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Workers' Propensity to Make a Monetary Sacrifice in Favour of Colleagues or People from the General Population: A Comparison based on an Artefactual Field Experiment

ABSTRACT

By drawing on a dataset collected through an artefactual field experiment, this paper analyses the propensity of social cooperative workers to make a monetary sacrifice in favour of colleagues or people drawn randomly from the general population. We find that workers tend to sacrifice lower amounts when it benefits colleagues rather than people from the general population. By analysing first- and second-order beliefs, we show that the former partly account for the difference in workers' choices; however, our analysis reveals that other motives count. A possible explanation, which is rooted in the distinction between moralistic and knowledge-based trust is provided.

KEY-WORDS

SOCIAL DILEMMA; SOCIAL COOPERATIVES; TRUST; ARTEFACTUAL FIELD EXPERIMENT

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1. Introduction

Our study looks at Italian social cooperatives, which almost doubled in number between 2001 and 2011 to 11,264, employing approximately 320,513 workers[1]. Social cooperatives combine characteristics of traditional cooperative enterprises and traditional non-profit associations, where governance rights and ownership are assigned to the workers or to a mix of stakeholder categories, such as consumers, volunteers and investors (Borzaga and Tortia, 2006, Degli Antoni and Portale, 2011). Residual earnings are principally reinvested in reserves that are not available to members, who only receive residual earnings to a very limited extent. Social cooperatives can be viewed as non-profit organizations with distribution constraints (Borzaga and Tortia, 2006).

These organizations may be included in the broader category of "social enterprises" (Borzaga and Defourny, 2001; Defourny and Nyssens, 2010a), which are characterized by the pursuit of community interest goals and social benefit creation for members and non-members (Kerlin, 2006), and whose regulation varies among countries (Defourny and Nyssens, 2008; Defourny and Nyssens, 2010b)[2]. They represent a still limited, but nevertheless important and growing phenomenon in contemporary economies. The increasing importance of this type of organization around the world makes the focus on social cooperatives proposed in this paper worthy of interest.

By drawing on a dataset collected by the author through an artefactual field experiment[3], this paper analyses the willingness of workers in social cooperatives to make a monetary sacrifice for colleagues and compares it with their readiness to make sacrifices for people they do not know. As a benchmark for workers' behaviour, we compare it with that of volunteers in the same type of organization. We also analyse the subjects' first-order and second-order beliefs. In our experiment, subjects interact in pairs and have to decide how much of their initial endowment to send to their counterpart, knowing that the amount sent is doubled by the experimenter. This interaction configures a typical social dilemma i.e., a situation in which the rational pursuit of self-interest can harm the result of the group, leading to an outcome which is not a Pareto-optimal equilibrium.

The existing literature shows that the socially-oriented nature and inclusive governance of social cooperatives generate positive effects associated with the participation of workers in those organizations. The satisfaction of workers in social cooperative is higher compared with other organizational forms (Borzaga and Tortia, 2006). On studying the effect of participation in social cooperatives on the creation of workers' social networks and generalized trust, Degli Antoni and Portale (2011) find positive effects of the degree of multi-stakeholder governance implemented by

[1] 9th Census of industry and services, institutions and non-profit organizations, 2011. Italian National Institute of Statistics (Istat). http://dati-censimentoindustriaeservizi.istat.it/

[2] The "social enterprise" category differs in some respects between the European and US contexts. In Europe social cooperatives are expressly considered to be social enterprises (see in particular the approach proposed by the EMES International Research Network; see also Kerlin, 2006).

[3] See the classification proposed by Harrison and List (2004). See also Mittone and Ploner (2015).

social cooperatives and of their adoption of corporate social responsibility practices. Degli Antoni and Sabatini (2016) show that, in social cooperatives, workers, and to a lesser extent volunteers, develop weak and strong ties understood as personal networks of contacts characterized by different degrees of familiarity[4]. Sabatini, Modena and Tortia (2014) find that, by participating in traditional cooperative enterprises (which share many characteristics in terms of inclusive governance and attention for stakeholders' claims with social cooperatives), workers tend to develop more generalized trust than they do through participation in organizations of other kinds (public or for-profit).

Considering these results, we expect that the vast majority of both workers and volunteers of social cooperatives do not observe standard rational and selfish behaviour when involved in a social dilemma like the one which characterizes our artefactual field experiment. With respect to the comparison between the behaviour of workers towards colleagues and towards unknown people, we do not receive any specific insights from the evidence described above. In fact, participation in social cooperatives seems both to generate trustful relationships within the workplace and foster generalized trust. Moreover, with specific respect to the interaction with colleagues, it must be taken into account that the relational dynamics that characterize organizations are complex: on-the-job relations can be enjoyable and trusting—as seems to be the case in general for social cooperatives—but they may also be negatively affected by competition in the workplace, e.g., when employees compete for promotion or to share the surpluses generated by the organization. Finally, when comparing volunteers' and workers' behaviour, on considering the empirical literature which highlights a generally higher level of generalized trust of volunteers than non-volunteers (Stolle, 1998; Stolle and Rochon, 1998; Wollebaek and Selle, 2002; Degli Antoni and Grimalda, 2016), we expect volunteers in general to be more willing than workers to make a monetary sacrifice for unknown people[5].

The originality of the present paper may be better understood by analyzing the contributions by Degli Antoni and Grimalda (2016) and Mittone and Ploner (2015), which share many characteristics with it. Degli Antoni and Grimalda (2016) carried out an artefactual field experiment involving members of different types of voluntary associations and a demographically comparable sample of non-members in a trust game (Berg, Dickhaut and McCabe, 1995). Following a between-subjects design, members were alternatively paired with members of their own association or with people from the general public. Non-members were paired with people from the general public. This enabled the authors to investigate the different patterns of generalized trust and trustworthiness of members of

[4] Degli Antoni and Sabatini (2016) compare the effect of participation in social cooperatives and in social welfare associations on the development of networks of strong and weak ties. The members of social cooperatives considered by these authors were the same subjects analyzed in the present paper. However, neither are the key questions used to measure strong and weak ties in the contribution by Degli Antoni and Sabatini (2016) used in the present analysis, nor have the experimental data from the game studied here been used in the paper by Degli Antoni and Sabatini (2016) (because data from the game were not available with respect to members of social welfare associations).

[5] Note that in our estimates we control for workers who are also volunteers in some organizations (see footnote 18).

Putnam-type and Olson-type associations and to compare them with those of non-members who had never joined an association as volunteers. Moreover, the authors compared the level of generalized and particularized trust of members of the two types of association. Degli Antoni and Grimalda show that members of Putnam-type associations display more generalized trust than non-members, while no difference in the level of generalized trust emerges between members of Olson-type associations and non-members. The opposite pattern is observed when trustworthy behaviour is considered, with members of Putnam-type (Olson-type) associations proving to be no more (more) trustworthy than non-members. Finally, the authors show that only members of Olson-type associations seem to reveal higher levels of particularized trust than generalized trust. The design proposed by Degli Antoni and Grimalda (2016) is similar to that used in the present contribution, with agents belonging to an organization being paired with other members of their own associations or with people from the general public. However, the distinctive feature of the present paper is that it focuses mainly on workers of social cooperatives, while the contribution by Degli Antoni and Grimalda (2016) focused on members who volunteer in different type of associations (not social cooperatives).

Conversely, the focus on employees of social cooperatives characterizes the paper by Mittone and Ploner (2015)[6], who analysed data from a prisoner's dilemma game embedded in a questionnaire administered to workers in Italian social cooperatives in 2007. The game varied in two respects, which the authors call "social proximity" and "relative returns of mutual cooperation". In the "high social proximity" condition, the subjects were paired with other workers from their own cooperative, whereas in the "low social proximity" condition, the two players belonged to different organizations. Monetary payoffs based on different combinations of choices were changed so as to make the cooperative equilibrium more or less convenient when compared with the standard Nash equilibrium that characterizes the one-shot prisoner's dilemma. Mittone and Ploner showed that (a) greater monetary incentives increase cooperation, in particular where social proximity is low, and (b) social proximity does not affect cooperation: that is, workers in cooperatives do not cooperate more closely when paired with colleagues than they do when paired with members of other organizations. The present contribution shares with Mittone and Ploner (2015) the focus on workers of social cooperatives, but differs from their work in two main respects.

First, in our experimental design, the "high social distance condition" was not implemented by pairing workers from two different social cooperatives, but instead a worker was paired with a person randomly drawn from the general population. On the one hand, this made interpretation

[6] Beside Mittone and Ploner's (2015) paper, other studies focused on employees' behaviour include those by Bandiera, Barankay and Rasul (2005) and Charness and Villeval (2009). The first study focused on workers' social preferences in the workplace by analyzing whether workers tend to internalize the consequences of their conduct towards their colleagues. The second study involved workers of different ages (juniors - under 30, and seniors - over 50) from two large French firms in a public goods game experiment. The authors found that seniors contribute more to team production than juniors, that they are not more risk averse in making financial decisions than juniors, and that they react to the competitiveness of the environment and to incentives about as intensely as juniors do.

of a possible in-group effect less clear. In fact, when we compare workers' behaviour towards their colleagues (*in-group*) with their behaviour towards unknown others (*out-group*), we change two aspects simultaneously: the unknown others are neither member of the same social cooperative as the workers taking a decision nor, generally speaking, do they work in social cooperatives. On the other hand, however, as may be seen in Section 4 (discussion of results), it enabled us to interpret our data in the light of concepts of moralistic trust (that is, trust of subjects about whom one has no information) and knowledge-based trust (trust of specific categories of persons), and allowed us to verify how a (generalized) propensity to make a personal sacrifice changes when workers reach their decisions by considering their previous experiences in the workplace.

Second, we included volunteers working in social cooperatives in our sample. This made it possible to study the behaviour of different people involved in the same organization (indeed affected by the same environmental variables) but with different statuses (i.e. worker or volunteer).

As expected, we found that the great majority of subjects involved in the experiment deviated from the non-cooperative Nash equilibrium, being willing to make a monetary sacrifice for their counterpart. At odds with what may be expected by considering the existing empirical literature on volunteers' generalized trust in comparison with that of non-volunteers, we found that, when paired with people from the general public, workers tended to sacrifice more than volunteers. Finally, our evidence reveals that workers' propensity to make a personal monetary sacrifice is lower when they are paired with colleagues rather than with people from the general population. In our conclusion, we discuss a possible explanation for this result based on the distinction between moralistic and knowledge-based trust (see in particular Uslaner, 2002). Belief-based explanations do not completely account for the difference in workers' behaviour when paired with colleagues and with people from the general public; rather, our analysis reveals that other motivations must be taken into account.

Our findings open up interesting scenarios for the analysis of relationships among colleagues. In particular, we encourage an investigation of whether the results that emerged with respect to employees in social cooperatives would also be confirmed when considering other kinds of organization, whether private (both non-profit and for-profit) or public.

The paper is organized as follows. Section 2 describes our database, the experimental design and procedures. Section 3 presents descriptive evidence and an econometric analysis. In Section 4 presents the discussion of results. Section 5 concludes.

2. Database, experimental design and procedures

2.1 Database

This paper is based on a database collected in 2011 by the author by means of an experimental game embedded in anonymous questionnaires. Questionnaires were filled in by workers and volunteers

of social cooperatives operating in Parma, a province in North Italy with 447,251 inhabitants[7] and a significant number of social cooperatives (with 17.08 social cooperatives per 100,000 inhabitants[8] Parma has the 37th largest number of social cooperatives out of the 110 Italian provinces).

Social cooperatives were contacted through the second-level association based in Parma "Consorzio di Solidarietà Sociale" (Consortium of Social Solidarity)[9]. This association involves 37 social cooperatives representing a significant proportion of the 73 social cooperatives operating in Parma. All the 37 social cooperatives were invited to participate in the research project. Of the 17 that agreed to take part, 12 were A-type social cooperatives, one was B-type, and 4 were A+B-type[10].

We asked managers of the social cooperatives to distribute questionnaires to all their workers and volunteers (see Section 2.3 on the experimental procedure). In total, we collected experimental data from 114 subjects (21 per cent of workers and 8 per cent of volunteers[11]): 87 workers from 15 social cooperatives (5.8 workers per organization on average, minimum 1, maximum 12, and standard deviation 3.8) and 27 volunteers from 11 social cooperatives (2.5 volunteers per organization on average, minimum 1, maximum 4, and standard deviation 1.1). We also asked members with detailed knowledge of their social cooperatives to answer questions intended to collect information on various characteristics of the organizations surveyed, such as size, number of employees, operational characteristics etc. The variables elaborated from these questions concerned the organizational level and had the same value for each respondent belonging to the same social cooperative.

2.2 Experimental design

The game represented a typical social dilemma. Two players were endowed with 50 EUR. They had to decide how much—between 0 and 50 EUR—of their endowment to send to the other player. Transferred euros were doubled. If it was assumed that players had purely self-interested preferences, the sub-game perfect Nash-equilibrium of this game, played one-shot, was the strategy vector in

[7] http://www.statistica.parma.it

[8] Our calculation on data from Istat: http://dati-censimentoindustriaeservizi.istat.it/ and http://demo.istat.it/bil20111009/index04.html.

[9] Second-level associations are associations of first-level associations—that is voluntary associations of individuals—with the institutional goal of supporting their members in their activities (such as fundraising programmes and organization of training courses).

[10] A-type social cooperatives operate in sectors characterized by socially oriented activities, such as education and research, welfare and health services. The aim of B-type social cooperatives is to promote the employment of disadvantaged people: they may operate in any sector, provided that at least 30% of their employees are disadvantaged. The A+B-type combines the features of A-type and B-type social cooperatives. The various types of social cooperatives were established by Law 381/1991.

[11] The lower percentage of volunteers who took part in the research is mainly due to greater difficulties with contacting them compared with workers, who spend far more time within the organization.

which both players sent 0 and earned 50 EUR, which was not a Pareto-optimal equilibrium.

We adopted a between subjects design characterized by an *in-group* and an *out-group* condition. Each worker participated in either the *in-group* or the *out-group* condition: that is, each worker who took part in the experiment could be paired with either a colleague or a member of the general public. Conversely, since the number of volunteers in social cooperatives is low and recruitment for the game was likely to be particularly difficult, we decided to involve volunteers only in the *out-group* setting, so as to have a sufficient number of observations at least in one condition. This meant that volunteers could be paired exclusively with persons from the general public. The effective number of volunteers who participated in the research project confirmed the validity of our choice.

In the *in-group* condition, workers were informed that they would be paired with another worker belonging to their own social cooperative. In this condition, therefore, workers could only be paired with colleagues from the same social cooperative. The instructions stated that "each pair is formed of workers randomly drawn from the same social cooperative". In the *out-group* condition, workers (volunteers) were informed that "each pair is formed of a worker (volunteer) at a social cooperative and a person randomly drawn from residents of the province of Parma or surrounding provinces".

At the end of the game, we also elicited first- and second-order beliefs. We asked the following questions: (i) "What amount do you believe that the person paired with you: will ask for herself/himself (between 0 and 50 EUR) _____; will send you (between 0 and 50 EUR) _____"; and (ii) "According to you, how much does the person paired with you believe that you will send to her or him (between 0 and 50 EUR)? _____". Belief elicitation was also monetarily incentivized (see the next Section).

2.3 Experimental procedures

The experimental instructions and the sheet on which players had to report their choices were embedded at the beginning of a questionnaire (101 questions relating to the respondent's experience in the cooperative) distributed by the managers of the social cooperatives and filled in at home. Participants were asked to return the questionnaire within two weeks. Questionnaires were collected through boxes placed in the headquarters of the social cooperatives.

The instructions explained that after the researchers had collected all the questionnaires, they would randomly draw 1 subject for every 50 who had taken part in the experiment (we used the term "activity" instead of "experiment" in the instructions), and only the subjects extracted would be paid. This incentive system is similar to the one adopted by Fong and Luttmer (2011). If a subject was drawn for payment of the game payoff, we paid 20 EUR for each of the two belief questions in the case of correct answers (that is, we paid for first-order belief where it was equal to the amount received and second-order belief where it was equal to the counterpart's first-order belief). In this way, each subject knew that there was only one chance in 50 that her or his counterpart would be selected to receive the money she or he decided to sacrifice, and only 1 chance in 50 that she or he would receive the money sent by the counterpart. The truthfulness of the entire procedure was guaranteed by the president of the Consortium of Social Solidarity of Parma.

Overall, the randomly extracted subjects were one worker who took part in the *in-group* condition and 1 worker from the *out-group*. In order to determine the payment for the worker in the *in-group* condition, we randomly selected a second worker belonging to the same organization, computed the final payoff according to the respective choices in the game, and paid only the former player. To determine the payoff for the worker extracted in the *out-group* condition, we randomly recruited a subject from the general population of Parma and surrounding provinces who received the same information that had been given to the other participants in the *out-group* condition. That is, the subject knew that "Each pair is randomly formed of a worker at a social cooperative and a person randomly drawn from residents of the province of Parma or surrounding provinces"[12]. To guarantee anonymity, workers were paid with a sealed envelope that bore only their identification number and contained the payoff, which was left at the reception desk of the social cooperative to which they belonged.

Even though the procedure of embedding a game in a survey and of postponing the payoff payment is not particularly common, other studies have already implemented this methodology. For example, Fehr et al. (2002) asked participants in a representative survey carried out in Germany to take part in a sequential trust game. After individual payoffs had been computed, the subjects were paid with cheques sent through the mail[13].

Since we could not check understanding of the game after the subjects had read the instructions, we asked them to report both the sum that they wanted to send to the other player and the sum that they wanted to keep for themselves. We used the coherence of these answers in order to detect subjects who had not clearly understood the game's instructions. There were five subjects whose choices were not compatible with the game rule because adding their two answers produced a sum different from 50. We excluded these subjects from the dataset. We also used belief questions to detect participants who did not properly understand the game: we excluded from the sample subjects who gave incoherent replies to the question aimed at eliciting first-order beliefs (six subjects).

3. Results

3.1 Descriptive analysis

Tables 1 and 2 report descriptive statistics and balancing properties on socio-demographic indicators across experimental conditions and type of subject, i.e. workers and volunteers. The variables considered are the age of subjects, their sex, education (dummy variable that takes the value

[12] We recruited this subject at a public swimming pool in the province of Parma. Since we needed only one subject from the general population, we opted to pay the subject in cash immediately after the participation.

[13] A similar procedure was also implemented by Falk and Zehnder (2013) and Mittone and Ploner (2015).

of one if the subject has attained at least a bachelor's degree), family income (measured through a discrete variable ranging between 1 (less than 15,000 EUR) and 5 (more than 75,000 EUR) and the number of years spent in the organization.

More than 65 per cent of participants were female. The average age was 39.5 years old, with volunteers being on average older than workers. The difference in age is statistically significant when comparing volunteers and workers involved in the *in-group* condition. This may be explained by the fact that volunteering largely involves retired people, who constituted 34.62 per cent of volunteers of our sample. Subjects that had attained at least a bachelor's degree were the 35.6%, with percentages ranging between the 40.8 per cent of workers involved in the *out-group* condition and the 29.6 per cent of the workers in the *in-group*, but without revealing statistically significant differences. The years spent in the organization are slightly higher for volunteers than for workers. Finally, the family income is significantly higher when considering volunteers with respect to workers involved in the two conditions.

Table 1. Descriptive statistics per experimental condition and type of involvement in the social cooperative

	Age	Female	Education	Family income	Years spent in the organization
Workers *in-group*	36.255 (9.556)	0.673 (0.474)	0.408 (0.497)	1.833 (0.883)	6.8 (6.125)
Workers *out-group*	38.519 (9.225)	0.654 (0.485)	0.296 (0.465)	2.077 (1.017)	6.667 (6.177)
Volunteers *out-group*	47.167 (18.227)	0.652 (0.487)	0.32 (0.476)	2.792 (0.932)	8.708 (9.091)
Whole sample	39.551 (12.838)	0.663 (0.475)	0.356 (0.481)	2.133 (1.001)	7.218 (6.929)

Means. Standard deviations in brackets.

Table 2. Balancing properties per experimental condition and type of involvement in the social cooperative

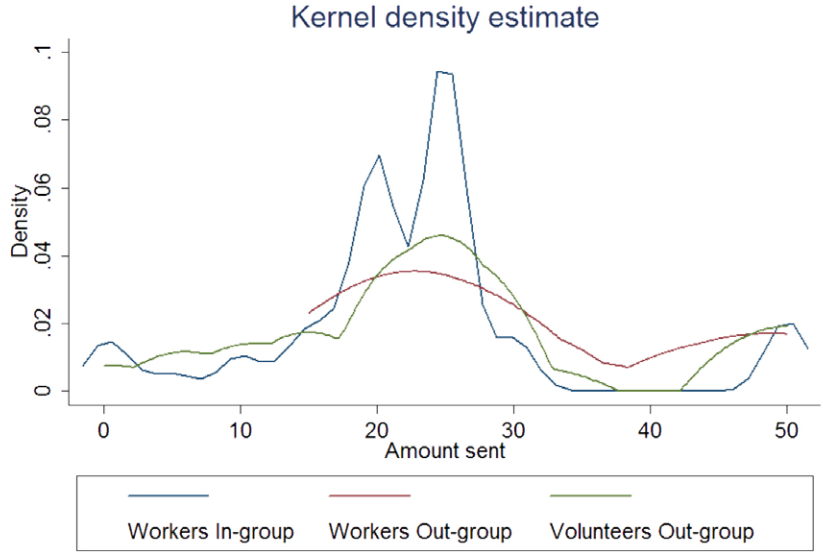
	Age	Female	Education	Family income	Years spent in the organization
H_0: Workers (*in-group*) = Workers (*out-group*)	1.163 (0.245)	0.029 (0.864)	0.936 (0.333)	0.949 (0.343)	-0.118 (0.906)
H_0:Workers (*in-group*) = Volunteers	1.891* (0.059)	0.032 (0.858)	0.547 (0.460)	3.747*** (0.000)	0.029 (0.977)
H_0: Workers (*out-group*) = Volunteers	1.322 (0.186)	0.000 (0.990)	0.034 (0.853)	2.499** (0.012)	0.095 (0.924)

* Significant at 10%; ** Significant at 5%; *** Significant at 1%. P-value in brackets.
For continuous variables, we tested— through nonparametric statistics—between-subject differences by using the Mann-Whitney test. For dichotomous variables, we used the Chi square test to analyze the differences in proportions.

The analysis on balancing properties reveals that no statistically significant differences emerge when the two samples of workers are considered (Table 2, first row). The homogeneity of workers is particularly important since the main aim of this paper is to compare their behaviour in the two experimental conditions.

When looking at the amount sent by subjects, the first interesting finding is a marked departure from standard rational and selfish behaviour. Only two workers (4 per cent) in the *in-group* condition, no workers in the *out-group*, and two volunteers (8 per cent) chose to send nothing. Figure 1 shows the Kernel density estimate related to the amount sent by subjects across experimental conditions and the type of involvement in the social cooperative. The figure reveals differences in the behaviour of volunteers and workers in the *in-group* and *out-group* condition. Overall, 16.50 per cent of the subjects sent their entire endowment, with the percentage varying consistently between the 8 per cent of workers in the *in-group* condition, the 20 per cent of volunteers, and the 28.57 per cent of workers in the *out-group*. In all the three different sub-samples, a large percentage of subjects sent around half of their endowments and the median is equal to 25. If we look at the average amount sent in the game, we notice that workers sent significantly more in the *out-group* (31.143 EUR) than in the *In-group* (22.580 EUR) (Mann-Whitney p=0.012). Compared with the behaviour of volunteers, who played only in the *out-group* condition, workers sent more in the *Out-group* (31.143 vs. 25.600 EUR) and less in the *in-group* (22.580 vs. 25.600 EUR), but in both cases the differences are not statistically significant (Mann-Whitney p=0.265; and p=0.335).

Figure 1. Amount sent per experimental condition and type of involvement - Kernel density estimate (Gaussian kernel function)



In the next section, we report a multivariate analysis performed to study the behaviour of workers and volunteers across the different conditions characterizing the experimental design by considering first- and second-order beliefs and controlling for the differences in socio-demographic variables that emerged in the descriptive analysis.

3.2 Econometric analysis

To perform our econometric analysis, we clustered standard errors by accounting for the social cooperative to which the worker or volunteer belonged (other prominent papers have used this technique: see, for example, Fehr et al. 2007, p.139). We assumed that observations were independent across groups, but not necessarily within groups, where the groups were subjects belonging to the same social cooperative. We performed both OLS and Tobit estimates where the censoring values were 0 (lower limit) and 50 (upper limit). Since the results were virtually unchanged when using the two different models, Table 3 reports OLS regression results only (Tobit estimates are available upon request)[14].

Our base OLS specification was:

$$Amount\ sent_{ig} = \alpha_0 + \alpha_1\ Workers\ in\text{-}group_{ig} + \alpha_2\ Volunteers\ out\text{-}group_{ig} + X'_{ig}\delta + \varepsilon_{ig} \qquad (1),$$

where the dependent variable is the amount sent in the game by subject *i* belonging to social cooperative *g*. The main independent variables are the dummies *Workers in-group* (taking the value of 1 for workers who participated in the *in-group* condition) and *Volunteers out-group* (taking the value of 1 for volunteers in the *out-group*). The residual category is the workers who take part in the *out-group* condition[15]. The subject recruited from the general public (see section 2.3 on the experimental procedures) was not included in the sample. X_{ig} includes a wide array of control variables: *Age* (in years); *Gender* (1 if the subject is a female); *University* (dummy variable taking the value of 1 if the respondent has at least a university degree)[16]; *Family income* (discrete variable ranging between 1—less than 15,000 EUR—and 5—more than 75,000 EUR); *Time in co-op* (the number of years spent in the social cooperative); *Member* (dummy taking the value of 1 if the subject is a member of the social cooperative); *A-type co-op* (dummy taking the value of 1 if the

[14] The only differences relate to the significance level of the control variable Family income in regressions 1 and 3 and the control variable Age in regression 2, which become significant at 5% instead of at 10%.

[15] Recall that no volunteers have been included in the in-group condition. Consequently, subjects considered in the estimates are workers who took part in the out-group condition, workers who took part in the in-group condition, and volunteers involved in the out-group condition.

[16] Note that the following empirical results do not significantly change if we consider, instead of this variable, a discrete variable measuring the level of education between 0 - no education, and 6 - postgraduate qualification). Estimates available from the author upon request.

cooperative is of A-type)[17]; *Years co-op* (social cooperative's number of years in operation; *Number volunteers* (number of volunteers in the social cooperative); *Number workers* (number of workers in the social cooperative).

Table 3. The determinants of the amount sent in the game

Regression	**1**	**2**	**3**
	Dependent Variable: *Amount sent*		
Workers in-group	-7.462*** (1.901)	-4.024* (1.918)	-5.067** (2.286)
Volunteers out-group	-8.157** (3.524)	-4.763* (2.554)	-6.310* (3.293)
First-order beliefs		0.532*** (0.087)	0.397*** (0.097)
Second-order beliefs			0.149 (0.195)
Age	-0.134 (0.126)	-0.180* (0.093)	-0.213** (0.084)
Gender	-2.693 (3.237)	0.012 (2.675)	-0.763 (2.775)
University	1.156 (2.609)	1.652 (1.933)	1.885 (1.727)
Family income	2.160* (1.075)	1.435 (1.065)	2.075* (1.074)
Time in co-op	-0.006 (0.349)	0.080 (0.190)	0.134 (0.181)
Member	-2.679 (4.077)	-1.545 (3.123)	-1.647 (2.981)
A-type co-op	-9.399*** (3.095)	-3.723 (2.321)	-3.948* (2.161)
Years co-op	0.322 (0.223)	0.295* (0.148)	0.261* (0.133)
Number volunteers	0.025 (0.040)	0.003 (0.024)	0.006 (0.025)
Number workers	0.033 (0.105)	0.068 (0.064)	0.073 (0.061)
Constant	34.061*** (6.157)	15.576*** (2.765)	16.444*** (5.022)
Wald test on equality of coefficients of *Workers in-group* and *Volunteers out-group*	0.695 (2.569)	0.739 (2.269)	1.243 (3.197)
R^2	0.183	0.454	0.470
Root MSE	11.808	9.649	9.611
Obs.	93	89	85

Cluster-robust standard errors in brackets. *Significant at 10%; **significant at 5%; ***significant at 1%.
The number of observations suffers from missing values associated with subjects who did not answer some questions used to elaborate the control variables and/or who did not report their belief.

[17] No observations from subjects belonging to B-type social cooperative who agreed to take part in the research project survive in the sample after eliminating subjects whose choices were not compatible with the game rule because adding their two answers together produced a sum other than 50 (see Section 2.3).

Regression 1 clearly shows that, also when individual socio-demographic factors and variables at the organizational level are considered, workers tend to send significantly more when paired with people from the general population than with colleagues (7.5 EUR more). It also reveals that, when paired with people from the general public, workers tend to send more (8.2 more) than volunteers[18]. Conversely, no statistically significant difference emerges between the amount sent by volunteers and workers when the latter are paired with colleagues; the Wald test presented in Table 3 on the hypothesis that the coefficient of *Workers in-group* and *Volunteers out-group* are equal to each other is not rejected.

At the individual level, the only variable which significantly (and positively) affects the amount sent is the level of family income. At the organizational level, subjects belonging to A-type social cooperatives send significantly less than members of A+B-type social cooperatives.

Regression 2 includes first-order beliefs (*First-order beliefs*) among the independent variables. It reveals that belief about the counterpart's behaviour significantly contributes towards explaining the decision to send (the R-squared more than doubles when first-order beliefs are considered). The level of contribution increases with the amount that it is believed will be sent by the counterpart. Moreover, when first-order beliefs are considered, both the size (in absolute value) and the significance of the coefficients of the two variables *Workers in-group* and *Volunteers out-group* decrease. This seems to indicate that the higher level of contribution by workers in the *out-group* condition is mediated by belief. However, since workers in the *out-group* also send more after including expectations, some additional factors—presumably connected with individual preferences—must be at work in driving their choices (see Section 4).

We also explored possible differences in the effect of first-orders beliefs on the amount sent across experimental groups by interacting first-order beliefs with the dummy variables *Workers in-group* and *Volunteers out-group*. Since the F-test on the null hypothesis that the coefficients of these interaction terms were jointly equal to 0 was accepted (p=0.635), we concluded that no significant differences emerged in the way beliefs affected our dependent variable across groups.

As far as the other control variables are concerned, when first-order beliefs are considered, the type of cooperative is no longer significant, while the age of subjects and the years of operation of the social cooperative become significantly associated with the amount sent, respectively in a negative and positive connection.

The inclusion of second-order beliefs (Table 3; regression 3) essentially does not change the previous result, with second-order beliefs which are not significantly associated with the amount sent in the game. Also, second-order beliefs do not significantly differ in their effect on the amount sent among groups of workers in the *out-group* condition, workers in the *in-group* condition, and volunteers (F-test computed following the same procedure described in relation to first-order beliefs: p=0.306).

[18] In order to control that this result does not strictly depend on workers who are also volunteers in some associations, we exclude from the estimates reported in Table 3 six workers (involved in the out-group condition) who declared in the questionnaire that they spent at least one hour per week doing voluntary work in associations. The difference in the amount sent between workers in the out-group condition and volunteers remains statistically significant at least at 5%, also when beliefs are considered.

Finally, the OLS estimates in Table 4 analyse beliefs in detail. In this case, too, we performed both OLS and Tobit estimates, and the results were essentially the same[19].

Here, our base OLS specification was:

$$Dependent\_var_{ig} = \alpha_0 + \alpha_1 Workers\ in\text{-}group_{ig} + \alpha_2 Volunteers\ out\text{-}group_{ig} + X'_{ig}\delta + \varepsilon_{ig} \quad (2),$$

where the dependent variable is *First-order beliefs* (in Table 4, regression 1) and *Second-order beliefs* (in Table 4, regression 2) of subject *i* belonging to the social cooperative *g*. X_{ig} represents the same control variables included in (1).

Table 4. The determinants of expectations

Regression	**1**	**2**
Dependent variable	*First-order beliefs*	*Second-order beliefs*
Workers in-group	-6.434**	-7.026*
	(2.413)	(3.690)
Volunteers out-group	-3.488	2.071
	(2.562)	(3.480)
Age	0.009	-0.029
	(0.152)	(0.198)
Gender	-4.613	-4.582
	(2.626)	(3.518)
University	-1.233	-1.924
	(3.408)	(3.558)
Family income	1.566	-0.472
	(1.457)	(1.480)
Time in co-op	0.274	0.210
	(0.393)	(0.312)
Member	-1.794	-1.731
	(3.855)	(4.921)
A-type co-op	-9.357**	-3.584
	(3.134)	(3.381)
Years co-op	0.048	0.095
	(0.207)	(0.211)
Number volunteers	0.025	-0.006
	(0.038)	(0.028)
Number workers	0.029	0.088
	(0.103)	(0.087)
Constant	30.704***	31.507***
	(6.798)	(7.261)
Wald test on equality of coefficients of *Workers in-group* and *Volunteers out-group*	-2.946	-9.096**
	(2.950)	(4.019)
R^2	0.155	0.157
Root MSE	12.924	12.87
Obs.	89	85

Cluster-robust standard errors in brackets. *Significant at 10%; **significant at 5%; ***significant at 1%.
The number of observations suffers from missing values associated with subjects who did not answer some questions used to elaborate the control variables and/or who did not report their belief.

[19] The only differences involved two control variables in regression 1: Gender, which was not significant in the OLS estimates, became significant at the 5% level in the Tobit regressions; and A-type co-op, which was significant at the 5% level in the OLS estimates and at 1% in the Tobit estimates.

Table 4 shows that, also when control variables at individual and organizational level are considered, both the first- and second-order beliefs of workers are higher when they are paired with people from the general population than with colleagues. The Wald test reported in Table 4 also reveals that second-order beliefs of workers in the *in-group* are lower than those of volunteers.

4. Discussion of results

As expected, by considering contributions on the pro-social attitudes of social cooperative workers and volunteers (Degli Antoni and Portale, 2011; Degli Antoni and Sabatini, 2016; Sabatini, Modena and Tortia, 2014), our experimental data revealed a marked departure from standard rational and selfish behaviour (more than 95 per cent of the subjects sent a positive amount of money to the counterpart), in particular in our *out-group* condition, where workers were paired with people from the general public. At odds with what may be expected by considering the marked generalized trust of volunteers when compared with that of non-volunteers, we find that—when paired with unknown others—volunteers tend to sacrifice less than workers. Finally, we found that workers send less to their colleagues than to people from the general public.

We have shown that the difference in the willingness to make sacrifices in the experimental game is partly mediated by the belief about the counterpart's behaviour. Workers expect their colleagues to send less than people from the general public. This leads one to think that the distinction between moralistic trust and knowledge-based trust (Uslaner, 2002, in particular Chapter 2) may have a role in explaining our evidence. Moralistic trust may explain why workers (and volunteers) decided to send a positive amount of money to perfect strangers in our experimental game. In Uslaner's approach, moralistic trust consists in the belief that other people share your fundamental moral values, and that others should therefore be treated as you would like them to treat you. Moralistic trust requires one to behave correctly with others even where (direct) reciprocity plays no role in the interaction. It is fairly stable over time (Uslaner, 2002, Chapter 3), and does not depend on everyday life experiences, even though it may be affected by collective social experience (such as the civil rights movement in the United States). In contrast with moralistic trust, knowledge-based trust involves a relationship between specific persons who interact within defined contexts. Knowledge-based trust tells one to behave with others on the basis of the previous experiences that have characterized interactions with those specific others. Knowledge-based trust will therefore be greater where the persons it refers to has proved to be trustworthy, whereas it will be eroded by untrustworthy behaviour. It should be noted that moralistic and knowledge-based trust coexist in every individual, who will behave according to moralistic trust when interacting with unknown persons, and to knowledge-based trust when information about the previous behaviour of the counterpart is available.

In this perspective, the belief that colleagues will send less money than members of the general public, which resulted in a lower contribution in our *in-group* experimental condition, may be

explained by the not completely satisfactory nature of job relations in terms of a reciprocal willingness to make sacrifices for others, which generates a level of knowledge-based trust towards colleagues that is lower than the level of moralistic trust. This does not imply that the desire to make a sacrifice for others is completely absent in workers when they are paired with colleagues. In fact, the vast majority of workers also depart from purely selfish behaviour in the *in-group* condition. Nor does this mean that on-the-job interactions reduce the level of the subjects' moralistic trust, which remains stable over the time, and is substantially unaffected by everyday life experiences. Our evidence on workers' beliefs regarding the propensity to make sacrifices of their colleagues and people from the general public does, however, raise issues of fundamental importance for management strategy with regard to the promotion of trust and good relationships among colleagues.

Moreover, since beliefs do not fully account for the lower contribution of workers in the *in-group* condition, motivations other than the effect of previous specific interactions in the workplace must count. Our design does not allow us to clearly identify and disentangle the residual motivations behind differences in workers' behaviour in the *in-group* and *out-group* condition. One tentative explanation might be that other-regarding preferences induce workers to send more to strangers than to colleagues because they are convinced that the strangers may be in a worse economic situation. In a period of economic crisis, the very fact of having a job might be perceived as a privilege, and awareness that the counterpart in the *in-group* condition is in employment might have affected the subjects' decision. The socially oriented nature of cooperatives and their inclusive governance (Dow, 2003; Stiglitz, 2009; Birchall, 2010) may attract subjects with specific other-regarding preferences (for example, inequity-averse subjects), and this may be particularly relevant in our sample. This explanation (or others that are not strictly based on belief) may account for the lower contribution in the *out-group* condition of volunteers as opposed to workers, who do not present significantly differences in terms of either first- or second-order beliefs (Table 4).

5. Conclusions

This paper contributes to the literature by carrying out an original experimental analysis, which compares the willingness of workers in social cooperatives to make a personal monetary sacrifice in favour of colleagues or people from the general population.

Given the importance of trust and positive relationships for the economic performance of organizations, our results deserve particular attention, and pose interesting questions for further research. Firstly, specific experiments should be designed to identify why workers are less willing to make sacrifices in favour of their colleagues than people from the general population. In addition, this study focused on workers involved in a precise organization type, and our dataset does not allow us to investigate whether the detected behaviour of workers with colleagues compared with that towards unknown others is peculiar to social cooperative workers. A comparative analysis of

workers employed in different kinds of organization might clarify this. Finally, it must be considered that the low probability that one's choice is actually paid in our game (we only paid 1 subject out of 50) makes the financial cost of sending money less effective in counterbalancing the non-monetary utility that may derive from sacrificing a part of the personal payoff in favour of the counterpart (for example, that associated with a socially desirable presentation of oneself). Like Mittone and Ploner (2015), we can say that at a theoretical level, subjects have a monetary incentive to reveal their true preferences. Since the size of monetary incentives may affect experimental subjects' behaviour, however, (for example, incentives reduce "socially desirable presentation" effects such as generosity, Camerer and Hogarth, 1999), further experimental analyses on workers' behaviour towards colleagues should offer more substantial monetary incentives so as to make other-regarding behaviour more costly than it was in our experiment.

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