be found online at https://doi.org/10.1016/j.econlet.2021.110024.

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[4] We also merged the two samples and included a dummy for the experiment subjects participated in. Regressing every norm against such dummy variable, we never find any statistical significance (all $p > 0.1$).