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The impact of downward social information on contribution decisions

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Abstract In this paper we study the effect of downward social information in contribution decisions to fund public goods. We describe the results of a field experiment run in conjunction with the fundraising campaigns of a public radio station. Renewing members are presented with social information (information about another donor's contribution) which is either above or below their previous (last year's) contribution. We find that respondents change their contribution in the direction of the social information; increasing their contribution when the social information is above their previous contribution, and decreasing their contribution when the social information is below. We hypothesize about the psychological motivations that may cause the results and test these hypotheses by comparing the relative size of the upward and downward shifts. These results improve our understanding of cooperation in public good provision and suggest differential costs and benefits to fundraisers in providing social information.

Keywords Social influence · Social information · Social comparison · Charitable giving · Public goods

JEL Classification C72 · C93 · H41

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1 Introduction

Over the past century, the nonprofit sector has become the third largest after government and business. Volunteering and individual contribution represent its largest source of income; 30% (Salamon et al. 2004). In the United States alone, total giving in 2005 stood at over US $260 billion, and giving by individuals had increased by 6.4% to US $199.07 billion (Giving USA 2006). As impressive as these numbers are, the nonprofit sector faces financial challenges. Corresponding cutbacks in government funding suggests that the supply of philanthropic dollars is not keeping up with the growth in the demand for them (Sargeant 1999).

Charitable fundraising activity is substantial, and understanding it has important practical implications. Many theories have been proposed to explain why individuals give (or cooperate) when it is in their own (financial) interest to free- or cheap-ride. Explanations include altruism (e.g. Becker 1974), warm-glow and warm-glow altruism (e.g. Andreoni 1989, 1990), conditional cooperation (e.g. Fischbacher et al. 2001), and reciprocity (e.g. Sugden 1984). Research on this question has been conducted by economists (for reviews see Davis and Holt 1993 and Ledyard 1995) and by psychologists (for a review see Dawes 1980).

These motivations for cooperation have been studied using experimental data from the lab and naturally-occurring (empirical) data (e.g. Andreoni 2004). Only very recently, field experiments have been introduced as a research tool in studying public goods provision and charitable contributions in economics (e.g. List and Lucking-Reiley 2002; Frey and Meier 2004; Eckel and Grossman 2005; Falk 2005).[1] List and Lucking-Reiley (2002) study the effect of seed money and refunds in a university fund raising campaign. They find that increasing the proportion of seed money increases both participation rates and the average amount contributed while instituting a refund only increases the average contribution, but not the participation rate. Eckel and Grossman (2005) study the effect of rebates as compared with matching donations in a public radio fundraising campaign via mail. They find that matching and rebates solicit about the same number of contributions, but that matching generates higher contributions. Note that both of these two experiments manipulate the payoff structure (or form of payoff) faced by individual donors.

Instead of manipulating the payoffs, our research follows Frey and Meier (2004) (reviewed in more detail below) by examining the influence of social information on behavior. In particular, our previous research has focused on documenting the impact of upward social information; telling donors how much a more generous donor has contributed (Shang and Croson 2007). This research has shown that upward social information is effective at increasing contributions. However, no previous study has examined the impact of downward social information.

Understanding the effect of downward social information is important both for researchers and practitioners. For researchers, it provides a robustness-check on our results of the impact of social information on decisions. It also can provide support

[1] Research in psychology and marketing has long used field experiments in studying charitable giving (for a review, see Weyant 1996). Influence techniques studied include foot-in-the-door, door-in-the-face, low-ball, and legitimization-of-small-donation.

for our explanation of those results; that of social comparisons and conformity to norms of giving. If these explanations are correct, then downward social information should be as (or more) impactful than upward social information. The comparison of the degree to which donors respond to downward and upward social information is thus informative for understanding the mixed motivations involved in contribution decisions; the desire to free-ride and the desire to conform to the social norm.

For practitioners, understanding the differential effects of downward and upward social information is also important. Previous research has demonstrated the benefits of providing upward social information, but nothing is known about the potential costs of providing downward social information. If they are sufficiently large, an organization might be better off providing no information at all, or paying extra to customize the information it provides to the targeted individual. Understanding the expected tradeoffs can help organizations make revenue-maximizing decisions.

This paper is organized as follows. We review the psychological literature on social comparisons and conformity and develop hypotheses about the effect of upward and downward social information and their relative size. Then, we describe our field experiment that tests and confirms these hypotheses. We conclude with implications for research and practice.

2 Previous literature and hypotheses

Social comparison theory, as originally proposed by Festinger (1954), suggests that people use a set of standards to evaluate reality and to evaluate themselves. First they rely on objective or non-social standards. For example, I evaluate myself as a generous person as long as I contribute 10% of my income to my church. Second, people compare themselves to others, especially when an objective standard is not available or is not perceived as relevant. For example, I might ask my fellow church-goers how much they contribute, compare their responses with my contribution, and use this comparison to evaluate how generous I am. In the context of voluntary contribution to nonprofit organizations, objective standards are often not available. Therefore, social comparison information (knowing what others have donated) is likely to have an effect on contribution.

Social comparisons have indeed been shown to influence the *participation rate* of contribution. Bryan and Test (1967) raised the rate of donation to a Salvation Army bell ringer by showing participants cooperative confederates. Reingen (1978) increased participation rate in donations to the Heart Association by showing targets a list of others who had contributed. Frey and Meier (2004) showed that knowing that a higher percentage of people had responded to solicitation mails increased the response rate to a college mailing campaign. While social information has been shown to influence the participation rate of contributions, there is only scant evidence of techniques influencing the *amounts* contributed.

The literature that does exist focuses exclusively on upward social information. Shang and Croson (2007) and Shang and Croson (2006) study the effect of upward social information on giving in two field experiments. The first paper demonstrates

the existence of an upward social information effect on individual donations. It explores the effectiveness of different levels of social information, and finds the most influential to be information drawn from the 90th to 95th percentile of previous contributions. In this experiment, social information increases contributions on average 12% (US $13) in the most effective condition (when donors are told that another donor had given US $300). Furthermore, these increased contributions do not crowd out future contributions. Contributions to the station one year later are the same regardless of the treatment to which the individual was assigned.

The second paper demonstrates the boundary conditions of the effect. They find that contributions go down when increasing the social information from the 95th percentile (US $600) to the 99th percentile (US $1000). The result is supportive of the social explanation of the results rather than an alternative cognitive explanation (anchoring or reference points).

Croson et al. (2006) and Shang et al. (2008, forthcoming) investigate the processes which cause this social information effect. Two possible mechanisms are explored: social norms and social identity. In the first paper, a laboratory experiment shows that the influence of social information on giving is mediated by social norms, i.e. telling donors of contributions made by another person influences their beliefs about the descriptive norm of what an average donor does, and this changed belief in turn influences their own giving. The external validity of the relationship between social norms and giving is tested in a survey of existing donors of a public radio station.

In the second paper, an identity-based mechanism of the social information effect is studied in three field and two laboratory experiments in which people react more strongly to gender congruent social information (contributions of another donor of the same gender as they) than gender incongruent social information (contributions of a differently-gendered donor). This effect is more likely to occur when donors have high gender identity esteem (measured in lab study 2a) and when attention is focused on others (manipulated in field study 2b). These results thus support an identity-based explanation of the gender congruency effect on contributions.

These papers have all argued that the upward influence of social information is due to changing donors' beliefs about the appropriate amount to give and have demonstrated various ways to strengthen the influence of social information on beliefs. However, all previous experiments have used upward social information; donors are told that another donor gave more than they did (or than they intended). This is the first paper to look at downward social information; when donors are told another gave less than they did or than they intended.

Levitt and List (2007) suggest that economic behavior is caused by an interaction between the individual and the situation in which they find themselves. Previous work by List (2007) suggests this is true of giving behavior in the lab; the choices available to the participant in the lab influence her beliefs about the appropriate gift, which in turn influences her giving. In our study, we argue that social information in the field determines the individuals' expectations of what contribution is appropriate, which drives their contribution.

These previous results, and the explanations for them, suggest that downward social information will reduce giving, just as upward social information increases it. Thus our first hypotheses:

H1: Respondents provided with upward or downward social information will change their contributions in the direction of the social information.

However, we also believe that upward and downward social information may operate with different strengths. When considering the differential impact of upward and downward social information, one might imagine the two competing forces of self-interest and the desire to conform to the norm of contribution. With upward social information, these forces work in opposite directions; the individual believes that the appropriate contribution is higher, but self-interest moves him to contribute less. In contrast, with downward social information these forces work in tandem; the individual believes that the appropriate contribution is lower, and this lower contribution is in line with his self-interest. Thus we predict that the negative effect of downward social information will be larger than the positive effect of upward social information. This is our second hypothesis.

H2: The reduction in contributions in the presence of downward social information will be larger than the increase in contributions in the presence of upward social information.

3 The environment

We sought a naturally-occurring institution that captured the public good structure, where each individual has an incentive to free ride, but where the group as a whole is better off when everyone contributes. We identified public radio as one such setting. Each individual has an incentive to free ride, listen to the station, and not contribute to its continued functioning. However, the community as a whole is better off when the station is funded. This field setting also offers us the potential to offer social information to contributors in a natural way.

First, virtually all public radio donors are public radio listeners; they are familiar with the services a public radio station provides and they use and enjoy these services over a period of time. Listeners consume the service (listen to the radio) without paying, either explicitly as they might pay for satellite radio or implicitly by hearing commercials as they might pay for private radio. Thus contributors are familiar with the public good being provided.

Second, public radio has periodic fundraising campaigns that familiarize listeners with the concept of contributing and consistently remind listeners of how they may contribute conveniently via mail and on the phone. Before a typical phone or mail drive begins, listeners have been exposed to pre-drive messages daily on the radio. When a typical fundraising campaign begins, the station runs two 10-minute intense solicitation appeals every hour (or more frequently) for 5–10 days and/or it mails renewal letters to groups of existing donors.[2] The phone drives occur at least

[2]For example, a typical fund drive may start from 6:00 am on a Wednesday morning. From 6:00 am to 6:10 am, DJs would give out phone numbers and typical fund raising appeals like: "You have been listening to the radio on your way to work every morning during the past year, it is finally the time for you to call into our station and make a contribution of US $120. Please call PHONE_NUMBER right now" Regular programming is then on the air for about 20 minutes. Sometimes it is news, sometimes it is music or talk-shows, depending on the station. Then another 10 minutes of pledging messages are on the air from 6:30 am to 6:40 pm.

once every four months and the renewal letters reach each existing donor at least five times during the year. Therefore, public radio listeners are highly (and sometimes painfully) aware of the need for funding and the procedure through which they may make contributions over the phone or by mail.

Third, public radio DJs prime norms of contribution. DJs mention the expectations of the station, the desirability of making a contribution and the gratitude that will result (including thank-you gifts) throughout the year in between regular programming. LaTour and Manrai (1989) found that social information became more effective in increasing participation rates after social norms on making a contribution had been primed in an earlier part of a fundraising campaign. Thus we believe that public radio is a setting where social information is likely to have an impact.

In summary public radio phone and mailing campaigns provide a situation where potential donors are benefactors of the station, are aware of the fundraising routines and are primed for making contributions. Fundraising appeals and social information provided in conjunction with them are thus likely to be effective.

4 The experiment

This field experiment was conducted in an anonymous public radio station on the east coast in June and September 2003 during the station's on-air fund drive and in November 2003 during the station's mailing campaign.

Method

Design. We used a between subject design with three conditions. Participants are all existing donors of the station who renew their memberships either via phone or via mail. Just before they decide (on the phone) or record their contribution (via mail), we inform them of another donor's gift. For some, this other donor had given more than the participant had given in the previous year. For others, they had given less. Still other donors received social information which equaled their previous year's contributions. We ensured that another member had indeed contributed the amount we suggested, so that our statements of others' contributions would not constitute deception. We examine the impact of this social comparison information on the change in contributions of the target donors from last year to this year.[3]

Participants. Two hundred and twenty five renewing donors received and responded to the experimental treatments. Among them, ninety-nine of them received the treatments via phone, and one hundred and twenty-six received them via mail.

Procedure

Phone procedure. During the on-air drive, the station DJs interspersed music with appeals for donations. Listeners responded to the on-air appeals during the drive and

[3]Note that some of the data presented in this paper has been analyzed in other settings. However, the analysis of downward social information is new, as is the data from the mailing experiment.

called the station to make a pledge. Experimenters answered the phone as volunteers for the station, asked the routine questions for the station and implemented the social information manipulation in the appropriate place in the conversation.[4]

In particular, after answering the phone with the station's identifier: "Hello, STATION_NAME member line", experimenters asked: "Are you a new member or a renewing member of STATION-NAME?" When the caller responded that they were a renewing member, experimenters read:

"We had another member; they contributed DOLLAR AMOUNT."

The question asked right after the manipulation was: "How much would you like to pledge today?" The pledge amount was then collected. Our dependent measure will be the difference between this pledge amount and the donor's previous contribution.[5]

All experimental conditions were randomized within each experimenter and within each hour. An extra step was also taken to avoid any expectation effect or sales effect from the experimenters. The manipulation sentences were printed on labels, and then attached to each pledge form. These sentences were covered by post-it notes. The experimenter did not remove these covers until they asked the first key question, i.e. what kind of member the callers are. At this point, they removed the post-it note, read the manipulation sentence and asked for the pledge amount. Experimenters were thus blind to which condition each caller was in before they read the manipulation, and the dependent measure of pledge was collected right after the manipulation. The social comparison level used was randomized within-experimenter and thus the addition of experimenter-fixed effects to our analysis below are themselves insignificant and do not change the significance of the other variables.

Mail procedure. This public radio station sends out renewing letters to its members seven months after they make a contribution. Then they send out one renewing letter every month for the next four months until a contribution is received. We implemented this experiment only on the first renewal notice received by participants.

The notice consists of two parts. The first part is a renewing letter, where greetings and appreciations are expressed and renewing contributions are requested. The second part is the detachable response sheet. On the response sheet we manipulate a sentence right above where donors record their contributions. This sentence says

[4]We recorded data only during the hours when the station did not give special discounts or premiums. During each special-discount hour, the station offered discounts on a contribution. For example, it could offer a US $10 discount for each US $120 contribution that is paid in full on a credit card. That means donors could contribute only US $110 to receive thank you gifts on the US $120 level. This offer encourages more one-time payment contribution on a credit card. When such special discounts are offered, almost all contributions received during those hours are US $110. This pre-commitment to a certain level may have unpredictable effects on our experiments. Thus we decided not to collect any data during those hours. During each special-premium hour, the station offer concert tickets donated by popular singer and songwriters or signed album by famous station hosts. For example, there could be 3 pairs of first row tickets to Norah Jones' concert, and the first three callers who were willing to contribute at least US $840 in full on a credit card could get the tickets. Data from these hours are very noisy depending on the offers, so we did not collect any data during those hours.

[5]Other information collected by the station during the phone conversation included callers' name, phone number, email address, billing address, city, zip-code, credit card or check information, and the thank-you gifts they would like to receive. However, for confidentiality reasons and to conform with human subjects protocols, only research-related information was copied and kept by the researchers.

"STATION_NAME received a contribution of DOLLAR AMOUNT from a member like you, and we invite you to join this member in renewing your membership today!". Respondents recorded their pledge amount by filling in the sentence directly below the manipulation, "Yes! Here is my contribution of _____." As with the phone experiment, we randomly assigned social information to respondents. We construct our dependent variable by calculating the difference between the amount contributed and the previous year's contribution by each donor.[6]

As before, the dollar amounts used were actual contributions of another member, eliminating deception. In both procedures, individuals who received social information above their previous year's contribution are in the upward social information condition, those who received social information below their previous year's contribution are in the downward social information condition, and those who received social information equal to their previous year's contribution are in the equal social information condition.

Results

Response rate. In the phone experiments, all participants who received the social information completed their phone call and made a pledge. Therefore, the response rate is 100%. In the mail experiment, materials were sent to 2883 renewing members. The response rate to these mailings was 4.65%, typical for these types of solicitations for this station. We found no significant differences in the return rate from our three conditions (upward = 4.75%, downward = 4.43%, equal = 4.59%) based on a probit regression analysis ($p = 0.9368$).

Amount contributed. Social comparisons influence contribution amounts. The first column of Table 1 shows the main effect of social information has a significant relationship to the change in contributions. Our dependent variable here is the difference between the individual's contribution in response to this appeal and his contribution in the prior year. We include control variables of the solicitation method (mail or phone), and the gender of the responder, which are themselves not statistically significant.

In addition, it is possible that the impact of social information would be higher over the phone than via mail. To check if this were the case, we added an interaction term to our regression; interacting the independent variable of interest (social information minus last year's contribution) with the solicitation method in the second column of Table 1. This interaction term is insignificant, and does not change the significance levels of the other independent variables. Thus we conclude that the impact of social information is equally significant via mail or on the phone.

Figure 1 presents a scatterplot of the variable of interest. The X-axis represents the difference between the social information and the last year's contribution. The Y-axis represents the change in contribution from last year to this year. Although many of the points are overlapping (for example, 0,0 contains 17 observations), the

[6]Other information collected on the response sheets is their address, how they want to pay for the pledges, and their credit card information. These data were again protected for confidentiality reasons.

Table 1 Change in contributions

	Estimate SE	Estimate SE	Estimate SE
Intercept	−3.05	−2.95	7.77
	6.31	6.36	9.21
Social Information − Last Contribution	0.14**	0.14**	0.13*
	0.05	0.05	0.06
Method (Mail = 1)	−9.26	−9.81	−11.09
	5.57	6.41	6.44
Gender (Female = 1)	−2.37	−2.24	−3.19
	5.39	5.45	5.47
SocInfo-Last Cont × Method		0.01	−0.01
		0.05	0.06
SocInfo-Last Cont × Down Dummy			0.17*
			0.09
N	225	225	225
R^2 adj.	0.0413	0.0371	0.0439

* $p < 0.05$

** $p < 0.01$

positive relationship described above is clear. This relationship is seen in the simple slope (solid line) of 0.1625. For each extra dollar that the other donor gives over what the target donor gave last year, the target donor increases their own contribution by 16 cents. Thus we find support for our first hypothesis; both upward and downward social information significantly impacts contributions.

Our second hypothesis is about the asymmetric effects of upward and downward social information. As shown in Fig. 1, slopes for the positive domain and the negative domain are different (hatched line). In particular, the relationship between downward social information and the decrease in contributions (0.2560) is twice as strong as the relationship between upward social information and the increase in contributions (0.1036).[7]

As shown in Fig. 2, when the social information is lower than the donors' previous contribution, donors decrease their contribution by an average of US $24.05 ($SE = 10.24$, $N = 42$). When the social information is higher than the donors' previous contribution, donors increase their contribution by an average of US $12.08 ($SE = 6.859$, $N = 161$). In contrast, when the social information provided is exactly equal to the donors' previous contribution, contributions increase by an average of

[7] These numbers differ somewhat from those in Table 1 because they represent unconditional slopes, without control variables.

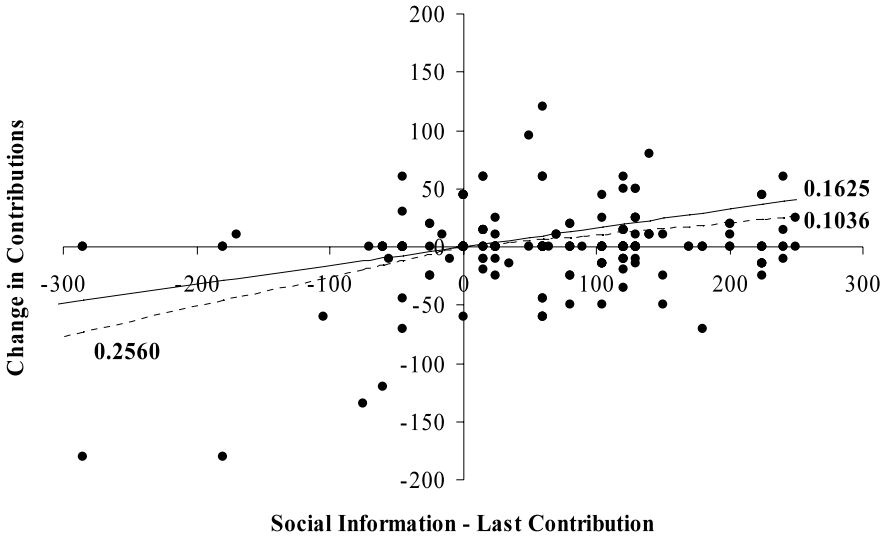

Fig. 1 Change in contributions versus (Social Information—Last Year's Contribution)

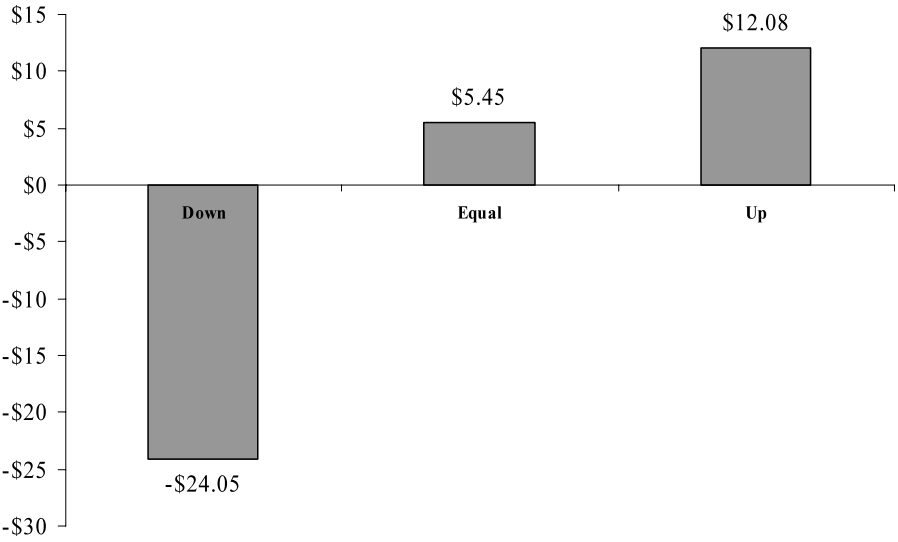

Fig. 2 Change in contributions by treatment

US \$5.46 ($SE = 4.890$, $N = 22$).[8] An ANOVA analysis rejects the null hypothesis that all three treatments are equal to each other ($F = 3.44$, $p = 0.0338$). Furthermore,

[8] Although amounts were randomly assigned to respondents, we had more participants in the "high" treatment than either of the other two. The social information numbers were chosen in consultation with the radio station in order to avoid reducing their earnings from this experiment. The social information we used (US \$75 and US \$180) are (respectively) the median and 80th-percentile of the previous year's contribution distribution.

a nonparametric Wilcoxon test finds a significant difference between the downward and upward treatments ($z = 2.01$, $p = 0.044$) but no other pairwise comparisons are significantly different.

We can statistically test whether the downward impact of social information is stronger than the upward impact of social information adding an interaction term to our regressions above (shown in the third column of Table 1). We find a significant interaction, suggesting that the relationship between the social information and one's own contribution is significantly stronger in the downward social information treatments than in the upward social information treatments. This result supports our second hypothesis.

5 Discussion and conclusion

Both hypotheses were supported by this data. Overall we show that both upward and downward social information influences renewing members' contributions. Those who received social information higher than their previous contribution increase their donation, while those who received social information lower than their previous contribution, decrease their donation. Furthermore, the downward impact of downward social information is approximately twice the upward impact of upward social information.

This research is important in the academic literature of public goods provisions and for industry fundraising practitioners. By showing the differential effect of upward and downward social information, we demonstrate the mixed motivations people have when making a charitable contribution. On one hand, they want to do good, but on the other hand, they want to do so cheaply.

Our results allow for some simple parameterizations. Imagine that an individual is considering giving more (or less) than he had given in a previous year. He sees upward social information. Increasing one's gift in the upward social information condition represents two conflicting forces: increased giving to conform to norms (N) and decreased giving (or lack of increased giving) to satisfy self-interest (SI). We can represent this as $N - SI$. Note that since the net effect is positive (shown in this study and in previous work), we know that $N > SI$. But how much greater?

In the downward social information condition, these forces work in tandem, generating a change in contribution equal to $N + SI$. Since the impact of downward information is twice the impact of upward information, we conclude that $N + SI = 2 * (N - SI)$, and that $N = 3SI$. Thus these results suggest that the desire to conform to the norm (to do good) generated by the social information is approximately *three times* as strong as the desire to give less to satisfy self-interest (to do so cheaply). Of course, this parameterization is only rough, and will almost certainly vary depending on the reasonableness of the social information, the strength of the norm that results from it, and the setting in which the fundraising occurs. Nonetheless, it highlights the importance of social information and the resulting norms in the contribution decision.

This result is also of interest to practitioners, as it experimentally demonstrates the detrimental effect of mentioning a contribution that is lower than donors' previous or intended contribution. When hosts or fundraisers make their appeals, mentioning a

low contribution made by another donor can lead to significantly reduced contributions.

Like all research, this research has limitations. One is the generalizability of the results. We believe that the influence of social information on donation behavior that we identified in public radio should be generalizable to other nonprofit organizations. However, there may be differences between different types of nonprofits. For example, donors to international humanitarian relief and development nonprofit organizations such as CARE and Oxfam are typically not also beneficiaries of the organizations' work, unlike the public radio situation where donors listen to the programming. Further research is needed to test whether people react similarly to social information in "helping the needy" situations like international humanitarianism relief as in "providing public good" situations like this one.

A second limitation has to do with the nature of the contribution to the public good. Here donors are giving money, while in other situations agents are asked to refrain from consuming, as in environmental situations. We think the principles of mixed motivations of voluntary actions are generalizable to situations like common pool resource consumption, but this would need to be tested.

In summary, this research is the first to demonstrate the effect of downward social information on charitable contributions. It provides important insights into the understanding of the mixed motives involved in public good provision as well as identifying concerns for practitioners who implement fund drives in public radio and other nonprofit organizations.

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