

Donation in Social Groups: Evidence from a Field Experiment

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Abstract

Intuitively a person is more likely to donate if the solicitation comes from a closer social tie or is done in context of a tight-knit group. Much of the previous research from laboratory experiments finds that closer ties cause more giving. Using a field experiment, we explore the effect of social group identities on donation behavior in a real world setting. In particular, we compare the donation behavior of the groups of alumni who are either told their group is made up of similar people or who are not told anything about their group. Donation rates across the two groups are not significantly different. A potential conclusion from our findings is that in a real world setting, leveraging social group identity is not as effective as it is in controlled laboratory settings. Thus, we propose that we should update our priors about the size of social effect on giving downwards.

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1 Introduction

Social networks pervade our lives. They are important in determining which jobs people take (Gee et al., 2017; JEBO 2017), who votes in elections (Bond et al., 2012), and how people make choices about their education (Sacerdote, 2001). This study explores the effect of a very basic concept of social groups in the field of charitable giving. In particular, we compare the donation behavior of those who know they are with people who are more similar to themselves versus those who are with random people.

There is broad agreement among economists that social networks play an important role in determining donations. Researchers have found that closer connections tend to increase altruism ¹, social information increases contribution ², and peer groups and the group size has a positive impact on charitable giving.³ Furthermore, factors like gender and race also affect social giving. Studies have shown that women are more likely to donate when alone and in groups.⁴ On the other hand, some researchers have seen no significant social effects in charitable giving.⁵ Hence, there are contradictory results concerning the influence of social groups on giving behavior. Additionally, most of the evidence above is either from a controlled environment or from observational data. We continue this line of research and take it a step further to test for social group effects outside the lab and in a real world setting.

This study might help investigate how social network structure can reduce free riding and solve the problem of under provision of public goods.

¹Andreoni & Petrie (2004) use photos along with contributions of other people, and Charness & Gneezy (2008) reveal names to build close connections that lead to increased altruism.

²Shang & Croson (2009) use public radio station to run a field experiment which shows that information about other's contributions motivates people to donate more.

³Smith et al. (2013) show that individuals decide the donation amount after observing donations of their peer groups. Meer (2011) notes that peer solicitation increases the likelihood of donating as well as the amount donated. Scharf & Smith (2016) find a positive relationship between peer group size and the number of contributions.

⁴See Fong & Luttmer (2011) and Croson et al. (2008)

⁵See Charness et al. (2007), Slow and Kirkwood (2002)

In addition, policy makers and fundraisers can design strategies to increase donations by appealing to the group of people who react the most to social messaging. This particular mechanism can prove to be beneficial for higher-education institutions struggling to combat rising tuition costs while still making education accessible. They can take advantage of their rich alumni network to increase donations and direct them towards scholarships and research grants.

In this paper, we use data collected through a field experiment (Randomized Control Trial) in a real world, social network run in 2016. The experiment sent approximately 6,400 direct mail solicitations to alumni of Tufts University. All of the subjects in the study were members of an affinity club (either Greek life, Athletics, or the Leonard Carmichael Society⁶). However, only half the sample was randomly assigned to be informed they were in a group where all members (including themselves) participated in the same affinity club during college. The other half were still in a group with the same affinity club members, but they were not aware of this. Additionally, we vary the threshold i.e. number of people required to donate, to secure \$50 in matching funds from a third party.

We want to investigate the hypothesis that individuals are more likely to donate if they know they are grouped with members of the same social club. We compare the performance of the Social groups to the groups that were not informed about their shared social group status. We find that donation rates across the two groups are not significantly different. A potential conclusion from our findings is that in a real world setting, leveraging social group identity through a direct mail campaign is not as effective as it is in controlled laboratory settings. Thus, we propose that we should update our priors about the size of social effect, on giving, downwards.

The rest of the paper is organized as follows. The next section reviews

⁶Leonard Carmichael Society is an umbrella organization that encourages volunteering and community service.

the existing literature related to our experiment. Section 3 describes the field experiment and provides descriptive statistics on giving in each treatment. Section 4 presents the econometric analysis and the results of the experiment. Section 5 discusses potential implications of our results and concludes.

2 Literature Review

2.1 Why do we expect group identity to matter?

An established literature exists that shows that people give more when they are in a group with people they share similar characteristics with. Table 1 summarizes the literature in this section. Chen and Li (2009) test the social identity theory⁷ using the minimal group paradigm method⁸ through a lab experiment. They find that participants are more likely to choose social welfare maximizing actions with an in-group member by 8.25% than an out-group member. Meer (2011) uses data on alumni donations from a university to test the effects of peer solicitations. Meer found that the likelihood of making a gift increases by 4.7% when the solicitor and the potential donor match on characteristics like race, sorority status, academic status, and athletic status.

On the other hand, there are some studies that find contradictory results. Solow & Kirkwood (2002) tested the effects of gender and group identity on giving rates. Students from the marching band comprised the “community” group. They find that male community members contribute significantly more than male strangers, while no significant differences were seen among females. They further compare giving rates by gender in soror-

⁷Tajfel & Turner (1979) developed the Social identity theory which states that “part of a person’s concept of self comes from the groups to which that person belongs”

⁸Minimal group paradigm is a method to test the social identity theory. Chen and Li (2009) used it by inducing group identity based on preference for different artists. They have subjects state which of two artists they prefer. People who choose the same artist are “in-group” whereas those who choose differing artists are “out-group.”

ities and find that individuals who are in a group with their fellow fraternity/sorority members contributed less than when they were in groups with strangers. Charness et al. (2007) test for reciprocity⁹ through an inter-state and classroom lab experiment. The reciprocal behavior in the classroom experiment (in-group) is not significantly different from the inter-state experiment (out-group) even though the social distance is lower in the classroom compared to inter-state. In another lab experiment, Andreoni & Petrie (2004) show that the contributions to a public good are not significantly higher when the participants just know the identity of their group members. However, knowing the amount of contributions in addition to identity significantly increases giving. Finally, Leider et al. (2009) measure generosity using dictator and helping games and find that participants are more generous towards nameless partners than towards people they are faintly familiar with.

Although there are conflicting findings in the literature, in general, past experimental studies have shown that people are more reciprocal and altruistic towards, are more likely to trust, cooperate and coordinate with members they identify with socially (See, Glaeser et al., 2000; Eckel & Grossman, 2005; Chen et al. 2014).

⁹Here reciprocity means that people will respond to a positive (negative) action with another positive (negative) action.

Table 1: Summary of Literature on Group Effects				
	Authors	Brief description	Type of experiment	Social/NonSocial
1	Chen & Li (2009; AER)	Group identity is induced based on preference for different artists	Lab experiment	8.25% increase***
2	Meer (2011; JPubE)	Alumni network at a university is used to test the effects of peer solicitation on charitable giving	Observational data	4.7% increase**
3	Solow & Kirkwood (2002; JEBO)	Group effects are tested through pre-existing group identities(Greek Life (GL) Membership, Band Membership) across gender	Lab experiment	Male: 18% increase*** (Band) 39.6% decrease** (GL)
				Female: 4% increase (Band) 30.7% decrease** (GL)
4	Charness et al. (2007; JEBO)	Classroom, inter-state and internet experiments were run to vary social distance	Lab experiment	9.6% increase
5	Andreoni & Petrie (2003; JPubE)	Social distance is reduced through photographs & revealing contributions of other participants	Lab experiment	30.3% increase
6	Leider et al. (2009; QJE)	Social distance was varied based on friendships to test for altruism & reciprocity	Online experiment	14% decrease

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

2.2 How donating to reach a goal is used to promote giving?

There are many ways to solicit donations from a group. A popular method, with the attractive quality that socially optimal contribution is one of the Nash equilibria, is to stipulate that a public good is only provided if donations reach a certain threshold. This type of mechanism is commonly referred to as a threshold public goods game. The threshold can be in the form of the amount of money to be collected or the number of contributions to be made.

Cadsby and Maynes (1999) show that provision of threshold goods can be encouraged if continuous contributions are allowed instead of binary contributions. Moreover, women are able to coordinate more effectively than men in a threshold public goods game (Cadsby and Maynes, 1998b; Croson et al. 2008). Other incentives like contingent matching, challenge

gifts, and seed money in threshold public goods game environment also have an effect on charitable donations (Anik et al., 2014; Rondeau & List, 2008).

Additionally, there are studies that show that varying the threshold level or threshold uncertainty can impact the size of the contribution made. Threshold uncertainty can increase contributions when the public good is highly valued (McBride, 2009), and a money-back guarantee increases contributions (Isaac et al., 1989). Gee and Schreck (2017) use theory along with lab and field experiment to show that varying the threshold level affects donation rates by changing beliefs about peers' actions. In their study, "3 out of 10" threshold match has the highest donation rate.

Our paper builds on the literature discussed above. We use the social clubs (Greek life, athletics, and Leonard Carmichael society) at a university to test for social group effects in charitable giving. People in the same social clubs are likely to follow similar behavioral patterns and share common opinions and world views. The objective is to find out whether people donate more if they know they are in a group of affinity club members. To our knowledge, this paper is the first to test for social group effects in a real world setting through a field experiment.

3 Experimental Design

The field experiment was conducted in collaboration with Tufts Fund. The study population included alumni of Tufts University who received letters on May 2nd, 2016. The sample was restricted to individuals who had yet to donate during the 2015-16 fiscal year, who do not live in a household with other Tufts alumni, and who participated in exactly one of the three affinity groups. The three groups were:

1. Leonard Carmichael Society: An umbrella organization that encour-

ages volunteering and community service.

2. Athletics: includes people who played sports like basketball, hockey, football, track, swimming, etc.
3. Greek life: includes people who were members of a fraternity/sorority.

To ensure that the alumni received letters around the same time, individuals living outside USA and Canada were excluded. The study was designed to see if being in the same social group would encourage people to donate more. To test this, all subjects were told they will be assigned to a group of 10 alumni, and if some threshold number of their group members made a donation by June 15th, 2016 then Tufts would receive an extra \$50 in matching funds from a third party donor up to a total of \$10,000 in matching funds. Gee & Schreck (2018) showed that varying the threshold number of people needed for matching money could have an effect on the donation rate. They further showed that people’s beliefs on giving behavior of others can vary by who they think is in their group. Based on their results, our experiment had two thresholds (1 person out of 10 and 3 out of 10) and two types of groups (Social and No information). These 4 treatments can be summarized as 2x2 experimental design:

Table 2: 2x2 Experimental Design

	Social Group	No Information
1 out of 10	Social, Match 1	Non-Social, Match 1
3 out of 10	Social, Match 3	Non-Social, Match 3

Notes: Social Group refers to the letters which mentioned Athletics, Leonard Carmichael Society, or Greek Life

The letters sent out had the same message except for one paragraph (in bold) that varied with different treatments.¹⁰ The letter for Social, Match 1 looked like the following:

¹⁰Exact letters can be seen in appendix

You make the unique Tufts experience possible for today's Jumbos. Your annual fund gift continues to make the university the best it can be for students and faculty ensuring the brightest students can attend, enriching the academic experience, and giving Tufts immediate resources to address greatest needs and fund innovation. With your gift this year, you can also help unlock up to \$10,000 in challenge funding from two generous donors. **You will be randomly assigned to a group of 10 Tufts alumni who were also «Group Match Club» like you. If at least 1 alumnus from your group of 10 gives by June 15th, a donor will give an extra \$50 to Tufts.** Your gift today will be put to immediate use to help current Jumbos and prepare for the next academic year. Remember, this challenge will end June 15, 2016 so please make your gift today! You have the power to unlock \$10,000 for Tufts students.

The other messages varied the bolded text as follows:

- Social, Match 3: **You will be randomly assigned to a group of 10 Tufts alumni who were also «Group Match Club» like you. If at least 3 alumni from your group of 10 give by June 15th, a donor will give an extra \$50 to Tufts.**
- Non-Social, Match 1: **You will be randomly assigned to a group of 10 Tufts alumni. If at least 1 alumnus from your group of 10 gives by June 15th, a donor will give an extra \$50 to Tufts.**
- Non-Social, Match 3: **You will be randomly assigned to a group of 10 Tufts alumni. If at least 3 alumni from your group of 10 give by June 15th, a donor will give an extra \$50 to Tufts.**

3.1 Data

The sample includes 6,471 people who were sent the letters. As a check on the random assignment of the treatments, Table 3 presents the results of the balance test across the four treatments for the characteristics of the sample including: their gender, if they had a 10-year or a 5-year reunion, the number of times the individual has donated in the last 9 years, whether they are a recent graduate (2005-2015) and their participation in any of the three affinity clubs. These covariates were included in the analysis as they might affect the donation rate. An individual might decide to donate in a particular year if that year was her/his reunion year or if she/he was a recent graduate. Also, people are likely to donate more if they have donated in the past.

The last column of Table 3 shows the results of two-way t-tests for the difference in means of the covariates across the four treatments. None of these were statistically significantly different at traditional levels. Hence, the sample is balanced across four treatments. There were 3,588 former athletes, 1,140 members of the Leonard Carmichael Society, and 1,743 participated in Greek life. Notice that not all of these numbers are divisible by 10 and so some people could either be dropped from the analysis or put into an artificial group of 10 by assigning some participants to two or more groups. For the purpose of analysis, it does not matter which exact group a person was assigned to.

Table 3: Subject Balance across 4 Treatments							
	(1)	(2)	(3)	(4)	(5)	(6)	
	Entire Sample	T1	T3	T1_Social	T3_Social		Pairwise Difference
	N	Mean (s.d.)	Mean (s.d.)	Mean (s.d.)	Mean (s.d.)	Mean (s.d.)	
Panel A							
Athletics	3588	0.555 (0.497)	0.555 (0.497)	0.554 (0.497)	0.555 (0.497)	0.554 (0.497)	No
Leonard Carmichael Society	1140	0.176 (0.381)	0.176 (0.381)	0.176 (0.381)	0.175 (0.380)	0.177 (0.381)	No
Greek Life	1743	0.269 (0.444)	0.269 (0.443)	0.270 (0.444)	0.270 (0.444)	0.269 (0.444)	No
Panel B							
Female	2846	0.44 (0.496)	0.439 (0.496)	0.440 (0.496)	0.440 (0.497)	0.440 (0.497)	No
Years Donated	6471	0.981 (1.678)	1.033 (1.767)	0.983 (1.678)	0.929 (1.606)	0.979 (1.701)	No
Young Alum	1282	0.198 (0.399)	0.200 (0.400)	0.199 (0.399)	0.212 (0.409)	0.182 (0.386)	No
Reunion Year	222	0.034 (0.182)	0.035 (0.183)	0.033 (0.178)	0.035 (0.185)	0.035 (0.183)	No
Observations	6471		1,616	1,622	1,614	1,619	

Notes: T1 are those who were sent letters with a threshold of 1 donor to active matching funds, while T3 required 3 donors. Those in T1 Social received the same letter as those in T1 with the addition of being told they were in a group of the same social type, the same is true of T3 Social. The last column states whether two-way t-tests between the four treatments were significantly different.

The assignment of people to groups of 10 was done after the letters were sent as it was assumed that some letters might be returned, never be opened or might get lost.¹¹ Due to this, this study focuses on measuring the intent-to-treat (ITT) effect. Additionally, existing literature has already tested how varying the threshold will affect the donation rate (Gee and Schreck, 2017), hence, this study will combine the thresholds and focus on the “Social” intervention, i.e. whether being in the same social group affects the donation rate. Table 4 presents the result of the balance check across the two treatments – social vs non-social and the means for all the attributes are not statistically different.

¹¹126 were returned as undeliverable, however, dropping these observations has no effect on the results.

Table 4: Subject Balance across Social vs. Non-Social					
	(1)	(2)	(3)	(4)	
	Entire Sample	Social	Non-Social	Pairwise Difference	
	N	Mean (s.d.)	Mean (s.d.)	Mean (s.d.)	Difference (p-value)
Panel A					
Athletics	3588	0.555 (0.497)	0.554 (0.497)	0.555 (0.497)	0.000 (0.012)
Leonard Carmichael Society	1140	0.176 (0.381)	0.176 (0.381)	0.176 (0.381)	-0.000 (0.009)
Greek Life	1743	0.269 (0.444)	0.269 (0.444)	0.269 (0.444)	0.000 (0.011)
Panel B					
Female	2846	0.44 (0.496)	0.439 (0.496)	0.440 (0.496)	0.001 (0.012)
Years Donated	6471	0.981 (1.678)	1.008 (1.723)	0.954 (1.654)	-0.054 (0.042)
Young Alum	1282	0.198 (0.399)	0.199 (0.399)	0.197 (0.398)	-0.002 (0.010)
Reunion Year	222	0.034 (0.182)	0.034 (0.180)	0.035 (0.184)	0.001 (0.005)
Observations	6471		3,238	3,233	6,471

Notes: *** p<0.01, ** p<0.05, * p<0.1

4 Results

This section reports the descriptive statistics on donors and the results from the econometric model. Table 5 reports the mean donation rate and the amount, conditional on giving, for the whole sample and then across the two social vs non-social treatments.¹² The overall mean donation rate was 2.7% and the donation rate was higher for the Non-Social treatment compared to the Social treatment (2.8% vs 2.5%). The overall mean donation amount conditional on giving was \$224.09 and again, it was higher for the Non-Social treatment. As the donation rate was low, outliers in

¹²Summary of donation behavior across all four treatments is shown in Table A1 in appendix.

the donation amount conditional on giving can affect its distribution. To better understand the distribution of the amount donated, the 25th, 50th, 75th, and the 99th percentiles are provided. The distribution is not different as all the percentiles except for the 99th are the same across the two treatments. Additionally, a Kolmogorov-Smirnov test cannot reject the null hypothesis of the equality-of-distributions of the donation amount conditional on giving across the two treatments. This result suggests that the Social treatment does not affect the amount donated. Hence, due to the distribution being the same and the amount being sensitive to the outliers, this study will focus on the binary outcome of whether the subject donates or not.

Table 5: Donation Behavior Summary across Social vs Non-Social

	Social	Non-Social	All
Donation Rate	0.025	0.028	0.027
Donation Amount, conditional on giving	\$156.84	\$284.70	\$224.09
Amount P25, conditional on giving	25	25	25
Amount Median, conditional on giving	50	50	50
Amount P75, conditional on giving	100	100	100
Amount P99, conditional on giving	2000	11000	5000
Donors	82	91	173

The econometric model used to measure the treatment effect takes the form of:

$$Y_i = \alpha + \beta \text{Social_Any}_i + \epsilon_i \quad (1)$$

Where Y_i is the binary outcome variable of whether the alum has donated or not and Social_Any_i is an indicator signifying that the alum was in the Social treatment group, X_i is a vector of covariates shown in Table 4, panel B. β is the coefficient of interest and can be interpreted as increase in the likelihood of donating if the individual is grouped with the members of

the same affinity club rather than with strangers. Given the binary nature of our outcome variable, a Probit model would have been ideal. However, to be able to easily interpret the results, we will use a linear probability model.¹³

Table 6 presents the least square regression with robust standard errors for the model in equation 1. Column 1 presents the results of the simple linear model without any controls and column 2 presents the results controlling for the historical giving behavior i.e. the number of times donated in the last nine years. Column 3 additionally controls for the covariates in table 4, panel B. The Social treatment effect across all the specifications is negative and insignificant at conventional levels. The effect size reduces after controlling for past giving behavior. The coefficient ranges from -0.00177 to -0.00274. Putting aside the lack of statistical significance, this implies that being informed you were in a group with others of your same social group reduced the probability of donating from 0.17 to 0.27 percentage points.

¹³We used Probit with marginal effects models to check the robustness of our results. The results are the same and are available on request.

Table 6: Probability of Donation by Treatment			
VARIABLES	(1) Social_Donor	(2) Social_Donor	(3) Social_Donor
Social_Any	-0.0027 (0.004)	-0.0018 (0.004)	-0.0018 (0.004)
Years Donated		0.0180*** (0.002)	0.0179*** (0.002)
Female			0.0020 (0.004)
Young Alum			0.0140** (0.006)
Reunion Year			0.0408** (0.019)
Constant	0.0281*** (0.003)	0.0100*** (0.003)	0.0050 (0.003)
Observations	6,471	6,471	6,471
R-squared	0.000	0.036	0.040

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In addition to the above analysis, we look at donation behavior by different affinity clubs.¹⁴ Table 7 shows that historic giving behavior, measured by the number of donations made in the past 9 years, across affinity club, is significantly different. Members of Greek life give more times compared to athletes and the members of Leonard Carmichael Society. Based on this observation, this study looks at the treatment effects within affinity clubs to test whether the Social treatment will play a role in increasing the giving rates for a particular club. Table 8 shows the results of the least square regression with robust standard errors for the model in equation 1 but broken down by the three affinity clubs. The treatment effect for the members of Greek life and LC is negative, and for athletes it is positive. However, these effects are small and not statistically significant. Even though the giving behavior varies across clubs as seen in the Table 7, our results suggest that

¹⁴Members of different groups may behave differently. Based on stereotypes, we might assume that volunteers will contribute more. Alternatively, athletes and members of Greek life do a lot of activities that involve coordination and cooperation, hence, we might assume they might react more to social messaging.

the Social treatment has no additional effect.

Table 7: Number of times donated from 2007-2015 by Affinity Group

	(1)	(2)	(3)
	Mean: Leonard Carmichael Society	Mean: Athletics	Mean: Greek Life
Years Donated	0.918 (1.729)	0.96 (1.548)	1.066 (1.922)
Observations	1,140	3,588	1,743

Notes: The results of two-way t-tests for the difference in means across the three groups show that the members of Greek life significantly gave more number of times than members of Leonard Carmichael Society and athletes.

Table 8: Heterogeneous Treatment Effects By Affinity Group

	(1)	(2)	(3)
VARIABLES	Social_Donor- Leonard Carmichael Society	Social_Donor- Athletics	Social_Donor- Greek_life
Social_Any	-0.0104 (0.009)	0.0017 (0.006)	-0.0069 (0.008)
Constant	0.0298*** (0.007)	0.0273*** (0.004)	0.0287*** (0.006)
Observations	1,140	3,588	1,743
R-squared	0.001	0.000	0.000

Robust standard errors in parentheses

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

Prior research shows that differences in gender can affect behavioral outcomes, especially when it comes to giving in groups. Croson et al. (2008) show that women in groups were more coordinated, made larger contributions, and were less likely to free ride compared to men in groups. In general, it has been shown that women are more generous (Nowell & Tinkler, 1993; Eckel & Grossman, 1998). The historic data (2007-15) from our study shows that women have donated more frequently than men (Table 9) so we expected to see that the donation rate for women in social treatment would be higher than men. This study further looks at the heterogeneous treatment effects by gender. Table 10 shows that women assigned to social treatment were less likely to donate by 0.38 percentage points compared to men assigned to Social treatment. This effect is small and not statistically significant.

Table 9: Number of times donated from 2007-2015 by Gender

VARIABLES	(1) Years Donated
Female	0.1827*** (0.043)
Constant	0.9010*** (0.027)
Observations	6,471
R-squared	0.003

Robust standard errors in parentheses

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

Table 10: Heterogeneous Treatment Effects by Gender

VARIABLES	(1) Social_Donor
Social_Any	-0.0010 (0.005)
Female	0.0075 (0.006)
Female*Social_Any	-0.0039 (0.008)
Constant	0.0248*** (0.004)
Observations	6,471
R-squared	0.000

Robust standard errors in parentheses

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

In summary, the Social treatment intervention results in reducing donation rates overall, within the clubs and by gender. However, these effects are small and not statistically or economically significant. The results failed to confirm the hypothesis that individuals are more likely to donate if they know they are grouped with members of the same social club.

5 Conclusion

We have reported the results of a field experiment that examines the impact of being in a social group on the donation rate. The field experiment was a randomized controlled trial and the data was balanced across various characteristics that might affect donation rate, leaving only the incremental effect of being told that the subject was in a group with members of the same affinity club rather than in a group which they might have assumed was full of strangers. The use of solicitation letters emphasizing the social groups, intended to generate a sense of community, led to a lower number of contributions, although the effect was not significant. Moreover, we see no significant effects by any single affinity group or gender. This suggests that priming the individual with the membership in a social group is not enough to alter the donation behavior. This result is similar to that of Solow and Kirkwood (2002) and the lab experiment by Andreoni and Petrie (2003) where the members are only aware of the identity of the other participants in the group.

We further explore whether the reason behind the insignificant results is that our sample was not powered to detect Social effects. We have two pieces of evidence from two different environments which show significant in-group effects in the field of charitable donations (Table 1). One is from a lab experiment in which group identities were induced (Chen & Li, 2009) and the other is based on observational data (Meer 2011) and uses natural social identities to analyze the Social effect. Given this literature we expected to see an increase in the donation rate of about 4 to 8%. Now we want to check if our study had enough sample size to meet these expectations. Given this effect size and assuming that there are equal proportions of subjects in treatment and control group, we calculate the sample size required to achieve a power of 80% and a significance level of 5% using

the modified formula provided in Dufflo et al. (2007) .¹⁵ The results of the calculations are summarized in Table 11.

Research study	MDE	SD	Power	Significance	Sample Size
Chen & Li (2009)	0.0825	0.275	80%	0.05	348
Meer (2011)	0.047	0.437	80%	0.05	2711

Notes: SD is the standard deviation of the outcome variables in the respective papers.

We can see that the sample size of our study (6,471) was much higher than the required sample sizes. Additionally, the effect sizes from these studies (4% and 8%) are large and lie outside our estimated confidence interval. Hence, after assessing the literature closest to ours, we conclude that our sample size was sufficient to detect significant effects and we can rule out large Social group effects in a field experiment. We further do an ex-post power analysis for our study. We calculate the minimum detectable effect size given our sample, for a power of 80% and a significance level of 5%. We find that the MDE is 0.01, which is approximately four times our treatment effect size of 0.0027. Alternatively, to detect an effect size of 0.0027, the sample size should have been 111,949.

While the lack of power itself may have been a large reason why we did not find significant results, there are several other factors that might account for the fact that our experiment found different results than existing literature. Our study was a field experiment run in a real life setting and estimated the intent-to-treat effect. The treatment groups consisted of people who shared common activities but did not interact with each other directly. The fund-raising window lasted just under 2 months and there

¹⁵ $MDE = (t_{(1-k)} + t_{\alpha}) \cdot \sqrt{\frac{1}{P(1-P)}} \cdot \sqrt{\frac{\sigma^2}{N}}$ MDE for power k, significance level , sample size N, and proportion of sample in treatment group P.

were no reminders sent to the participants.¹⁶ Finally, the matching amount was \$50 and might be considered a weak incentive to donate.

Findings from our study do not fully align with the existing literature. However, this study provides important lessons for future work about charitable giving. For instance, in general, leveraging social identity when some form of social interaction is involved seems to increase welfare. However, designing a fundraising event in a real world setting that involves interactions between donor and solicitors or among donors can be cumbersome and cost inefficient. Our study provides a cost effective alternative to this problem. It is, thus, unclear whether the results of the existing literature are overestimated or not, but we know that there is bias when it comes to publishing significant results over insignificant ones which in turn, leads to overestimation of the correlations (Maniadis, Tufano & List 2014). In summary, the picture that emerges from the existing lab and field experiments is that the priming social identity positively affects charitable giving, but our results do not find any significant results in a natural environment. Furthermore, Abadie (2018) argues that non-significant results are sometimes more informative than significant ones. Thus, we propose that, we need to update our priors and beliefs downwards on how applicable are the group effects is in the field of charitable giving.

¹⁶On average, 10-13% of the sample donated during the calendar years 2007-15. Short fundraising window without any reminders could have lead to the drop in the donation rate for the experiment to 2.6%. Usually an institution organizes multiple fundraising drives throughout the year encouraging people to donate more through reminders.

6 Appendix

Fig A1: Sample letters for Non-Social Treatment

COUNT ON MY GIFT OF:

\$ 250 \$ 100 \$ 50 \$ 25 Other: \$ _____

Make a recurring gift of \$ _____ each month. Starting month: _____

* Tufts' fiscal year runs from July 1 to June 30. This authorization may be cancelled at any time by notifying us. _____

0000119600 A4807

DIRECT MY TUFTS FUND GIFT TO:

Area of Greatest Need

Financial Aid

Faculty & Research

Student Life

Other _____

Tufts Fund for Arts,
Sciences & Engineering
80 George Street
Medford, MA 02155
617-627-4930

Gifts are also accepted online at
www.ase.tufts.edu/givenow1

Please turn over for payment info.

Thank you for making any necessary corrections to your information.

You make the unique Tufts experience possible for today's Jumbos. Your annual fund gift continues to make the university the best it can be for students and faculty—ensuring the brightest students can attend, enriching the academic experience, and giving Tufts immediate resources to address greatest needs and fund innovation. With your gift this year, you can also help unlock up to \$10,000 in challenge funding from two generous donors.

You will be randomly assigned to a group of 10 Tufts alumni. If at least 1 alumnus from your group of 10 gives by June 15th, a donor will give an extra \$50 to Tufts.

Your gift today will be put to immediate use to help current Jumbos and prepare for the next academic year. Remember, this challenge will end June 15, 2016 so please make your gift today! You have the power to unlock \$10,000 for Tufts students.

If this letter has crossed paths with a recent donation, we apologize. As always, thank you for your Tufts Fund support.

(a) T1: 1 out of 10

COUNT ON MY GIFT OF:

\$ 250 \$ 100 \$ 50 \$ 25 Other: \$ _____

Make a recurring gift of \$ _____ each month. Starting month: _____

* Tufts' fiscal year runs from July 1 to June 30. This authorization may be cancelled at any time by notifying us. _____

0000192870 A4811

DIRECT MY TUFTS FUND GIFT TO:

Area of Greatest Need

Financial Aid

Faculty & Research

Student Life

Other _____

Tufts Fund for Arts,
Sciences & Engineering
80 George Street
Medford, MA 02155
617-627-4930

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You will be randomly assigned to a group of 10 Tufts alumni. If at least 3 alumni from your group of 10 give by June 15th, a donor will give an extra \$50 to Tufts.

Your gift today will be put to immediate use to help current Jumbos and prepare for the next academic year. Remember, this challenge will end June 15, 2016 so please make your gift today! You have the power to unlock \$10,000 for Tufts students.

If this letter has crossed paths with a recent donation, we apologize. As always, thank you for your Tufts Fund support.

(b) T3: 3 out of 10

Fig A2: Sample letters for Social Treatment

COUNT ON MY GIFT OF:
 \$ 250 \$ 100 \$ 50 \$ 25 Other: \$ _____
 Make a recurring gift of \$ _____ each month. Starting month: _____
* Tufts' fiscal year runs from July 1 to June 30. This authorization may be cancelled at any time by notifying us. _____
 0000046255 A4825

DIRECT MY TUFTS FUND GIFT TO:
 Area of Greatest Need
 Financial Aid
 Faculty & Research
 Student Life
 Other _____

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Thank you for making any necessary corrections to your information.

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You will be randomly assigned to a group of 10 Tufts alumni who were also an athlete like you. If at least 1 alumnus from your group of 10 gives by June 15th, a donor will give an extra \$50 to Tufts.

Your gift today will be put to immediate use to help current Jumbos and prepare for the next academic year. Remember, this challenge will end June 15, 2016 so please make your gift today! You have the power to unlock \$10,000 for Tufts students.

If this letter has crossed paths with a recent donation, we apologize. As always, thank you for your Tufts Fund support.

(a) T1: 1 out of 10

COUNT ON MY GIFT OF:
 \$ 250 \$ 100 \$ 50 \$ 25 Other: \$ _____
 Make a recurring gift of \$ _____ each month. Starting month: _____
* Tufts' fiscal year runs from July 1 to June 30. This authorization may be cancelled at any time by notifying us. _____
 0000025334 A4828

DIRECT MY TUFTS FUND GIFT TO:
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Thank you for making any necessary corrections to your information.

You make the unique Tufts experience possible for today's Jumbos. Your annual fund gift continues to make the university the best it can be for students and faculty—ensuring the brightest students can attend, enriching the academic experience, and giving Tufts immediate resources to address greatest needs and fund innovation. With your gift this year, you can also help unlock up to \$10,000 in challenge funding from two generous donors.

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If this letter has crossed paths with a recent donation, we apologize. As always, thank you for your Tufts Fund support.

(b) T3: 3 out of 10

Table A1: Donation Behavior Summary Across 4 Treatments

	Social		Non-Social		All
	T1	T3	T1	T3	
Donation Rate	0.024	0.027	0.03	0.026	0.027
Donation Amount, conditional on giving	\$112.69	\$194.96	\$361.54	\$198.90	\$224.09
Amount P25, conditional on giving	25	25	27.5	25	25
Amount Median, conditional on giving	50	75	50	50	50
Amount P75, conditional on giving	100	112.5	105.55	100	100
Amount P99, conditional on giving	100	2000	11000	5000	5000
Donors	38	44	48	43	173

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