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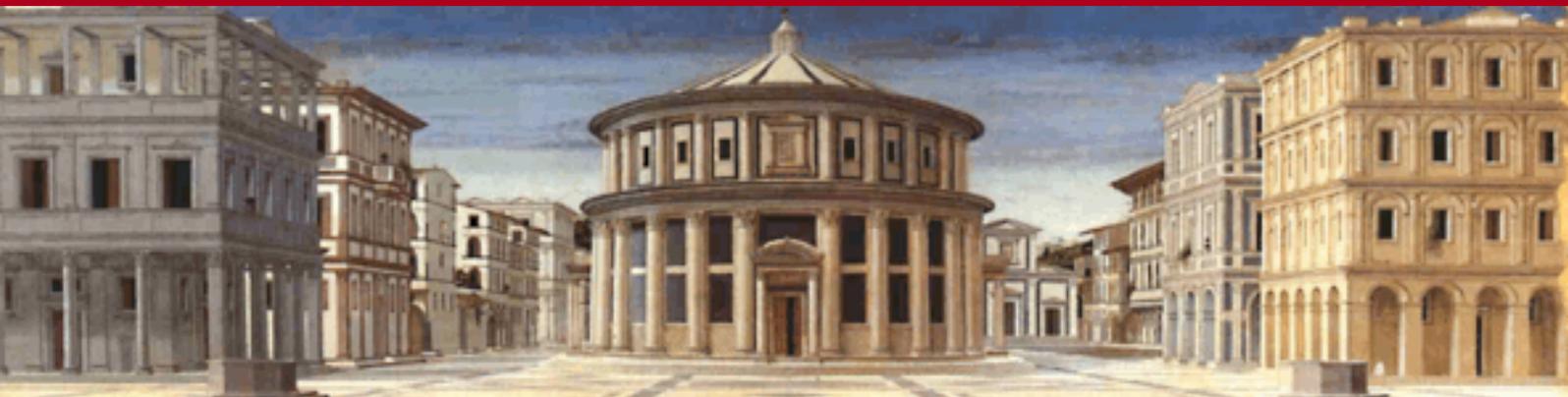
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Workers' propensity to
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and the general
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experiment

Working papers



**Workers' propensity to cooperate with colleagues and the general population:
a comparison based on a field experiment**

Giacomo Degli Antoni*

Abstract

Experimental evidence shows that people tend to be more cooperative with persons belonging to their own group than with others. Strangely enough, this literature largely fails to consider a type of group pervasive in modern societies: colleagues belonging to the same productive organization. This is particularly curious if one considers the importance of cooperation among colleagues for the economic performance of organizations.

This paper carries out an original experimental analysis which compares the level of cooperation of social cooperative workers when they are paired with colleagues and with people from the general population.

In contrast with the literature on in-group favoritism, we find that workers trust their colleagues less and cooperate less with them than they do with people from the general public, even though, in absolute terms, the level of cooperation is quite high also among colleagues. By analyzing first- and second-order beliefs, we show that the difference in cooperation is partly mediated by expectations concerning the counterpart's behavior, since workers expect their colleagues to be less cooperative than members of the general public. However, the analysis reveals that also other motivations count, such as other-regarding preferences and warm glow.

JEL classification: C72, C93, L31, P13, Z13

Keywords: social cooperatives, field experiment, social dilemmas, in-group favoritism, trust, beliefs

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Workers' propensity to cooperate with colleagues and the general population: a comparison based on a field experiment

1. Introduction

People tend to be more cooperative with persons belonging to their own group than with others. This is a rather robust result emerging from the experimental literature on in-group favoritism when both minimal groups (groups formed in the lab on the basis of some arbitrary characteristics) and real groups are considered (on minimal groups see: Tajfel 1970, 1974; Brewer 1979, 1999; Mullen, Brown and Smith 1992; Charness *et al.* 2007; Hargreaves-Heap and Zizzo, 2009; on real groups: Goette *et al.* 2006; Ruffle and Sosis 2006; Bernhard *et al.* 2006).

Strangely enough, this literature largely fails to consider a type of group pervasive in modern societies: colleagues belonging to the same productive organization. In real groups, cooperation with members of one's own group compared with cooperation with non-members has been analyzed with respect to army platoons (Goette *et al.* 2006); Kibbutz members (Ruffle and Sosis 2006); various native groups from Papua New Guinea (Bernhard *et al.* 2006); and volunteers working for associations of various kinds (Degli Antoni and Grimalda 2012). An exception to the lack of experimental studies on the propensity to cooperate among workers is the paper by Mittone and Ploner (2011), which analyses data from a prisoner's dilemma game embedded in a questionnaire administered to workers of Italian social cooperatives in 2007. The game could vary according to two aspects, which the authors called 'social distance' and 'monetary incentives to cooperate'. In the low social distance condition, the subjects were paired with other workers at their own cooperative. In the high social distance condition, the two players belonged to different organizations. Monetary payoffs under different combinations of choices were changed so as to make the cooperative equilibrium more or less convenient compared with the standard Nash-equilibrium characterizing the prisoner's dilemma. Mittone and Ploner showed that: a) higher monetary incentives increase cooperation; b) social proximity does not affect cooperation; that is, workers in cooperatives do not tend to cooperate more when paired with colleagues than when paired with members of other organizations.

The scarcity of experimental evidence on workers' cooperation with colleagues is particularly curious if one considers its importance for the economic performance of organizations. Personal communication and relationships among employees and between principals and agents increase workers' effort (Osterloh, Frey and Frost, 2001). Trust and personal relations, also through their effect on workers' intrinsic motivations¹ to cooperate (Dawes *et al.* 1988, Frey and Bohnet 1995), encourage the transfer of

¹ On the concept of intrinsic motivation see: Deci (1971, 1975), Frey (1992, 1997).

information and tacit knowledge, and they foster the creation of social knowledge, which is an asset for production processes (Osterloh and Frey 2000, Nahapiet and Ghoshal 2002, Sabatini 2008).

By drawing on a unique dataset collected by the author through a field experiment, the present paper analyzes the propensity to cooperate of workers in social cooperative when paired with colleagues or with people randomly drawn from the general public. As a benchmark for the level of cooperation among workers, we compare their behaviour with that of volunteers in the same type of organization. Moreover, we analyze first-order and second-order beliefs in the counterpart's behaviour.

The present paper differs from the one by Mittone and Ploner (2011) 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. This enabled us to compare the specific propensity to cooperate shown by workers towards their colleagues with their generalized propensity to cooperate. Second, we included in our sample volunteers belonging to social cooperatives. This made it possible to study the different propensities to cooperate of people involved in the same organization (indeed affected by the same environmental variables) but with different *statuses*.

Italian social cooperatives have the institutional purpose of pursuing both the interests of their members and the general interest (see Law 381/1991, *Disciplina delle cooperative sociali*,² which introduced this organizational form in Italy). Social cooperatives are nonprofit organizations (Borzaga and Tortia 2006) which combine characteristics of traditional cooperative enterprises and traditional nonprofit associations, where governance rights and ownership are assigned to the workers or to a mix of stakeholder categories (such as consumers, volunteers and investors). This kind of organization 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 benefits creation for members and non-members (Kerlin 2006), and whose regulation varies among countries (Defourny and Nyssens 2008, Defourny and Nyssens 2010b). These organizations represent a still limited, but nevertheless important and growing, phenomenon in contemporary economies. Between 2001 and 2011 social cooperatives in Italy almost doubled, reaching the number of 11,264 and employing more than 320,513 workers.³

The socially-oriented nature and inclusive governance of social cooperatives generate positive effects associated with the participation of workers in these organizations. The satisfaction of workers in social cooperative is higher compared with other organizational forms (Borzaga and Tortia 2006). On studying the

² Available at the url: bit.ly/381-1991 (in Italian).

³ Data from the 9° "Censimento industria e servizi e Istituzioni non profit 2011" - Census industry and services and non-profit institutions in 2011 (<http://dati-censimentoindustriaeservizi.istat.it/>) carried out by the Istituto Nazionale di Statistica (Istat) -- The National Institute of Statistics.

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 social cooperatives and of their adoption of corporate social responsibility practices. Degli Antoni and Sabatini (2013) 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 et al. (2013) 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).

In line with these results, in what follows we shall show that both workers and volunteers of social cooperatives display a high level of propensity to cooperate with people randomly drawn from the general population. Our evidence also reveals that workers' propensity to cooperate with colleagues is lower than their propensity to cooperate with people from the general population. This result is in contrast with the in-group favoritism effect apparent in many contexts, and it opens interesting scenarios for the analysis of cooperation among workers belonging to the same organization.

The paper is organized as follows. Section 2 describes the database, the experimental design and procedures. Section 3 presents some descriptive evidence. Section 4 is devoted to the econometric analysis. Section 5 concludes.

2. Database, experimental design and procedures

2.1. Database

This paper is based on an original database collected in 2011 by the author by means of an experimental game and anonymous questionnaires filled in by workers and volunteers of social cooperatives operating in Parma - a province in North Italy with 447,251 inhabitants (<http://www.statistica.parma.it/>) and a significant number of social cooperatives (with 17.08 per 100,000 inhabitants⁵ Parma has the 37th largest number of social cooperatives out of the 110 Italian provinces).

⁴ Degli Antoni and Sabatini (2013) 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 (2013) 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 (2013) (because data from the game were not available with respect to members of social welfare associations).

⁵ Our calculation on data from Istat: <http://dati-censimentoindustriaeservizi.istat.it/> and <http://demo.istat.it/bil20111009/index04.html>

Social cooperatives were contacted through the second-level association⁶ based in Parma “Consorzio di Solidarietà Sociale” (“Consortium of Social Solidarity”). 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 (operating in sectors characterized by socially oriented activities, such as education and research, social welfare, and health activities)⁷, 1 was of B-type (social cooperatives aimed at promoting the employment of disadvantaged people: they may operate in any sector, provided that at least 30% of their employees are disadvantaged workers), and 4 were A+B-type (they combined the features of the A-type and B-type social cooperatives).

In total, we collected experimental data from 114 subjects: 27 volunteers in 11 social cooperatives (2.5 volunteers per organization on average, minimum 1, maximum 4 and standard deviation 1.1) and 87 workers in 15 social cooperatives (5.8 workers per organization on average, minimum 1, maximum 12 and standard deviation 3.8). Volunteers and workers were randomly selected.

The respondents answered 101 questions relative to their experience in the cooperative. Questionnaires were distributed and filled in at home. Before the questionnaire was administered, so that the respondents would not be affected by questions in the survey, they were asked to read instructions and to take a decision in a very simple simultaneous game, properly incentivized, intended to study their propensity to cooperate.⁸

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 and procedures

The game represented a typical social dilemma. Two players were endowed with 50 euros. They had to decide how much – between 0 and 50 euros – 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 was the strategy vector in which both players sent 0 and

⁶ Second-level associations are associations of first-level associations – i.e. voluntary associations of individuals – with the institutional goal of supporting their members in their activities (such as fundraising programmes, the organization of training courses, etc.).

⁷ The different types of social cooperatives were established by Law 381/1991.

⁸ As a whole, 32 volunteers and 106 workers returned the questionnaires. However, 5 volunteers and 19 workers did not take any decision in the game. Because of that, they are not included in the sample analyzed in the present paper.

earned 50 euros. This was not a Pareto-optimal equilibrium. If both players sent their entire endowment, both earned 100 euros. However, the decision to play cooperatively by sending a positive amount of money exposed players to the risk of being abused by the counterpart. Cooperative behaviour in this game may be motivated by other-regarding preferences (Cox 2004), social-welfare preferences (Charness and Rabin 2002) and warm glow (Andreoni 1989 and 1990).

The rules of the game were common knowledge. We adopted a between-subjects design with each subject taking part in only one session. Workers and volunteers of social cooperatives and people from the general population of residents in Parma participated in the experiment.

An *In-group* and an *Out-group* condition characterized the experimental design. Workers participated in both conditions. By contrast, 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 (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 the *Out-group* condition, subjects were informed that their partner was a resident of the province of Parma or surrounding provinces.

The game instructions were attached at the beginning of the questionnaire described in the previous section. Decisions in the game and questionnaires were collected through boxes placed in the headquarters of the social cooperatives that participated in the research project. We asked workers and volunteers to write an identification number chosen by themselves on the sheet where they took the decision for the game and on the questionnaire. To avoid identical numbers, we suggested using the date of birth of their mother together with the initial of their mother's name. We asked the participants to keep a sheet of paper bearing their identification number so that they could receive the payoff earned in the activity.

After having collected all the game decisions, we randomly drew 1 subject for every 50 subjects who had taken part in the experiment. For each worker drawn 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. For each worker/volunteer extracted in the *Out-group* condition we asked a subject randomly selected among residents in the province of Parma or surrounding provinces to take part in the same game and, after computing the payoffs, we paid both the workers/volunteers extracted and the subjects from the general public. Subjects from the general public were recruited and took part in the experiment in a public swimming pool in the province of Parma. They were paid in cash immediately after their participation. Workers and volunteers, both in the *In-group* and the *Out-group* condition, were paid with an envelope reporting the identification number and containing the payoff, which was left at the reception desk of the social cooperative to which they belonged. The

entire procedure was described in the game's instructions delivered to the subjects. Consequently, the workers and volunteers who participated in the game knew that they had 1 chance in 50 of being drawn and actually paid for their choices in the game. We informed subjects that the computation of payoffs and their payments would take place after all the decisions had been collected, and that the correctness of the entire procedure was guaranteed by the President of the Consortium of Social Solidarity of Parma.

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.

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 5 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.

By means of two questions on the first page of the questionnaire, we also elicited first- and second-order beliefs. The questions asked "How much do you believe that the person you are paired with will keep for himself (between 0 and 50 euros) ___ and will send to you (between 0 and 50 euros) ___" and "According to you, how much does the person you are paired with believe that you are going to send to him?". Also belief elicitation was monetarily incentivized. If the subject was drawn for the payment of the game payoff, we paid 20 euros for each of the two belief questions in the case of correct answers. 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 (6 subjects).

3. Descriptive analysis

Table 1 reports descriptive statistics and balancing properties on socio-demographic indicators across experimental conditions and type of subject, i.e. workers and volunteers.

Consideration of the age of subjects, their sex, education (attainment of at least a bachelor's degree), family income (measured through a discrete variable ranging between 1 – less than 15,000 euros and 5 – more than 75,000 euros) and the number of years spent in the organizations show that:

- No statistically significant differences emerge when the two samples of workers are considered (fourth row);
- The sample of workers in the *In-group* condition differs from the sample of volunteers with regard to both income and age distribution (fifth row);
- The sample of workers involved in the *Out-group* condition differs from the sample of volunteers with regard to income distribution (last row).

The homogeneity of workers is particularly important since the main aim of this paper is to compare their behavior in the two conditions. The differences between workers and volunteers may be explained by the fact that a large number of volunteers (34.62%) were retired.

Table 1

Descriptive statistics and balancing properties per experimental condition and type of involvement in the social cooperative

		Age	Female	Education	Family income	Years spent in the organization
Descriptive statistics Means and standard deviations in curved brackets.	Workers <i>In-group</i>	36.255 (9.556)	0.673 (0.474)	0.408 (0.497)	1.833 (0.883)	6.8 (6.125)
	Workers <i>Out-group</i>	38.519 (9.225)	0.654 (0.485)	0.296 (0.465)	2.077 (1.017)	6.667 (6.177)
	Volunteers <i>Out-group</i>	47.167 (18.227)	0.652 (0.487)	0.32 (0.476)	2.792 (0.932)	8.708 (9.091)
Balancing properties P-value in squared brackets. Mann-Whitney or χ^2 test.*	H ₀ : Workers (<i>In-group</i>) = Workers (<i>Out-group</i>)	1.163 [0.245]	0.029 [0.864]	0.936 [0.333]	0.949 [0.343]	-0.118 [0.906]
	H ₀ : Workers (<i>In-group</i>) = Volunteers	1.891 [0.059]	0.032 [0.858]	0.547 [0.460]	3.747 [0.000]	0.029 [0.977]
	H ₀ : Workers (<i>Out-group</i>) = Volunteers	-1.322 [0.186]	0.000 [0.990]	0.034 [0.853]	-2.499 [0.012]	-0.095 [0.924]

*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.

Table 2 summarizes the descriptive statistics on the amount sent across experimental conditions.

The first interesting finding is a marked departure from standard rational and selfish behavior. Only two workers (4%) in the *In-group* condition, no workers in the *Out-group*, and two volunteers (8%) chose to

send nothing. Overall, 16.50% of the subjects sent their entire endowment, with the percentage varying consistently between the 8% of workers in the *In-group* condition, the 20% of volunteers, and the 28.57% 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. When we look at the average amount sent in the game, we notice that: a) workers sent significantly more in the *Out-group* (31.143 €) than in the *In-group* (22.580 €) (Mann-Whitney $p=0.012$); b) compared with the behavior of volunteers, who played only in the *Out-group* condition, workers sent more when paired with people from the general public (31.143 € vs. 25.600 €) and less when paired with colleagues (22.580 € vs. 25.600 €), but in both cases the differences are not statistically significant (Mann-Whitney $p=0.265$; and $p=0.335$).

Table 2
Descriptive statistics on the amount sent (percent values in parentheses)

Amount sent	Workers <i>In-group</i>	Workers <i>Out-group</i>	Volunteers <i>Out-group</i>	Total sample
0	2 (4.00)	0 (0.00)	2 (8.00)	4 (3.88)
0 < amount sent < 10	2 (4.00)	0 (0.00)	0 (0.00)	2 (1.94)
10 ≤ amount sent < 20	7 (14.00)	2 (7.14)	4 (16.00)	13 (12.62)
20 ≤ amount sent < 30	32 (64.00)	16 (57.14)	12 (48.00)	60 (58.25)
30 ≤ amount sent < 40	3 (6.00)	1 (3.57)	2 (8.00)	6 (5.83)
40 ≤ amount sent < 50	0 (0.00)	1 (3.57)	0 (0.00)	1 (0.97)
50	4 (8.00)	8 (28.57)	5 (20.00)	17 (16.50)
Mean	22.58	31.143	25.600	25.641
St.Dev.	10.816	12.921	14.183	12.842
Median	25	25	25	25

Even though we do not have a treatment that allows direct comparisons of behavior by workers and volunteers with the behavior of the general population in Parma, we can fruitfully refer to a recent paper by Degli Antoni and Grimalda (2012), who carried out a field experiment, using an Investment game, in the same province of Parma.

Degli Antoni and Grimalda had a sample of 77 subjects (recruited by Demoskopea, an opinion polling and market research agency) who had never joined an association as volunteers. In the Degli Antoni and Grimalda design, these subjects were involved in an *Out-group* condition, where they were paired with people from the general public of Parma and surrounding provinces, exactly as in the present paper.

In the investment game used by Degli Antoni and Grimalda, both senders and receivers had an initial endowment of 25 €, and the subjects acted as both senders and receivers. Senders had to decide how much of their endowment to send to the receivers. Senders could choose from among only 6 options: they could send 0, 5, 10, 15, 20 or 25 €. The money sent was doubled. The receivers could send back any amount

between zero and the amount in their possession, equal to the sum of the amount transferred by the sender, multiplied by two, and their initial endowment of 25 €.

The senders' choice in this game was similar to the choice of players in our design. In both cases, the amount sent to the counterpart was doubled. The main difference is that, in the investment game proposed by Degli Antoni and Grimalda, the senders had more incentive to send money because the receivers could decide to send back to them an amount of money also higher than the amount initially sent. Consequently, all things considered, we may expect that the subjects were more cooperative in the investment game than in our experiment.

Nevertheless, in the *Out-group* condition characterizing the experiment reported by the present paper, both workers (who sent 62.28% of their endowment on average) and volunteers (51.20%) sent more than did subjects who had never joined an association in the experiment conducted by Degli Antoni and Grimalda (42.60%). The latter sent more or less the same amount as workers paired with colleagues in our *In-group* condition (45.16%).

Degli Antoni and Grimalda (2012) applied their *Out-group* condition also to 155 subjects who were currently members of voluntary associations and to 34 subjects who had been members of associations in the past but had later dropped out. Also current members (who sent 57.92% of their endowment on average) and dropouts (40.60%) sent less than workers of social cooperatives in the *Out-group* condition of our design.

Overall, workers in social cooperatives seem to be fairly cooperative with people from the general population and in general, more cooperative than other groups of people belonging to the same province. However, they seem to be less cooperative in the *In-group* than in the *Out-group* condition.

First- and second-order beliefs on the counterpart's behavior give clues with which to interpret this puzzling finding: workers showed significantly more generalized trust than particularized trust towards their colleagues. When paired with colleagues, workers believed, on average, that their counterpart would send 18.604 € against the 26.346 € which were believed that the counterpart would send in the *Out-group* condition (Mann-Whitney $p=0.003$). Also second-order beliefs (what I believe that the counterpart believes that I will send to him) were statistically significantly higher in the *Out-group* than in the *In-group* condition (28.333 vs. 20.574 €; Mann-Whitney $p=0.017$).

The first- and second-order beliefs of volunteers were equal to 27.292 € and 29.870 € respectively. They were not significantly different from the beliefs of workers in the *Out-group* condition (Mann-Whitney $p=0.760$ and $p=0.777$) and significantly higher than the beliefs of workers in the *In-group* (Mann-Whitney $p=0.024$ and $p=0.008$).

In the next section we report a multivariate analysis performed to study the behavior of workers and volunteers across the different conditions characterizing my experimental design by controlling for the differences in socio-demographic variables that emerged in the descriptive analysis.

4. Econometric analysis

To perform our econometric analysis we used OLS estimates where standard errors were clustered by accounting for the social cooperative to which the worker or volunteer belonged. We assumed that observations were independent across groups, but not necessarily between groups, where the groups were subjects belonging to the same social cooperative.

Table 3 shows our regression results where the dependent variable is the amount sent in the game. 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*). Control variables are: *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 - 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)⁹), *Family income* (discrete variable ranging between 1 – less than 15,000 euros and 5 – more than 75,000 euros), *Time in coop* (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), *Coop type A* (dummy taking the value of 1 if the cooperative is of type A),¹⁰ *Years_coop* (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).

⁹ Estimates available from the author upon request.

¹⁰ No observations from subjects belonging to the social cooperative of Type B 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 produced a sum different from 50.

Table 3
The determinants of cooperation

Regression	1	2	3
	Dependent Variable: <i>Amount sent</i>		
<i>Workers In-group</i>	-7.462*** (1.901)	-4.024* (1.918)	-5.067** (2.286)
<i>Volunteers Out-group</i>	-8.157** (3.524)	-4.763* (2.554)	-6.310* (3.293)
<i>First-order beliefs</i>		0.532*** (0.087)	0.397*** (0.097)
<i>Second-order beliefs</i>			0.149 (0.195)
<i>Age</i>	-0.134 (0.126)	-0.180* (0.093)	-0.213** (0.084)
<i>Gender</i>	-2.693 (3.237)	0.012 (2.675)	-0.763 (2.775)
<i>University</i>	1.156 (2.609)	1.652 (1.933)	1.885 (1.727)
<i>Income</i>	2.160* (1.075)	1.435 (1.065)	2.075* (1.074)
<i>Time in coop</i>	-0.006 (0.349)	0.080 (0.190)	0.134 (0.181)
<i>Member (socio)</i>	-2.679 (4.077)	-1.545 (3.123)	-1.647 (2.981)
<i>Coop type A</i>	-9.399*** (3.095)	-3.723 (2.321)	-3.948* (2.161)
<i>Years_coop</i>	0.322 (0.223)	0.295* (0.148)	0.261* (0.133)
<i>Number_volunteers</i>	0.025 (0.040)	0.003 (0.024)	0.006 (0.025)
<i>Number_workers</i>	0.033 (0.105)	0.068 (0.064)	0.073 (0.061)
<i>Constant</i>	34.061*** (6.157)	15.576*** (2.765)	16.444*** (5.022)
R ²	0.183	0.454	0.470
Root MSE	11.808	9.649	9.611
Obs.	93	89	89

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.

Regression 1 clearly shows that, also when individual socio-demographic factors and variables at the organizational level are considered:

Result 1. *Workers tend to cooperate significantly more with people from the general population than with colleagues (7.5 euros more).*

Result 2. *When paired with people from the general public, workers in social cooperatives tend to cooperate more (8.2 euros more) than volunteers in the same type of organization.*

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 cooperatives of type A send significantly less than members of A+B social cooperatives.

Regression 2 investigates the role of first order beliefs. It reveals that:

Result 3. *Expectation about the counterpart's behaviour significantly affects the decision to cooperate, with the level of contribution increasing with the amount that it is believed will be sent by the counterpart (note that the R-squared more than doubles when first-order beliefs are considered).*

Result 4. *The higher level of contribution by workers in the Out-group is mediated by expectation. When first-order beliefs are considered, both the size and the significance of the coefficients of the two variables Workers In-group and Volunteers Out-group decrease.*

Result 5. *Workers in the Out-group are still more cooperative after the inclusion of expectation, revealing that also some additional factors – such as other-regarding preferences or warm glow – are at work.*

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 (regression 3) essentially does not change the previous result, with second-order expectations which are not significantly associated with the amount sent in the game.

Finally, Table 4 analyses beliefs in detail. It 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.

Result 6. *Generalized trust of workers in cooperative behaviour by people from the general public is greater than their particularized trust in cooperative behaviour by colleagues.*

Table 4
The determinants of expectations

Regression	1	2
Dependent variable	<i>First-order belief</i>	<i>Second-order belief</i>
<i>Workers In-group</i>	-6.434** (2.413)	-7.026* (3.690)
<i>Volunteers Out-group</i>	-3.488 (2.562)	2.071 (3.480)
<i>Age</i>	0.009 (0.152)	-0.029 (0.198)
<i>Gender</i>	-4.613 (2.626)	-4.582 (3.518)
<i>University</i>	-1.233 (3.408)	-1.924 (3.558)
<i>Income</i>	1.566 (1.457)	-0.472 (1.480)
<i>Time in coop</i>	0.274 (0.393)	0.210 (0.312)
<i>Member (socio)</i>	-1.794 (3.855)	-1.731 (4.921)
<i>Coop type A</i>	-9.357** (3.134)	-3.584 (3.381)
<i>Years_coop</i>	0.048 (0.207)	0.095 (0.211)
<i>Number_volunteers</i>	0.025 (0.038)	-0.006 (0.028)
<i>Number_workers</i>	0.029 (0.103)	0.088 (0.087)
<i>Constant</i>	30.704*** (6.798)	31.507*** (7.261)
R ²	0.155	0.157
Root MSE	12.924	12.87
Obs.	89	85

Robust standard errors in brackets. *Significant at 10%; **significant at 5%; ***significant at 1%.

5. Conclusion

This paper contributes to the literature by carrying out an original experimental analysis which compares the level of cooperation of social cooperative workers when they are paired with colleagues and with people from the general population.

Recent studies based on survey data seem to reveal that participation in cooperatives and social cooperatives fosters the creation of generalized trust. Our experimental data on workers and volunteers of social cooperatives support this evidence. At the same time, in contrast with the literature on in-group favoritism, we have found that workers trust their colleagues and cooperate with them less than they do

with people from the general public, even though, in absolute terms, the level of cooperation is quite high also among colleagues. By considering first-order beliefs, we have shown that the difference in cooperation is partly mediated by the expectation about the counterpart's behavior, since workers expect their colleagues to be less cooperative than people from the general public. However, the analysis reveals that also other motivations count, such as other-regarding preferences or warm glow.

Given the importance of trust and cooperation for the economic performance of organizations, these results deserve particular attention and poses interesting questions for further research. Why does in-group favoritism not emerge when the group of colleagues is considered? Is the lower level of cooperation with colleagues peculiar to social cooperatives' workers? Are workers of other type of organizations as trustful as workers of social cooperatives when they relate with colleagues or with people from the general public?

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