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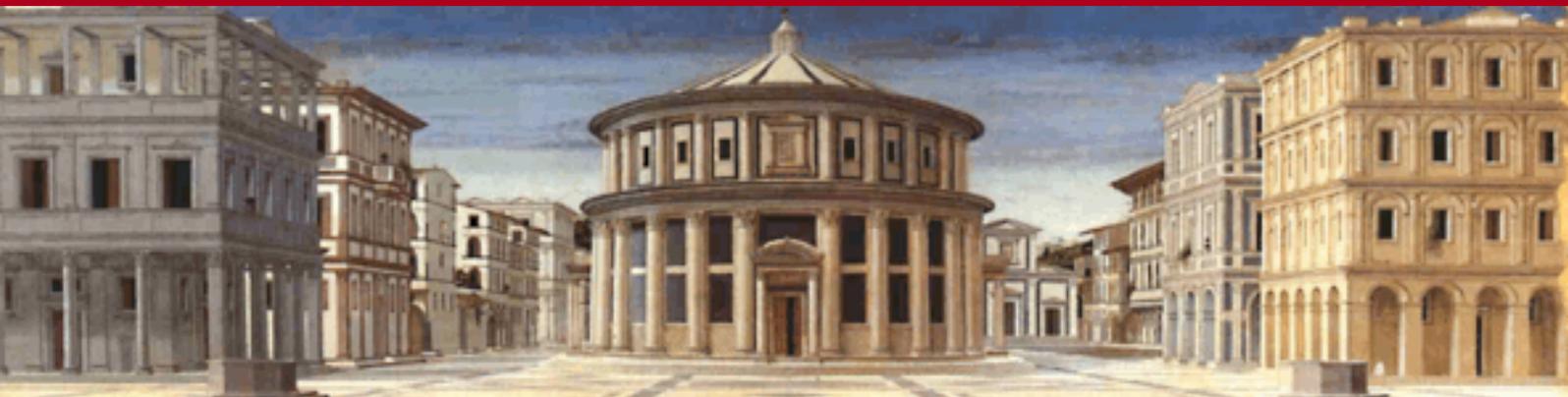
The value of real voluntary associations

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PRELIMINARY DRAFT

Abstract

Many scholars have stressed the importance of membership in associations as one of the main determinants of inter-personal trust (e.g. Zucker, 1986; Coleman, 1990; Lahno, 1995). In particular, Olson (1982) and Putnam et al. (1993) provided two different accounts of the role of private voluntary associations in affecting propensity to trust. Olson emphasized the tendency of some groups to pursue private interests and lobby for preferential policies. From this point of view, associations do not contribute to create a social fabric of trust, but instead increase divisions. By contrast, Putnam et al. (1993: 88) stated that voluntary associations "instill in their members habits of cooperation, solidarity and public-spiritedness".

We carried out an experimental analysis aimed at investigating the propensity to cooperate of voluntary members of different kinds of associations compared with propensity to cooperate of people who have never been voluntary members. Association members came from typically "Olsonian" association – i.e. trade unions – and typically "Putnamian" associations – i.e. cultural and social welfare or health associations.

Our experimental design is based on a standard Investment Game (Berg et al. 1995). It comprises an in-group treatment, where members interact with other members of their own association, and an out-group treatment, in which members are paired with people from the general population. All interactions are anonymous.

To the best of our knowledge, the present study represents the first attempt to investigate the relationship between voluntary participation in different kinds of associations and propensity to cooperate by involving people of different age, education and socio-economic status (previous contributions focused on samples of college students: Glaeser et al. 2000, Anderson et al. 2004). Our preliminary evidence shows that:

- Voluntary members of associations contribute significantly more (around 50%) than non-members, both in the in-group and in the out-group treatment; this is a much higher proportion than what found by Ruffle and Sosis (2006) and Hargreaves-Heap and Zizzo (2009), who on the contrary found no significant difference;

- The type of associations of which people are members affects the patterns of cooperation. We find in-group favoritism for members of Olson-type associations, i.e. they cooperate significantly more with their fellow members than with people from the general public. No in-group favoritism is found for Putnam-type associations members. Moreover, Putnam-type associates cooperate significantly more than non-members with people from the general public, while members of Olson-type associations contribute as non-members when paired with people from the general public. These results seem to confirm the original intuition of the two authors.

1. Introduction

In their 2009 contribution, Hargreaves-Heap and Zizzo (HHZ henceforth) show that the presence of groups may have a detrimental effect on social welfare. They used a series of trust game experiments in which group belonging was artificially induced through the so-called *minimal group paradigm* (Tayfel, 1970). They show that efficiency is highest when no group salience is induced. When groups are formed, trust towards in-group members is no higher than when groups are absent, but trust toward out-group members is significantly lower. They conclude that, at its most basic level, the existence of groups *per se* is negative. People are however willing to pay positive sums of money to be part of a group, even if this is not conducive to extra earnings. These results go against a relevant strand of literature in the organizational theory literature (Zucker, 1986; Coleman, 1990; Lahno, 1995; Putnam, 2000), thus deserve further investigation.

The present paper aims at investigating the effect of membership in real voluntary associations on cooperative behavior. We adopt an experimental approach, since we share the same concerns as HHZ (2009:317) about the reliability of answers to survey questions in measuring actual propensities to cooperate[1]. Our sample includes people of different age, education and socio-economic status. This represents an innovation with respect to previous studies investigating similar topics, which only focused on a sample of college students (Glaeser et al. 2000, Anderson et al. 2004). About two thirds of our 376-subject sample is made up of current association members, and one third has been recruited from people from the general public who are not group members. We took care that the demographic characteristics of association members matched those of non-association members. Association members are either assigned to an in-group or an out-group condition. In the former, they are anonymously matched with other members of the same association. In the out-group condition, they are matched with people from the general public. Thus, the main novelty of our study is that such an in-group/out-group manipulation is induced *naturally* thanks to membership in various types of real associations.

Olson (1982) and Putnam et al. (1993) provided two different accounts of the role of private voluntary associations in affecting economic and social welfare. Olson emphasized the tendency of some groups to pursue private interests and lobby for preferential policies. On the other hand, Putnam et al. (1993: 88) stated that voluntary associations "instill in their members habits of cooperation, solidarity and public-spiritedness". Olson's vision is one of groups generating costs to the society as a whole, whereas Putnam's approach attaches positive welfare consequences to groups. Groups typically classified as "Olson-type" in the economics literature are trade unions, political parties or groups, and professional associations(Knack and Keefer, 1997; Knack, 2003). "Putnam-like" associations have typically included education, arts, music, or cultural activities, youth work, religious or church organizations, local community action on issues like

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[1]For example, Glaeser et al. (2000) show that trust questions reflect the level of subjects' trustworthiness instead of their trust.

poverty, employment, housing, racial equality, and sports or recreation associations. The theoretical prediction is thus that Olson-type (Putnam-type) associations have a negative (positive) effect on generalized trust. Nevertheless, empirical investigations carried out using country-level data, present ambiguous conclusions[2].

A recent contribution in the sociological literature (Paxton 2007) focuses on the role of participation in different kinds of voluntary associations in promoting members' generalized trust. By using individual level data, Paxton (2007) shows that participation in voluntary associations connected to other voluntary associations through members' multiple memberships creates more trust than participation in associations isolated from other voluntary associations. In her analysis, based on the World Values Survey (1994), trade unions emerge as the least connected associations, social welfare and cultural associations have intermediate levels of connections, while peace associations are the most connected.

Considering these theoretical and empirical analyses, we recruited members from three kinds of associations: trade unions, social welfare and cultural associations. The former are Olson-type and little connected associations, while the latter two are Putnam-type with a higher amount of connections.

The focus on real associations allows us to move a step forward from the analysis by HHZ. Their finding provides a "lower boundary" to the "pure" effect of group membership in terms of social welfare. The authors themselves suggest investigating the "contribution that comes from an actual group's constitutive norms" (HHZ: 296). The influence of real associations on social welfare may vary according to two main directions with respect to the analysis considering minimal groups, i.e. groups formed on the basis of some arbitrary characteristics of subjects, such as the fact of having received, when entering the lab, a blue or a red card.

First, cooperation among members of the same group may be stronger when real groups are considered. Shared norms and rules promote trust among members of the same associations because they increase the predictability of others' behavior (Zucker 1986). Moreover, the existence of stable networks, allows the opportunity of sanctioning in future interactions (Axelrod 1984). Contributions in real groups do show evidence of in-group favoritism[3]. This has been found to be the case for individuals randomly assigned to different army platoons (Goette et al., 2006); Kibbutz members vis-à-vis city residents (Ruffle and Sosis, 2006; RS henceforth); different native groups from Papua New Guinea (Bernhard et al., 2006). However, the novelty of the HHZ approach is the comparison between the treatments with and without groups.

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[2] Knack and Keefer (1997) find a surprisingly negative though not significant effect on generalized trust of Putnam-type associations and a positive effect of the Olson-type associations, while considering all the associations together no statistically significant effect emerges. Knack (2003) analyses a larger sample of countries and finds out a positive effect of associations on trust when all the associations are considered together, while when the distinction between Putnam and Olson groups is introduced, only the former presents a significant, and positive, effect on trust.

[3] Starting with the pioneering study by Tajfel (1970), also several experimental contributions on minimal groups displays evidence of in-group favoritism: Tajfel, 1974; Brewer, 1979; Mullen, Brown, and Smith, 1992; Brewer, 1999; Charness et al., 2007.

Among the studies on real groups, only RS have a design that allows a comparison with the no-group condition considered by HHZ. When paired with city residents, Kibbutz members display a level of cooperation identical to those of city residents, while their level of cooperation is higher when paired with other Kibbutz members. This seems to reveal a positive (in-group) effect of real groups on cooperation with respect to the absence of groups which does not emerge in the HHZ experiment.

The second channel trough which influence of real associations on social welfare may differ from influence of minimal groups is the possible effect of participation on the internalization process of roles, norms, and values that may affect behavior of members (Akerlof and Kranton, 2005, Goette et al. 2006). In the specific case of voluntary associations, these norms, roles and values could increase cooperation also towards people outside the group (Tocqueville 1840; Putnam et al 1993; Paxton 2007). After having learned the "virtues" of cooperation, group members would extend the compliance with such norms from the in-group to the society at large. Trust in others would shift from being "personal" to being "generalized" (Yamagishi and Yamagishi, 1994; Yuki et al, 2004). The experimental literature has shown that, when members of real groups interact with members of other groups, and the existence of the two different groups is made salient, out-group hostility seems to emerge (Goette et al. 2006, Bernhard et al. 2006). Moreover, when the distinction between groups is not made highly salient (as in the out-group treatment proposed by RS[4]) neither out-group hostility nor higher cooperation (by kibbutz members in the case of RS) towards out-group members emerge. The result proposed by RS is a notable result, because the group considered should in principle contribute to create a generalized spirit of cooperation."The *raison d'etre* and lifestyle of the kibbutz socialize individuals to cooperate not only with one another, but also with Israelis more generally" (Ruffle and Sosis 2006: 148). Since this is not the case, RS, too, cast doubts on the possibility of groups to inculcate in their members norms of cooperation with strangers.

The present paper implements an Investment Game (Berg et al. 1995) and uses a design similar to RS. Members of trade unions, cultural associations and social welfare associations are alternatively paired with other members of their own association (in-group treatment) or with people randomly drawn from the general population (out-group treatment).

Our evidence shows that:

- voluntary members of associations contribute significantly more (around 50%) than non-members, both in the in-group and in the out-group treatment;
- members' propensity to cooperate in the two experimental conditions is not neutral to the type of association of which one is currently member, in particular in-group favoritism emerges only with respect to members of trade unions.

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[4]- In this experiment subjects are simply told "that the person with whom they were paired was from another place" (RS: 152)

Section 2 describes the sample selected for our research. Section 3 describes the experimental design. Section 4 and 5 presents the empirical results also discussing theself-selection issue. Section 6 concludes.

2. Sample Characteristics

A total of 376 subjects took part in the experiment. 265 of them were association members (Members henceforth), 77 had never been members of an association (Never-members henceforth), and 34 had been association members in the past but later dropped out from the associations (Dropouts henceforth). The recruitment of droupouts follows Karlan (2001) suggestion to recruit "unsuccessful" as well as "successful" cases when assessing the consequences of a given "treatment" (participation in micro-credit programs in Karlan's study). This permits to limit both the incomplete sample and the attrition biases that are endemic in this kind of experiments.

Table 1 reports demographic characteristics for our three main sample groups with respect to the three variables that were used in the recruitment to screen subjects, that is, Gender, Age and Education.

Table 1.Sample Demographic characteristics

Variable		Members	Never-members	Dropouts
Gender	Female	59.92%	59.74%	58,82
Age	<30	11.07%	13.33%	23.53%
	30-50	43.13%	42.67%	44.12%
	51-60	22.52%	26.67%	29.41%
	>60	23.28%	17.33%	2.94%
Education	No Title	0%	0%	0%
	Primary School	1.57%	1.30%	0%
	Junior high School	14.96%	14.29%	3.03%
	Secondary School certificate (3 Years)	8.66%	5.19%	3.03%
	Secondary-School certificate (5 Years)	42.91%	45.45%	60.61%
	Bachelor's degree	25.98%	31.17%	30.30%
	Master's degree	3.94%	2.60%	0%
	PhD	1.97%	0%	0%
Obs.		265	77	34

Apart from slightly oversampling people younger than 30 in the past members group, the demographic characteristics of the three groups appear very similar. The null hypothesis that the three sample groups come from the same distribution cannot be rejected in a Kruskal-Wallis test run on the three demographic characteristics that we controlled in our recruitment. Those are, GENDER (p=0.9925; n_1=262, n_2=34, n_3=77), EDUCATION (p=0.4079; n_1=254, n_2=33, n_3=77), and AGE (p=0.1076; n_1=262, n_2=34, n_3=76), although in the latter case the test is just outside the conventional levels of significance. However, the three groups appear to differ in their declared level of household income, which we did not control during recruitment due to its

sensitivity for subjects' privacy (see next section). In this case, the null hypothesis that the three sample groups came from the same distribution can be rejected, although only at weak levels of significance(p=0.0577; n_1=218, n_2=28, n_3=68). Overall, current members declared higher income levels than others.

3. The experimental design

122 subjects were recruited by Demoskopea, an opinion polls and market research agency. The vast majority of these subjects entered the Never member and the Dropouts groups[5]. 254 subjects were recruited by the experimenters from ten different associations: four cultural associations (3 choruses and 1 ethnic and traditional dance association), four social welfare and health services associations(the Italian association for blood donation, an association for medical research on cancer, an association assisting hospitalized children and an association dedicated to charity and evangelization), and two trade unions (two of the most important Italian trade unions in terms of number of subscribers), and they entered the Members group. All participants were contacted following the same recruitment protocol. Subjects were invited to participate in a research on inter-personal decision-making. It was specified that participants' earnings could vary between sums greater than 50€ and 0€ depending on the participant and others' choices. Moreover, the option of earning 25€ for sure was always available to subjects. As we shall see, rather than giving participants a standard show-up fee, we gave subjects an "endowment" that could have been used in the Investment Game as subjects desired. This procedure reproduces that used in the original Berg et al.(1995) experiment. It was also made clear that the research aimed at recruiting a sample from the general population of the province of Parma and surrounding provinces. Under no circumstances was the research presented to prospective subjects as focusing on association members.

Contacted subjects were screened with respect to three demographic characteristics, that is, their gender, age, and level of education attainment (See Table 1). We deemed inappropriate to screen subjects over their income levels because of obvious confidentiality reasons. The medium of contact with subjects differed between Demoskopea and the experimenters. Phone contacts were used by Demoskopea, whereas experimenters were personally present at the beginning of association meetings. Although we cannot rule out that the different form of contact induced different responses in subjects' experimental

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[5]Although Demoskopea was instructed to recruit only Never-members or Dropouts, eleven subjects recruited by Demoskopea answered in our questionnaire they were in fact currently active member. We believe this is due to the fact that during the recruitment interview subjects were asked generically if they were voluntary members of some associations or organizations. Only three examples of association types were given. In the questionnaire, instead, a whole list of 19 different types of associations was presented to subjects. It is quite likely that some people did not identify themselves as a "voluntary member" in the interview, but did so later when finding that their association was included in the list. Other forms of mistake during the phone interview, or absent-mindedness, cannot obviously be ruled out. In the data analysis, we treat these eleven subjects as part of the Member group, although some of the associations of which they are member is neither cultural, or social welfare, or trade unions.

behavior, the fact that recruitment was made following the same protocol, which was read to subjects, ensures in our view that this effect is at most small[6].

Experiments were conducted between May and October 2011. For each experimental session, two groups of subjects were convened at two different locations of the University of Parma. One of the two experimenters was present at each of the locations. Upon their arrival, subjects' were asked to draw at random an envelope, which included an ID number (reproduced on several stickers), and 5 paper tokens representing 5 Euros each. It was explained to subjects that the ID number served to guarantee their anonymity throughout the research, and that the tokens would have been used in the experimental decisions. Handing subjects the tokens at the beginning of the session was functional to ensure subjects that the promised guaranteed payment of 25 Euros would in fact take place.

The two groups were then separately conducted to two different rooms of the University library. Experimental sessions were run in parallel by the two experimenters. After having been seated, instructions were administered orally, but written instructions and diagrams representing the situation of choice were also made available at subjects' desk. Subjects were instructed they would participate in two decisions, and that payments would be given by the payoff of only one of the two. The decision would have been determined by a 50-50 random draw realized by the computer at the end of the session.

The rules of the Investment Game were then illustrated to subjects, making use of some graphs and examples. Participants were told each of them would be paired with another participant present in the other room. In case of an unbalanced number of people in the two groups, it was explained that some randomly drawn participants from the least numerous group (let us call her Player A) would have been matched with two participants from the most numerous group (let us call them Player Bs). In this way, player A's actions would determine the payoffs for both player Bs, and the actions of one randomly chosen player between the Player Bs would have determined Player A's payoff. Although the two groups did not meet before the experiment to protect the anonymity of the choice, subjects were insured they could meet the other experimenter and the other group at the end of the session. It was explained that individual choices would have been transferred to the experimenter in the other room via an internet connection available in the room.

In the first decision, subjects acted as senders. It was explained that both senders and receivers were endowed with 25€. Senders' choice consisted of placing their five 5€ tokens into two envelopes named "Personal" and "Send". Each token put into the Personal envelope would enter directly the sender's final

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account, whereas each token put into the "Send" envelope would have been multiplied by a factor of two and transferred to the receiver.

In the second decision, subjects acted as receivers. We applied the strategy method, so subjects had to indicate in a paper form the amount they wished to return for each of the possible six options available to the sender. Receivers could send back any amount between zero and the sum of the amount transferred by the sender, multiplied by two, and the 25€ endowment. We used a multiplicative factor of two, instead of the customary value of three, mainly because of budget reasons. We included the 25€ endowment in the sum the receivers could send back, because we thought computations may have been easier in this way. Before making their choices, subjects were asked to complete a six-question comprehension test on a paper sheet. These were collected by the experimenters and then the solution to the test was explained to subjects. The experimenters made sure that every participant was clear on the instructions before decisions were made. No feedback was given between the two decisions. So the receiver choice can be considered as independent from the sender choice. In fact, it was specified that a player's partner when acting as a sender would have been different to the same player's partner when acting as a receiver.

After the two experimental choices, we elicited subjects' beliefs. First we asked how much the subject expected the receiver with whom she was paired would return, *given* the amount the subject actually sent. Second, we asked subjects to estimate the amount transferred by the sender with whom they were paired in the second decision. Subjects were paid 1€ for each correct guess. In the first estimate we allowed for a ±3€ margin of error. The attitudinal and demographic questionnaire followed. During this time, experimenters recorded subjects' choices as senders and receivers on an Excel spreadsheet, and when finished transferred the spreadsheet to the other experimenter via an internet connection. Final payoffs for each subject were automatically determined by an Excel algorithm carrying out the random matching. Payments were distributed by cash at the end of the session, after subjects had finished completing the questionnaire. Payments were placed in an envelope bearing a label with each subject's ID Number. Subjects had to complete a receipt of their earnings, which had to be left in an envelope on their way out, without the experimenters having to see the receipt.

Our main treatment consisted in varying the characteristics of the pair interacting in the Investment Game. As is customary in in-group/out-group studies, in the in-group treatment members of the same association were paired, whereas in the out-group treatment pairs were drawn from the population at large. At the moment where the matching rules were explained, subjects were told they would be matched with a person participating in the experiment in the other room. Then, subjects participating in the in-group treatment were told that they would be matched with a member of the same association where they had been contacted by experimenters. The name of the association was read aloud. It was specified that this person was a resident of the province of Parma or surrounding provinces. This was done to avoid that

subjects members of associations active at the national level may be led to think that their partner would come from Italian regions located far away from their own. This may have caused inter-cultural beliefs to play a part in their choice, and we wanted to avoid this possibility.

In the out-group treatment, subjects were informed that their partner was a resident of the province of Parma or surrounding provinces, and that s/he had been contacted within a large sample of people residents in these provinces. It was specified that more than a thousand people, coming from different age and socio-economic groups, had been contacted to participate in the research. One group of people in the out-group treatment comprised people recruited through Demoskopea, while the other was formed by association members recruited by the experimenters. To form the latter group, we mixed people coming from several different associations, so that most of the people part of this group would, with high probability, not be acquainted with each other. In this way, we believe that association members could see in their own group a cross-section of Parma residents that, for the most part, was unacquainted to them. That this was in fact the case can be confirmed by the results of a control question included in the questionnaire, which asked people to state whether they thought they knew personally people present in the other research room. Around 41% of Members participating in the in-group treatment answered positively to such question, whereas positive answers dropped to 7% for Members recruited in the out-group treatment. According to a Mann-Whitney test, the difference is statistically significant at less than the 1% level. Each research session lasted around 75 minutes, with average payoffs of around 33€.

4. Descriptive statistics

In this paper we focus only on senders' behavior, and leave receivers' behavior to future analysis.

Table 2 shows senders' transfers across different treatments and subjects' membership type. Given the similarity in their aims and activities, in what follows we group together the members of the four social welfare and health services associations, of the four cultural associations, and of the two trade unions. This decision also seems to be supported by our data. Kruskal-Wallis tests performed on the null hypothesis that transfers are the same between members of the different associations tell us that there are no statistically significant differences between members of the two trade unions ($p=0.2126, n_1=58, n_2=19$), between members of the four social welfare and health services associations ($p=0.4066, n_1=23, n_2=32, n_3=26, n_4=12$) and between members of the four cultural associations ($p=0.1985, n_1=16, n_2=11, n_3=18, n_4=39$) (Appendix A shows descriptive statistics on level of senders' contribution with respect to each single association). Moreover, no difference in transfers emerges across each association pairs within these three groups, using ordered logit regressions and controlling for demographic characteristics (results available upon request). Columns 8 and 9 in Table 2 classify current members according to their participation in Olson-type or Putnam-type associations. We consider as Olson-type associations trade unions, political parties or groups,

and professional associations, while we classify as Putnam-type associations all the other groups[7].This is largely consistent with the existing literature(see section 1). There seems to be general consensus that Olson-type associations, i.e. those acting as "distributional coalitions" favoring their own members (Knack and Keefer, 1997), should include these three groups. The literature is more divided as to which association to consider as "Putnam-type". Since existing classifications do not seem to be based on strong rationales – it is difficult to classify groups on the basis of their presumed pro-sociality - we preferred not to make arbitrary exclusions from this group[8].

Table 2 – Senders' contribution across treatments and membership

	Never-members	Dropouts	Current members					
	Total	Total	Total	recruited in social welfare and health services associations	recruited in cultural associations	recruited in trade unions	of at least 1 Putnam-type association	of at least 1 Olson-type association
In-group	[0]	[0]	15.32 (6.11) [110]	15.83 (5.73) [42]	14.34 (5.95) [38]	15.83 (6.83) [30]	15.33 (5.95) [91]	16.46 (6.64) [41]
Out-group	10.65 (6.56) [77]	10.15 (7.93) [34]	14.48 (6.45) [155]	15.39 (6.84) [51]	14.89 (6.01) [46]	13.94 (6.51) [47]	14.52 (6.52) [124]	13.54 (6.48) [65]

Standard deviations in round brackets and number of observations in square brackets.

An even cursory look at the data reveals that sending rates are far superior among association members than Never-members or Dropouts. Members send on average around 50% more than non-members, and the percentages do not differ much between in-group and out-group treatments. This amount of "co-operative" behavior is much higher than what found, for instance, in RS. All Wilcoxon tests performed on the null hypothesis that contribution is the same between a member group (considering all the possible groups presented in the table) and either a Never-member or Dropout group reject the null at less than the 1% level. The null cannot instead be rejected between Never-member and Dropouts. Members of Olson-

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[7]These are social welfare services for elderly, handicapped or deprived people; religious or church organizations; cultural associations; sport associations; environmental associations; third world development or human rights; youth work – e.g scouts, guides, youth clubs; education; health associations; civil protection.

[8] Knack and Keefer (1997) restrict Putnam-type associations to religious or church organizations; education, arts, or cultural activities; and youth work. Knack (2003) includes in Putnam-type associations: education, arts, music or cultural activities; local community action on issues like poverty, employment, housing, racial equality; youth work; and sports or recreation associations.

type associations send more in the in-group than in the out-group treatment (Wilcoxon p=0.044), whereas no significant difference emerges for Putnam-type associations.

These results suggest a sizable membership effect on Senders' behavior both in the out-group and in the in-group treatment, and an in-group favoritism limited to Olson-type associations. The next section controls for individual socio-demographic characteristics in econometric analysis.

5. Econometric results

As senders, subjects could choose among six amounts to be sent: 0,5,10, 15,20 and 25 euros. We study their behavior performing ordered logit estimates.

5.1 The effect of mere membership

In this section we study the effect of current membership on senders' behavior across the two treatments. Table 3 shows the impact of being a member on the amount sent when a set of socio-demographic and other control variables are included (see appendix B for variable legend and descriptive statistics). Regressions 1 and 2 do not distinguish between the two treatments, while regressions 3 and 4 include two interaction variables between a dummy variable identifying current membership and the participation in either the in-group or the out-group treatment. Regressions 2 and 4 include measures of a subject's beliefs over others' actions. The first measure (Belief_receiver_behavior) is a sender's belief over the amount they will receive back given the amount they sent. The second measure (Belief_sender_behavior) is the belief over how much a sender would transfer in the interaction[9]. Both measures were monetarily incentivized.

We expect association members to hold beliefs that others are more trustworthy, that is, that they will return higher sums, *ceteris paribus* (data on belief reported in appendix C seem to confirm this expectation). If we can show that differences between members and non-members hold even controlling for beliefs on others' trustworthiness, we will have a proof that members higher sending rate is not only caused by higher expectation of reciprocation, but also by some additional motivation – such as altruism or efficiency-concerns.

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[9]More specifically, this second measure made reference to the interaction in which subjects acted as receivers. Participants were asked to state their expectation over how much the sender with whom they had been matched transferred to them.

Table 3. The effect of mere current membership on the amount sent

Dep. Var: Amount Sent	(1)	(2)	(3)	(4)
Female	-0.515**	-0.246	-0.537**	-0.254
	(0.239)	(0.242)	(0.238)	(0.241)
Age	0.120*	0.115*	0.132**	0.118*
	(0.0636)	(0.0653)	(0.0654)	(0.0662)
Age^2	-0.001**	-0.002**	-0.002**	-0.002**
	(0.001)	(0.001)	(0.001)	(0.001)
Adequate financial means	-0.719**	-0.685**	-0.717**	-0.681**
	(0.298)	(0.271)	(0.299)	(0.270)
Southern	-0.981***	-0.408	-1.004***	-0.415
	(0.347)	(0.360)	(0.351)	(0.359)
TownSize	0.191	0.194	0.206	0.198
	(0.225)	(0.236)	(0.226)	(0.236)
Bachelor's degree	0.0561	-0.0348	0.214	0.00897
	(0.297)	(0.306)	(0.312)	(0.311)
Secondary School	-0.152	-0.348	-0.0361	-0.317
	(0.250)	(0.272)	(0.261)	(0.273)
Retired	0.426	0.478	0.426	0.488
	(0.326)	(0.388)	(0.325)	(0.391)
Unemployed	-0.838	-0.565	-0.819	-0.558
	(0.736)	(0.590)	(0.754)	(0.597)
Family Unit	-0.113	-0.0706	-0.118	-0.0724
	(0.0738)	(0.0735)	(0.0749)	(0.0732)
Single	-0.448	-0.427	-0.440	-0.425
	(0.306)	(0.300)	(0.315)	(0.303)
Unclear	-0.016	-0.120	-0.012	-0.121
	(0.066)	(0.081)	(0.066)	(0.081)
Risfin	0.088*	0.079*	0.097*	0.081*
	(0.050)	(0.044)	(0.050)	(0.044)
Experimenter	0.427**	0.089	0.427**	0.087
	(0.207)	(0.222)	(0.207)	(0.222)
Past_trust	0.340*	0.302*	0.326*	0.299*
	(0.177)	(0.161)	(0.177)	(0.161)
Droupout	-0.205	-0.188	-0.227	-0.194
	(0.484)	(0.444)	(0.487)	(0.444)
Belief_receiver_behavior		1.395*		1.379*
		(0.759)		(0.761)
Belief_sender_behavior		0.217***		0.216***
		(0.0247)		(0.0247)
Members	1.044***	0.975***		
	(0.286)	(0.273)		
Members_X_ING			1.354***	1.066***
			(0.326)	(0.311)
Members_X_OUT			0.869***	0.925***
			(0.303)	(0.292)
Cut1	-0.703	1.244	-0.331	1.331
	(1.643)	(1.659)	(1.679)	(1.677)
Cut2	0.552	2.792*	0.929	2.881*
	(1.656)	(1.691)	(1.695)	(1.711)

table 3 continues

table 3 (continued)

Cut3	2.114	4.714***	2.497	4.801***
	(1.663)	(1.701)	(1.702)	(1.720)
Cut4	3.443**	6.467***	3.830**	6.553***
	(1.671)	(1.705)	(1.712)	(1.724)
Cut5	4.613***	8.060***	5.015***	8.150***
	(1.680)	(1.728)	(1.724)	(1.748)
Pseudo R^2	0.071	0.201	0.074	0.201
Prob>χ^2	0.000	0.000	0.000	0.000
Number of obs.	339	337	339	337

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

Results of regression 1show that:

- ✓ men contribute more than women[10], but only when belief are not included in the regressions.

- ✓ the age of subjects presents a quadratic effect on Senders' contribution *(Age and Age^2)*

- ✓ the better subjects' self-assessment of their financial situation, the more they contribute (*Adequate financial means*);[11]

- ✓ subjects born in South Italy tend to contribute less (*Southern*), but only when beliefs are not considered;

- ✓ contribution increases with the subjects willingness to take financial risks (*Risfin*), even though the effect is only weakly significant;

- ✓ no differences emerges between Dropouts and Never-members (*Droupouts*);

- ✓ moreover, we observe a positive and significant effect of membership on transfer decisions. All things considered (in regression 1), the predicted probability of observing the highest contribution for Members is 0.079 greater than for Never-members.

Regression 3 shows that the effect of membership is greater in the in-group treatment than in the out-group treatment, being the marginal effect of membership associated with the highest contribution equal to 0.151 in the in-group treatment and equal to 0.080 in the out-group treatment. According to a Wald test on the null hypothesis:$H_0 = \beta_{MEMB\_X\_ING} - \beta_{MEMB\_X\_OUT} = 0$, members' sending rate is weakly

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[10]The empirical evidence on gender effects in experimental games is mixed -see Eckel and Grossman (2001) and Solnick (2001) for evidence from ultimatum games; Bolton *et al.* (1998), Bohnet and Frey (1999b) and Andreoni and Vesterlund (2001) with respect to dictator games; the survey by Ledyard (1995) with regard to public goods game experiments; and Ortmann and Tichy (1999) who consider a repeated prisoner's dilemma. In relation to a trust game, Croson and Buchan's (1999) show that women behave like men when they perform as trustors but they are more generous when they play as trustees. According to Eckel and Grossman (1998) women behave like men in more risky contexts, such as ultimatum games, but they are more socially oriented in less risky contexts, such as dictator games (see also Eckel, 2008; Eckel and Grossman, 2008).

[11]The variable "Household Income", which asked subjects the monthly net income of their household, suffers from a high number of missing values. In subsequent analyses we then prefer to use the variable "Adequate Financial Means", for which missing values are considerably fewer (see Appendix B for the exact wording of the question). The two variables are highly correlated (coefficient of linear correlation rho=0.41). Moreover, the results of the analyses remain substantially the same when replacing Income Satisfaction with Household Income. When this is not the case, the modification in the result is reported in a footnote.

significantly higher when interacting with fellow members vis-à-vis strangers (p=0.050). Interestingly, members paired with non-members send significantly more than non-members (p=0.004). This result is in stark contrast with both HHZ and RS.

Regressions 2 and 4 reveal, as expected, that senders' decisions significantly depend on beliefs. In particular, the inclusion of beliefs in the estimates significantly increases the variance explained by the independent variables. The positive effect of membership on the amount sent remains even after the inclusion of beliefs. It is worth noting that between the two measures of beliefs we used, it is the second the one predicting transfers more accurately. Such measure reflects a sender's view of the "social norm" in sending behavior, i.e. a subject's view over how much a sender is expected to send. Thus, social norms seem to have more predictive power than a subject's expectation over their partners' trustworthiness.

Result 1: Members contribute significantly more than non-members. This is the case both when members are paired with non-members and when they are paired with fellow members of their own association. Members contribute more when paired with fellow members than when paired with non-members, but this in-group favoritism effect is only weak.

5.2 The effect of current membership in social welfare and health services associations, cultural associations and trade unions

Regressions in Table 4 study the effect of membership on Senders' behavior by type of associations. In this specification, we group together membership in individual associations into the three different types illustrated in section 3 – that is, cultural, social welfare and health services, and trade unions. We only consider membership in the association for which the subject has been recruited. This is somewhat restrictive because, for instance, a subject contacted as a member of a cultural association may also be member of a trade union. However, since the in-group treatment is only meaningful with respect to the association for which the subject has been recruited, this specification is the most direct way to study in-group effects per type of association. We leave to the next section the analysis of multiple membership. As we shall see, results do not change significantly.

Table 4. The effect of current membership in social welfare and health services associations, cultural associations and trade unions on the amount sent

Dep. Var: Amount Sent	(1)	(2)
Female	-0.516**	-0.316
	(0.246)	(0.255)
Age	0.120*	0.092
	(0.069)	(0.068)
Age^2	-0.001**	-0.001*
	(0.001)	(0.001)
Adequate financial means	-0.607**	-0.638**
	(0.301)	(0.286)
Southern	-1.133***	-0.466
	(0.367)	(0.383)
TownSize	0.187	0.106
	(0.230)	(0.251)
Bachelor's degree	0.277	-0.0903
	(0.328)	(0.330)
Secondary School	0.038	-0.295
	(0.268)	(0.279)
Retired	0.327	0.499
	(0.338)	(0.403)
Unemployed	-0.864	-0.600
	(0.763)	(0.601)
Family Unit	-0.119	-0.0822
	(0.0755)	(0.0767)
Single	-0.443	-0.525*
	(0.317)	(0.317)
Unclear	-0.0373	-0.143*
	(0.070)	(0.086)
Risfin	0.086*	0.0694
	(0.051)	(0.044)
Experimenter	0.342	0.078
	(0.215)	(0.225)
Past_trust	0.410**	0.368**
	(0.180)	(0.168)
Droupouts	-0.235	-0.211
	(0.499)	(0.447)
Belief_receiver_behavior		1.295
		(0.816)
Belief_sender_behavior		0.220***
		(0.026)
Cultu*in-group	0.950**	1.053***
	(0.392)	(0.378)
Social welfare*in-group	1.529***	0.964**
	(0.403)	(0.431)
Trade*in-group	1.722***	1.094**
	(0.478)	(0.456)
Cultu*out-group	0.991***	1.364***
	(0.355)	(0.382)
Social welfare*out-group	1.228***	0.951**
	(0.416)	(0.385)

table 4 (continued)

Trade*out-group	0.621	0.629
	(0.414)	(0.430)
Cut1	-0.617	0.386
	(1.771)	(1.776)
Cut2	0.637	1.922
	(1.775)	(1.793)
Cut3	2.238	3.893**
	(1.779)	(1.786)
Cut4	3.554**	5.598***
	(1.788)	(1.785)
Cut5	4.780***	7.233***
	(1.801)	(1.806)
Pseudo R^2	0.081	0.204
Prob>χ^2	0.000	0.000
Number of obs.	329	327

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

Regression1 includes the interaction terms between the participation in the two different treatments and the membership in social welfare and health services associations (*Social welfare*out-group* and *Social welfare*in-group*), cultural associations (*Cultu*out-group* and *Cultu*in-group*) and trade unions (*Trade*out-group* and *Trade*in-group*). Regression 2 takes into consideration the role of beliefs.

In the Investment Game, being paired with a member of one's own association increases contribution with respect to contributions by Never-members. This effect is statistically significant (at least at the 5% level) and holds for all the types of associations considered. In respect to regression 1, it is greater for trade unions members (marginal effect associated with the highest level of contribution equal to 0.255)than for social welfare and health services associations (0.212) and cultural associations (0.111).

Moreover, when Members play in the out-group treatment, their contribution also tends to be higher than Never-members'. This effect is significant at the 5% level for social welfare and health services associations' and cultural associations' members, and it is not statistically significant for trade unions' members. In the out-group scenario, the greater probability to observe the highest contribution for Members with respect to Never-members is observed for members of social welfare and health services associations (marginal effect equal to 0.151). The marginal effect for cultural associations' members is equal to 0.116 and the one related to trade unions equal to 0.065 but is not statistically significant.

A comparison between the coefficients of the interaction variables reveals an in-group favoritism effect for trade unions members (Wald test between coefficient of *Trade*in-group* and *Trade*out-group* p=0.019) while no effect emerges for cultural (p= 0.915) and social welfare and health services (p=0.466) associations when their decisions in the in-group and out-group treatment are compared.

The introduction of beliefs among the control variables significantly changes a result related to membership: the in-group favoritism effect for trade union members disappears. This seems to suggest

that a key reason behind lower contribution of trade union members in the out-group treatment is the lower level of trust in non-members compared to trust in fellow trade union members. In fact, trade union members expect on average 0.335 (std.dev 0.166) from receivers of their own group (belief normalized given the amount sent by the sender), but expect considerably less (0.269, std.dev 0.151) when paired with a non-member. Moreover, they expect other trade union members to behave more cooperatively as senders (average expected contribution equal to 15, std.dev. 7.440) than non-members (mean 12.606, std.dev. 5.289), also this belief contributes to generate the in-group favoritism effect.

Result 2: Current participation in social welfare and health services and cultural associations is significantly associated with senders' contribution both in the in-group and in the out-group treatment. Trade unions' members contribute more than Never-members in the in-group treatment, while in the out-group treatment the effect is not significant. In-group favoritism emerges only with respect to members of trade unions. Beliefs over receivers' and senders' behavior, appear to mediate the trade unions' in-group favoritism effect.

5.3 The effect of current membership when the distinction between Putnam-type and Olson-type associations is considered

Following the empirical literature (Knack and Keefer 1997 and Knack 2003) that firstly operationalized the different theoretical approaches proposed by Putnam et al. (1993) and Olson (1982), we distinguish between participation in Olson-type and Putnam-type associations (see discussion in section 4). *Olson*out-group* is a dummy variable taking the value of 1 when a subject played in the out-group treatment and is member of at least one association between: trade unions, political parties or groups, and professional associations. *Putnam*out-group* is a dummy variable that takes the value of 1 when the subject took part in the out-group treatment and is member of at least a Putnam-type association as it was defined in section 4. With respect to the in-group treatment, we must consider that people who took part in the treatment as members of a specific association, say a trade union, could also be members of a Putnam-type association. However, in this case, the in-group effect highlights the members' behavior with respect to the other members of the trade union. Indeed, if we are interested in the in-group effect when people interact with other members of their own Olson-type or Putnam-type association, we have to consider their specific membership with respect to the associations used to create the in-group sessions.

Table 5. The effect of current membership in Putnam-type and Olson-type associations

Dep. Var: Amount Sent	(1)	(2)
Female	-0.552**	-0.294
	(0.250)	(0.251)
Age	0.132**	0.129*
	(0.067)	(0.067)
Age^2	-0.001**	-0.002**
	(0.001)	(0.001)
Adequate financial means	-0.733**	-0.654**
	(0.302)	(0.271)
Southern	-1.099***	-0.439
	(0.359)	(0.372)
TownSize	0.178	0.161
	(0.227)	(0.237)
Bachelor's degree	0.215	0.001
	(0.321)	(0.320)
Secondary School	0.002	-0.318
	(0.268)	(0.274)
Retired	0.430	0.449
	(0.330)	(0.385)
Unemployed	-0.886	-0.598
	(0.817)	(0.636)
Family Unit	-0.113	-0.0695
	(0.075)	(0.074)
Single	-0.423	-0.471
	(0.318)	(0.319)
Unclear	-0.023	-0.118
	(0.068)	(0.081)
Risfin	0.097*	0.0858*
	(0.051)	(0.045)
Experimenter	0.434**	0.089
	(0.210)	(0.222)
Past_trust	0.345*	0.304*
	(0.180)	(0.164)
Droupouts	-0.411	-0.297
	(0.472)	(0.433)
Belief_receiver_behavior		1.233
		(0.783)
Belief_sender_behavior		0.220***
		(0.025)
Putnam and olson	-0.277	-0.595
	(0.390)	(0.421)
Putnam*in-group	1.082***	1.050***
	(0.340)	(0.328)
Olson*-in-group	1.602***	1.211***
	(0.508)	(0.454)
Putnam*out-group	0.766**	0.971***
	(0.298)	(0.293)
Olson*out-group	0.135	0.340
	(0.387)	(0.424)
Cut1	-0.508	1.431
	(1.708)	(1.730)

table 5 (continued)

Cut2	0.749	2.984*
	(1.723)	(1.764)
Cut3	2.298	4.888***
	(1.727)	(1.771)
Cut4	3.631**	6.644***
	(1.737)	(1.774)
Cut5	4.823***	8.249***
	(1.749)	(1.799)
Number of obs.	338	336
Prob>χ^2	0.000	0.000
Pseudo R^2	0.074	0.202

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

Because of that, the *Olson*in-group* and the *Putnam*in-group* variables take the value of 1 for subjects who played in the in-group sessions and, respectively, who are members of the 2 trade unions or of the 8 cultural and social welfare and health services associations where we recruited the current members. Regression 1 in Table 5 shows that members of both Olson-type and of Putnam-type associations tend to contribute more than Never-members when they are paired with members of their own association. In the out-group treatment, members of Putnam-type groups contribute significantly more than Never-members, while no significant effect arises with respect to members of Olson-type groups. The marginal effect associated with the highest level of contribution for Members in Olson-type and Putnam-type associations is equal to 0.231 and 0.122,respectively. The predicted probability of observing the highest contribution for members of Putnam-type associations in the out-group treatment is 0.074 greater than for Never-members.

An in-group favoritism effect emerges with respect to members of Olson-type associations, with these subjects sending significantly more in the in-group than in the out-group treatment (p=0.002), while there are no differences in contribution in the two treatments for Putnam-type group members (p=0.280)[12].

The distinction between Olson and Putnam type associations lends itself to be analyzed by considering cross-membership in different types of associations.

Finally, all the results related to the effect of membership on contribution (included the in-group favoritism related to Olson type participation: p=0.065 in regression 2) are confirmed when the beliefs are taken into account.

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[12]However, when Household Income is used instead of Adequate Financial Means, we find a weak in-group effect for Putnam associations, too (p=0.077). Most likely, this result is due to the sample change. When using Household Income instead of Adequate Financial Means, 48 observations are dropped from the analysis. In fact, applying the same model as Table 5 when such 48 observations are omitted, confirms the existence of a weak in-group effect for Putnam members. Therefore it seems unlikely that the result over the larger sample is due to the use of Adequate Financial Means instead of Household Income. Rather, it may be tentatively conjectured that, if we had the variable Household Income over the larger sample, such in-group effect would disappear.

Result 3: *When the distinction between Olson-type and Putnam-type groups is analyzed, we find members of both group types sending more than Never-members in the in-group treatment, while only members of Putnam-type associations send more in the out-group treatment. An in-group favoritism effect arises, but only with respect to members of Olson-type associations.*

5.4 The effect of intensity of voluntary participation

In this section we study the effect of four proxies for the intensity of voluntary participation on subjects' behavior. Two proxies concern current participation: the average number of hours spent volunteering per week (*Hours_spent_vol*) and the number of organizations of which a participant is currently member (*N_organ*). Two proxies measure the intensity of participation during subjects' lifetime: the total number of years spent as a voluntary member (*N_years*), and the number of associations of which one is or was member (*N_organ_tot*).

Table 6 shows the effect of these variables on the amount sent considering the two different treatments (the variables are interacted with the treatment variables) and without distinguishing between the different types of associations. Results do not significantly change when the distinction between the two treatments is not considered, i.e. when proxies for intensity of participation are not interacted with the treatment variables (and the treatment dummy is included or not) (analysis available upon request).

Regressions 1-4 in Table 6 investigate the existence of linear effects of the proxies of participation intensity on senders' contribution. Regression 5 includes dummy variables capturing current participation, across treatments, in only one association (*dummy_N_organ_X_in* and *dummy_N_organ_X_out*) or in more than one association (*N_organ_X_in* and *N_organ_X_out*). Regression 6 considers the same distinction of regression 5 but with respect to the associations a subject has joined during all her lifetime.

Table 6 does not reveal general evidence of intensity effects of participation on senders' decisions in the game. The two statistically significant effects concern: a) the average number of hours spent volunteering per week; however, the sign is here *opposite* to what we expected: the more time one spends in associations, the *lower* the contributions to unknown others in the out-group treatment; b) the number of associations of which one is or was member, but the effect is only weakly significant.

Regressions 5 and 6 show a positive effect of participation in one or more than one association with respect to Never-members, but Wald tests do not reveal any appreciable effect of participating in more than one vis-à-vis just one association (Wald test *dummy_N_organ_X_in* - *N_organ_X_in* p=0.617; *dummy_N_organ_X_out*- *N_organ_X_out* p=0.902; *dummy_N_organ_tot_X_in*- *N_organ_tot_X_in* p=0.134; *dummy_N_organ_tot_X_out*- *N_organ_tot_X_out* p=0.607)

<div align="center">Table 6. The effect of intensity of participation</div>

	Ologit (1)	Ologit (2)	Ologit (3)	Ologit (4)	Ologit (5)	Ologit (6)
Hours_spent_vol_X_in	-0.063**					
	(0.025)					
Hours_spent_vol_X_out	0.009					
	(0.010)					
N_organ_X_in		0.045				
		(0.096)				
N_organ_X_out		0.099				
		(0.149)				
N_years_X_in			-0.011			
			(0.013)			
N_years_X_out			-0.001			
			(0.015)			
N_organ_tot_X_in				0.126*		
				(0.073)		
N_organ_tot_X_out				0.099		
				(0.110)		
dummy_N_organ_X_in					0.893**	
					(0.364)	
dummy_N_organ_X_out					1.259***	
					(0.366)	
N_organ_X_in					0.855***	
					(0.322)	
N_organ_X_out					1.433***	
					(0.373)	
dummy_N_organ_tot_X_in						0.775*
						(0.396)
dummy_N_organ_tot_X_out						0.986**
						(0.400)
N_organ_tot_X_in						0.945***
						(0.322)
N_organ_tot_X_out						1.530***
						(0.354)
Pseudo R^2	0.083	0.075	0.075	0.079	0.075	0.077
Prob>χ^2	0.000	0.000	0.000	0.000	0.000	0.000
Number of obs.	322	338	331	329	339	329

Robust standard errors in brackets. * Significant at 10%; ** significant at 5%; *** significant at 1%. All the regressions include the following control variables: Female, Age, Age^2, Adequate financial means, Southern, TownSize, Bachelor's degree, Secondary School, Retired, Unemployed, Family Unit, Single, Unclear, Risfin, Experimenter, Droupouts, Trust_past.

Table 7 considers the effect of intensity of participation when the distinction between social welfare and health services associations, cultural associations and trade unions only referred to the associations where we recruited current member is taken into account.

Hours_in_ass_X_in and *Hours_in_ass_X_out* are the interaction variables between the number of hours spent on average per year in the associations where we recruited current members and the in-group and out-group treatment variables; *Years_in_ass_X_in* and *Years_in_ass_X_out* are the interaction terms between the number of years one has already spent in these associations and the two treatment variables.

No significant effect of intensity of participation arises, either when we focus on participation in the associations where we recruited actual members.

Table 7. The effect of intensity of participation in
social welfare and health services associations, cultural associations and trade unions on the amount sent

	Ologit (1)	Ologit (2)
Hours_in_ass_X_in	0.002	
	(0.002)	
Hours_in_ass_X_out	0.001	
	(0.002)	
Years_in_ass_X_in		-0.002
		(0.001)
Years_in_ass_X_out		0.002
		(0.002)
Pseudo R^2	0.096	0.093
Prob>χ^2	0.000	0.000
Number of obs.	254	269

Robust standard errors in brackets. * Significant at 10%; ** significant at 5%; *** significant at 1%; All the regressions include the following control variables: Female, Age, Age^2, Adequate financial means, Southern, TownSize, Bachelor's degree, Secondary School, Retired, Unemployed, Family Unit, Single, Unclear, Risfin, Experimenter, Droupouts, Trust_past.

Table 8 shows results obtained when the distinction between Putnam-type and Olson-type associations is introduced. We could explore the intensity of associational membership with respect to the Putnam/Olson distinction only by using the number of associations one is, or was, member. In fact, we do not have clear-cut information related to the number of hours or years spent in each type of association. Our measure of multi-membership refers only to the out-group treatment since there is only one association for each subject that was used to create the pairs in the in-group sessions. Regressions 1 and 2 show the results when linear effects are analyzed. Regressions 3 and 4 include both (a) dummy variables associated with subjects that participate in only one Putnam-type or Olson-type association (these variables are: *dummy_olson_gen_x_out_num* and *dummy_putnam_gen_x_out_num* in regression 3 where only current participation is considered and *dummy_putnam_gen_x_out_ntot* and *dummy_olson_gen_x_out_ntot* in regression 4 where all the associations joined by subjects are taken into consideration), and (b) dummy variables that capture the participation in more than one Putnam/Olson-type association (*olson_gen_x_out_num* and *putnam_gen_x_out_num* in regression 3 and *olson_gen_x_out_ntot*and *putnam_gen_x_out_ntot* in regression 4).

By considering the Putnam/Olson distinction, we find only two significant effects due to intensity of participation: a) a linear effect when all the Putnam type associations joined by subjects are taken into consideration (regression 2); b) when all the association joined by subjects in their life are considered

(regression 4) a significantly higher contribution is observed for senders who joined more than one Putnam association with respect to senders who joined only one Putnam association (Wald test p=0.020)[13].

Table 8. The effect of intensity of participation
in Putnam-type and Olson-type associations on the amount sent

	Ologit (1)	Ologit (2)	Ologit (3)	Ologit (4)
olson_gen_x_out_num	0.326 (0.996)			
putnam_gen_x_out_num	0.130 (0.108)			
olson_gen_x_out_ntot		0.179 (0.447)		
putnam_gen_x_out_ntot		0.203** (0.091)		
dummy_olson_gen_x_out_num			-0.136 (0.320)	
dummy_putnam_gen_x_out_num			0.577* (0.343)	
olson_gen_x_out_num			0.631 (0.758)	
putnam_gen_x_out_num			0.810*** (0.301)	
dummy_olson_gen_x_out_ntot				-0.131 (0.289)
dummy_putnam_gen_x_out_ntot				0.0579 (0.396)
olson_gen_x_out_ntot				0.550 (0.608)
putnam_gen_x_out_ntot				0.873*** (0.291)
Pseudo R^2	0.074	0.077	0.075	0.079
Prob>χ^2	0.000	0.000	0.000	0.000
Number of obs.	338	338	338	338

Robust standard errors in brackets. * Significant at 10%; ** significant at 5%; *** significant at 1%. All the regressions include the following control variables: Female, Age, Age^2, Adequate financial means, Southern, TownSize, Bachelor's degree, Secondary School, Retired, Unemployed, Family Unit, Single, Unclear, Risfin, Experimenter, Droupouts, Trust_past.

When we include in the regressions the proxies for intensity of participation not interacted with the treatment variables, we find a positive and weakly significant effect of participation in more than 1 association with respect to participation in only one association both considering Olson type and Putnam type associations (regression 4) (data available upon request). This holds whether or not we include treatment dummies when we consider Putnam type associations. When we consider Olson type associations, the test is just outside the conventional levels of significance if the treatment dummies are included.

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[13]However, this result disappears when Household Income replaces Adequate Financial Means.

Result 4: *No robust evidence of an intensity effect of participation on senders behavior in the game arises.*

6. Conclusions

Our experimental analysis aimed at studying association members' propensity to trust relative to people who have never been voluntary members in their lifetime.

Our experimental design, based on a standard Investment Game (Berg et al. 1995), is characterized by an in-group treatment, where members interact with other members of their own association, and an out-group treatment, in which members are paired with people randomly drawn from the general population.

The present contribution places itself within two main strands of literature. On the one hand, it concerns the in-group/out-group literature that originated from the seminal contribution by Tajfel (1970). On the other hand it refers to the seminal contributions by Olson (1982) and Putnam et al. (1993), which also inspired empirical works (Knack and Keefer 1997 and Knack 2003), on the participation in different types of associations as a determinant of generalized trust.

To our knowledge, the present study represents the first attempt to investigate the relationship between voluntary participation in different kinds of associations and propensity to cooperate by involving people of different age, education and socio-economic status (previous contributions focused on samples of college students: Glaeser et al. 2000, Anderson et al. 2004).

Evidence based on Senders' behavior shows six main results:

1) Voluntary members of associations contribute significantly more than Never-members. Members send on average around 50% more than Never-members, and the percentages do not differ much between in-group and out-group treatments; this is in stark contrast with both HHZ and RS.

2) Members contribute more when paired with fellow members than when paired with non-members, but overall in-group favoritism effect is only weak.

3) The type of association joined by subjects matters in explaining propensity to cooperate across the two treatments:

   a) current participation in social welfare and health services associations and cultural associations (not characterized by particular distributional goals and then usually classified as "Putnam-type" associations) is significantly associated with senders' contribution both in the in-group and in the out-group treatment;

   b) members of trade unions (usually considered as "Olson-type" associations) contribute more than non-members in the in-group treatment, while in the out-group treatment the effect disappears;

   c) in-group favoritism emerges only with respect to members of trade unions.

4) Result (3) is further confirmed when the whole range of associations of which an individual is member is explicitly taken into account. We find members of both Olson-type and Putnam-type associations sending more than Never-members in the in-group treatment, while only members of Putnam-type associations send more in the out-group treatment; moreover, an in-group favoritism effect arises, but only with respect to members of Olson-type associations.

5) We find hardly any evidence of an effect of the intensity/time of participation in association onto propensity to trust others. In one case (total number of hours spent in association throughout one's life) the effect is actually contrary to our hypothesis. Only in the case of number of associations do we find a positive effect in line with Paxton (2007).

A key issue on the analysis between voluntary participation and propensity to trust concerns the possibility of self-selection: does voluntary participation increase propensity to cooperate or are cooperative people more likely to become voluntary members of associations? In this respect, the absence of a clear intensity effect of participation (result 5) seems not to support the idea that staying in association increases propensity to cooperate. We aim to further examine the issue of self-selection by implementing other methods.

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Appendix A

Level of contribution across treatments and single associations were current members were recruited

	Cultural associations				Social welfare and health associations				Trade unions	
	1	2	3	4	1	2	3	4	1	2
In-group	14.29	15.00	10.63	16.07	16.67	14.75	13.33	21.43	16.59	13.75
	(5.35)	(5.59)	(4.96)	(6.56)	(6.83)	(3.43)	(7.50)	(4.76)	(7.14)	(5.82)
	[7]	[9]	[8]	[14]	[6]	[20]	[9]	[7]	[22]	[8]
Out-group	16.11	22.50	12.50	14.80	17.65	14.17	15.88	9.00	14.31	12.73
	(6.01)	(3.54)	(6.35)	(5.68)	(6.40)	(6.34)	(6.90)	(6.52)	(6.34)	(7.20)
	[9]	[2]	[10]	[25]	[17]	[12]	[17]	[5]	[36]	[11]

Standard deviations in round brackets and number of observations in square brackets

Appendix B
Table B1 Variable legend

Age	Subject's age
Female	Dummy variable (DV) taking value one (=1) if the respondent is a female
Bachelor's degree	DV =1 if the respondent has at least a university degree
Secondary School	DV=1 if the respondent has at least high school education
TownSize	DV=1 if the town where the respondent lives has more than 100.000 inhabitants
Adequate financial means	Satisfaction with personal financial situation as declared by the respondent (it takes integer values from 1 to 4)
Southern	DV=1 if the respondent was born in South Italy
Risfin	Variable measuring the general willingness of the respondent in taking financial risk (it takes integer values from 1 to 10)
Retired	DV=1 if the respondent is retired
Unemployed	DV=1 if the respondent is unemployed
Family Unit	Number of family members
Single	DV=1 if the respondent is single
Belief_receiver_ behavior	Belief over receiver's behaviour (normalized by considering the initial endowment of receiver given the sender's decision)
Belief_sender_ behavior	Belief over sender's behaviour
Past_trust	Scale obtained from factor analysis of 4 questions related to trusting strangers: How often the subject: leaves his door not locked; intentionally leaves the car or the bike not locked; leaves objects unattended; trust strangers
Unclear	Numbers of mistakes in the control questions
Experimenter	DV which distinguishes between the two experimenters who conducted all the experimental sessions
Hours_spent_vo l	Average number of hours spent volunteering per week.
N_organ	Number of organizations one is currently member
N_years	Total number of years spent as a voluntary member in all life
N_organ_tot	Number of associations one is currently member or was member in the past.
Hours_in_ass	Hours spent on average per year in the associations where we recruited current members
Years_in_ass	Number of years spent in the associations where the experimenters recruited current members

Table B2 Descriptive statistics

	Never-members (in-group only) Means and (std.dev)	Dropouts (in-group only) Means and (std.dev)	Members (in-group) Means and (std.dev)	Members (out-group) Means and (std.dev)
Age	47.013 (13.142)	42.471 (12.700)	50.370 (14.747)	46.701 (13.359)
Female	0.597 (0.494)	0.588 (0.500)	0.607 (0.491)	0.594 (0.493)
Bachelor's degree	0.338 (0.476)	0.333 (0.479)	0.202 (0.403)	0.400 (0.492)
Secondary School	0.792 (0.408)	0.939 (0.242)	0.587 (0.495)	0.860 (0.348)
TownSize	0.622 (0.488)	0.531 (0.507)	0.467 (0.501)	0.578 (0.496)
Adequate financial means	2.669 (0.677)	2.794 (0.592)	2.981 (0.598)	2.987 (0.596)
Southern	0.234 (0.426)	0.182 (0.392)	0.137 (0.346)	0.124 (0.331)
Retired	0.169 (0.377)	0	0.245 (0.432)	0.155 (0.363)
Unemployed	0.065 (0.248)	0.088 (0.289)	0	0.019 (0.138)
Family Unit	2.48 (1.143)	2.559 (1.186)	2.852 (1.755)	2.818 (1.233)
Single	0.273 (0.448)	0.412 (0.500)	0.25 (0.435)	0.310 (0.464)
Belief_receiver_behavior	0.295 (0.192)	0.276 (0.199)	0.345 (0.180)	0.312 (0.188)
Belief_sender_behavior	11.513 (6.929)	10.971 (6.483)	14.444 (6.604)	12.694 (5.702)
Risfin	3.395 (2.644)	3.706 (3.119)	2.486 (2.267)	3.221 (2.513)
Unclear	1.312 (1.462)	0.824 (1.058)	0.973 (1.571)	0.871 (1.332)
Hours_spent_vol	0	0	7.516 (9.995)	6.104 (6.411)
N_organ	0	0	2.019 (1.238)	2.033 (1.524)
N_years	0	8.997 (6.941)	15.605 (12.156)	16.327 (12.297)
N_organ_tot	0	2.118 (1.431)	2.714 (2.088)	2.973 (2.237)
Hours_in_ass	0	0	97.373 (112.292)	124.404 (178.993)
Years_in_ass	0	0	123.007 (116.999)	114.333 (131.56)

Appendix C

Table 2 – Sender's belief over the amount they will receive back given the amount they sent.

	Never-members	Dropouts	Current members					
	Total	Total	Total	recruited in social welfare and health services associations	recruited in cultural associations	recruited in trade unions	of at least 1 Putnam-type association	of at least 1 Olson-type association
In-group	[0]	[0]	0.345 (0.180) [108]	0.389 (0.188) [42]	0.303 (0.174) [37]	0.335 (0.166) [29]	0.351 (0.184) [90]	0.344 (0.161) [40]
Out-group	0.295 (0.192) [76]	0.276 (0.199) [33]	0.312 (0.188) [155]	0.333 (0.202) [51]	0.343 (0.207) [46]	0.269 (0.151) [47]	0.317 (0.195) [125]	0.283 (0.169) [66]

Standard deviations in round brackets and number of observations in square brackets.