Image Concerns in Pledges to Give Blood: Evidence from a Field Experiment*

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Abstract

We use a field experiment to study how social image concerns affect a commonly used strategy to attract new donors: pledges to engage in a charitable activity. While waiting for their appointment, visitors to a local government office are offered sign-ups for blood donations in a crowded waiting room. We randomly vary the visibility of the pledge to donate and the organization for which blood donations are solicited (charitable vs. commercial). Our setting provides natural variation in who observes the pledge. We do not find that visibility increases pledges to donate. Exploring heterogeneity in treatment effects, we find that visibility increases pledges when participants are observed by friends or family. Almost all subjects renege on their pledge.

Keywords: prosocial behavior, blood donations, social image, commitment, pledges, field experiment.

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1 Introduction

Ethical considerations make the supply of human tissues reliant on voluntary contributions (Roth, 2007). Donors face substantial private costs in order to help other people in need, often without receiving compensation. Absent a market clearing mechanism, frequent shortages constitute a challenge for healthcare providers (Garbarino et al., 2017). Explicitly or implicitly appealing to image concerns of prospective donors is a commonly used way to help overcome the under-provision of voluntary contributions. We want to be seen by the people around us as being generous and altruistic. Costly prosocial behavior such as donations of time, money, or body tissue can act as a signal to others that demonstrates such generosity (Benabou and Tirole, 2006). Although people do not always welcome such signaling opportunities (DellaVigna et al., 2012; Andreoni et al., 2017), social image concerns can be leveraged to induce individuals to behave in socially desirable ways, including giving to charity (Ariely et al., 2009), energy conservation (Yoeli et al., 2013), editing public content online (Gallus, 2017) and paying taxes (Perez-Truglia and Troiano, 2018; Garcia et al., 2020).

In many settings, prosocial actions themselves cannot be made public. Before the action, however, social pressure can be leveraged by encouraging public pledges to act charitably in the future. Pledges are used to rally individuals to contribute to future charitable activities, for example through calls for action in online and offline social networks. These pledges are the focus of our study.

Two steps are involved for a pledge to increase contributions to a charitable activity: First, individuals need to take up the initial commitment. Second, individuals need to follow through and fulfill their pledge. In this paper, we set out to study how social image concerns affect both of these steps.

In the first step, an observable promise to do good – similarly to an observable act of doing good – can be used to signal generosity to others. We study how pledges are affected by the visibility of the decision to pledge.

In the second step, we are interested in whether additional pledges induced by our treatment translate into additional donations. Various mechanisms can explain why individuals would renege or follow through (Heinicke et al., 2019). A pledge can produce an internal commitment that individuals with preferences for moral consistency (Cioffi and Garner, 1996; Cialdini and Trost, 1998) or promise-keeping (Charness and Dufwenberg, 2006) might not want to break. Increasing the psychological costs of reneging could then increase follow up (Andreoni and Serra-Garcia, 2021b).

We conduct a framed field experiment (Harrison and List, 2004) in a mid-sized German city where various organizations compete for prospective blood donors. In the service center of the municipal government located in the city hall, we intercept

customers waiting for their appointment with an offer to sign up for blood drives scheduled after the experiment. The experiment randomly varies treatments over two dimensions: First, we vary the organization holding the blood drive. We work with the German Red Cross, which never pays its donors, and a private commercial blood bank, which remunerates donors with 20 euros per donation. Second, we vary whether the sign-up is offered in private on a tablet computer only visible to our subject or in public verbally by our enumerator. We then exploit natural conditions of the venue of intercept for the identification of the behavioral mechanism that we are interested in: Other customers as well as friends and family members coming along to the appointment serve as a "audience" for the public pledge. The sign-up is not binding, but represents a pledge vis-à-vis the blood collector. In the months after the survey, we observe whether our subjects choose to donate by matching their names with the databases of the two collectors.

In our study, 27 percent of participants pledge to donate blood in the months after the experiment. On average, making the pledge visible has no significant effect on the pledging rate. However, we find evidence that is suggestive of heterogeneous treatment effects: Making the pledge public among participants who bring friends or family members to the city hall increase pledging rates by an estimated 16.8 percentage points. This effect is driven by participants who can pledge to donate to the Red Cross as opposed to the commercial blood bank. We interpret this evidence as consistent with a theoretical framework in which image returns from prosocial actions are highest when these are both unambiguously prosocial and observed by people we care about. Blood donations at the commercial blood bank may not be perceived as unambiguously prosocial because of the monetary incentive associated to the donation.

Turning to actual donations, we find that less than 1 percent of pledges were fulfilled. The low rate makes it hard to investigate how our treatments affected donations. While our experimental design aimed to closely resemble a real-world blood drive, we also discuss potential extensions that could shed more light on the low fulfillment.

This paper makes three contributions to the literature. First, it contributes to a burgeoning literature in psychology and economics concerned with the effect of social image concerns on behavior in general (Bursztyn and Jensen, 2017). We provide the first experimental test of social image models in the setting of blood donations. Second, we contribute to a literature on "soft" commitment devices that do not impose material, but only psychological costs from deviation (Bryan et al., 2010). This literature mostly studies how such devices can help avoid temptations. Our study uses a soft commitment device that leverages the immediate temptation to give, which alone

may not necessarily translate into future giving behavior (Andreoni and Serra-Garcia, 2021b). Using a design similar to ours, Exley and Naecker (2016) show that social image concerns drive commitment take-up in workshop attendance, but do not translate into higher attendance. A set of recent studies explicitly focus on pledges for charitable giving: Fosgaard and Soetevent (2018) conduct a field experiment with a charity and, similar to us, find that most individuals renege on their pledges. Andreoni and Serra-Garcia (2021a) confirm that pledges by themselves are not effective at increasing giving, though follow-up that increases the cost of reneging can effectively increase giving. Third, with our focus on the recruitment of new donors, we see this study as complementary to a literature that has studied incentives to activate existing donors (Lacetera et al., 2014; Sun et al., 2015; Vuletić, 2015; Leipnitz et al., 2018; Goette and Tripodi, 2020).

While our reasoning extends to other forms of costly prosocial behavior, we see our results as particularly relevant in the domain of human tissue donations (see e.g. Almeling, 2006; Bergstrom et al., 2009; Kessler and Roth, 2012; Han and Wibral, 2020). In light of demographic trends and increasing demand for blood in medical procedures, blood banks find it increasingly challenging to recruit new donors (Greinacher et al., 2011).[1] In 2016, blood services across 21 countries reported a drop in the number of newly-recruited donors of 27.6 percent compared to the previous year (NHS Blood and Transplant, 2016). The results of our paper speak to this challenge.

2 Methods

2.1 Theoretical Framework

To fix ideas for our empirical analysis of how social image concerns can affect pledges to donate, we rely on the theoretical framework by Benabou and Tirole (2006), in which the decisions of agents to participate in some prosocial activity carry reputational costs and benefits. We abstract from direct payoffs from intrinsic and extrinsic motivations to participate in the prosocial activity and focus on the implications of visibility using the simplified model from Bursztyn and Jensen (2017).

An agent i undertakes a binary action, say a pledge to donate, $p_i \in \{0, 1\}$. This action may be visible to a reference group j. The action is informative about the type of agent $\sigma_i \in \{l, h\}$, where to her reference group j type h is seen as more socially-

[1] Approaching prospective donors in public places through face-to-face canvassing is one of the most commonly-used methods of donor recruitment for charities and blood banks (Australian Competition and Consumer Commission, 2017). By closely cooperating with two blood banks, we can study this recruitment method while maintaining ecological validity.

desirable by others than type l. Utility from social image to agent i is then

$$S_{i,j} = \lambda_{i,j} E_i \left[\omega_j\right] \Pr_{-i}(\sigma_i = h|p_i) \tag{2.1}$$

where $\lambda_{i,j}$ is the degree to which the agent cares about being perceived as socially desirable in her reference group j. $E_i \left[\omega_j\right]$ is the expectation that agent i has about how socially-desirable it is to be seen as a high type by other agents in her reference group j, measured by $\omega_j > 0$. Finally, $\Pr_{-i}(\sigma_i = h|p_i)$ is the probability that taking action p_i reveals agent i to be of type h to others in the reference group.

Following this framework, the three factors that make social image effects stronger are observability, how much i cares to impress j, and social desirability of the action. We test the following hypotheses:

Hypothesis 1 (Social image: immediate effect on pledges)**.** *Making the decision to pledge observable leads to an increase in pledges.*

Hypothesis 2 (Social image and social desirability)**.** *The effect of observability on pledges is stronger when pledges are made for socially more desirable actions.*

Hypothesis 3 (Social image and social proximity)**.** *The effect of observability on pledges is stronger when pledges are observed by friends or family members.*

Hypothesis 4 (Social image: downstream effects on donations)**.** *Making the decision to pledge observable leads to an increase in actual donations.*

2.2 Experimental Design

We recruit subjects among customers of the service center of the Bonn municipal government. This is an ideal natural setting to research because it allows us to sample from a diverse population that is relevant to study the behavior of potential blood donors, and the physical space of the waiting area with many other people around provides a natural "audience" that we can use to make social image concerns salient.

After a short survey, we offer to sign up participants for blood drives scheduled in the city over the following weeks. In a 2×2 between-subject design experiment, we randomly vary the visibility of the pledge (*PUBLIC* or *PRIVATE*) and the organization that subjects can pledge to donate to (*CHARITABLE* or *COMMERCIAL*).[2] The two organizations we work with, a well-known charity collecting unpaid donations and a commercial blood bank that pays its donors for giving blood, are likely perceived

[2]The initial design had a third treatment in which subjects could chose between a charitable pledge and a commercial pledge to donate. We exclude this treatment from the main paper because it is difficult to interpret. Design and data are presented in Online Appendix D.

differently in terms of social desirability in the sample of people in our study. Design and procedures are detailed in Online Appendix C.

Within this design, we have natural variation in the reference groups of prospective donors, which is orthogonal to our treatments. We leverage this variation to study how changing the extent to which subjects may care about the opinions of their audience shapes social image effects.

2.3 Sample Characteristics and Balance Across Treatments

Over four weeks, our enumerators approached 1,072 individuals using a random sampling procedure. From this random sample, 264 refused to participate and 194 aborted the survey. Individuals who aborted the survey early tend to be older, not native, and visiting the city hall in groups. Compared to the population of the city of Bonn, our final sample of 614 respondents has similar gender composition, but is younger and includes fewer immigrants (Online Appendix Table A1). Seven subjects abort after treatment assignment, with no differential abortion rates across treatment groups. Our sample is mostly balanced on observables (Table 1).

Table 1: Summary Statistics for Participating Subjects, by Treatment Assignment

	Full sample	Charitable		Commercial		P-value
		Private	Public	Private	Public	
a) Self-reported before treatment						
Frequency of altruistic activity	3.059	3.086	3.019	3.067	3.056	0.922
	(0.037)	(0.064)	(0.078)	(0.076)	(0.082)	
Importance of donating blood	4.007	4.030	3.955	3.881	4.169	0.089
	(0.043)	(0.076)	(0.083)	(0.095)	(0.093)	
Perception of blood donors as altruists	4.153	4.157	4.242	4.074	4.121	0.551
	(0.036)	(0.064)	(0.065)	(0.082)	(0.081)	
Awareness of institutions: Red Cross	0.855	0.833	0.892	0.815	0.887	0.155
	(0.014)	(0.027)	(0.025)	(0.034)	(0.029)	
Where would you donate: Red Cross	0.412	0.409	0.427	0.422	0.387	0.914
	(0.020)	(0.035)	(0.040)	(0.043)	(0.044)	
Awareness of institutions: Commercial	0.132	0.157	0.089	0.185	0.089	0.031
	(0.014)	(0.026)	(0.023)	(0.034)	(0.026)	
Where would you donate: Commercial	0.029	0.030	0.000	0.044	0.048	0.060
	(0.007)	(0.012)	(0.000)	(0.018)	(0.019)	
Awareness of institutions: University	0.705	0.667	0.752	0.741	0.669	0.202
	(0.018)	(0.034)	(0.035)	(0.038)	(0.042)	
Where would you donate: University	0.559	0.561	0.533	0.565	0.573	0.918
	(0.020)	(0.035)	(0.040)	(0.043)	(0.045)	
Respondent age	34.415	33.556	34.312	35.807	34.403	0.359
	(0.480)	(0.827)	(0.966)	(1.034)	(1.075)	
Respondent years lived in Bonn	5.666	5.657	5.675	5.689	5.645	0.992
	(0.150)	(0.268)	(0.291)	(0.327)	(0.327)	
b) Uptake of pledges after treatment						
Subject pledged to donate	0.238	0.232	0.299	0.200	0.210	0.179
	(0.017)	(0.030)	(0.037)	(0.035)	(0.037)	
c) Measured by enumerator in post-survey questionnaire						
Male	0.489	0.424	0.459	0.519	0.597	0.018
	(0.020)	(0.035)	(0.040)	(0.043)	(0.044)	
Respondent came in group	0.300	0.364	0.255	0.304	0.250	0.205
	(0.026)	(0.049)	(0.051)	(0.056)	(0.047)	
Respondent immigrant	0.130	0.131	0.127	0.126	0.137	0.993
	(0.014)	(0.024)	(0.027)	(0.029)	(0.031)	
Intensity of social image concern	3.438	3.212	3.618	3.489	3.516	0.004
	(0.045)	(0.081)	(0.085)	(0.097)	(0.101)	
Ability to complete survey	4.203	4.141	4.128	4.348	4.242	0.008
	(0.029)	(0.052)	(0.049)	(0.061)	(0.071)	
Observations	614	198	157	135	124	

Notes: Standard errors in parentheses. 'Frequency of altruistic activity' asked interviewed subjects how often they engage in altruistic activities, on a 5-point Likert scale where 1 is "never" and 5 is "very often". 'Importance of donating blood' asked interviewed subjects how important they consider donating blood, on a 5-point Likert scale where 1 is "not important" and 5 is "important". 'Perception of blood donors as altruists' asked interviewed subjects to what extent they think is true that a friend or family member is altruistic for donating blood, on a 5-point Likert scale where 1 is "not true" and 5 is "true". 'Awareness of institutions' is an indicator for whether subjects reported knowing the organization from a list we provided. 'Where would you donate' indicates where subjects would prefer donating if they had to choose. 'Respondent age' in years is based on the date of birth from the consent form. 'Respondent years lived in Bonn' is based on survey question, censored at 8 years. 'Respondent came in group' indicates whether the indicator was seen by the enumerator entering the city hall with an acquaintance. 'Respondent immigrant' indicates whether the enumerator marks the subject as likely immigrant. 'Intensity of social image concern' asked enumerators post-survey to record their perceived intensity of social image, on a 5-point Likert scale where 1 is "very weak" and 5 is "very strong", based on how crowded and how quiet the waiting area was. 'Ability to complete survey' asked enumerators post-survey to judge perceived attention and ability to complete survey, on a 5-point Likert scale where 1 is "very low" and 5 is "very high". P-value is for a one-way ANOVA on ranks (Kruskal-Wallis) test comparing the four groups.

3 Results

In this section, we study how visibility affects the take-up of pledges to donate blood. We test the hypotheses that social recognition encourages pledges to donate and that the effect of social recognition is stronger when subjects are asked to pledge a donation with a charitable organization relative to a commercial one. We then move to heterogeneity analysis, where we exploit the fact that a significant number of study participants are accompanied to the city hall by one or more friends or family members. Using administrative records of blood donations linked to our survey experiment, we conclude by studying how pledges translate into donations.

3.1 Take-up of Pledges in City Hall Experiment

3.1.1 Average Treatment Effects on Pledges

We leverage our experimental design to estimate the causal effect of social recognition on pledge uptake. We estimate the following linear probability model:

$$P_i = \alpha + \beta_1 PUBLIC_i + \beta_2 COMMERCIAL_i + \beta_3 PUBLIC_i \times COMMERCIAL_i + \mathbf{X}_i'\delta + \varepsilon_i \qquad (3.1)$$

where P_i denotes individual pledging behavior, $PUBLIC_i$ takes value 1 if pledges are made in public and 0 if in private, $COMMERCIAL_i$ takes value 1 for subjects that are randomized into treatments where we solicit pledges to donate with the commercial blood bank and 0 for subjects that are asked to donate with the charitable organization, and $\mathbf{X}_i$ is a vector of controls. We include covariates to improve precision of treatment effect estimates and account for small imbalances in treatment assignment. Instead of manually choosing which covariates to include, we rely on a principled approach for variable selection called double lasso that is designed to avoid inflated Type I errors (Urminsky et al., 2016).

Table 2 estimates Equation (3.1) with and without controls (columns 3–4). Columns 1–2 estimate the effect of social recognition in the full sample. Point estimates are directionally consistent with the hypotheses that visibility would increase pledges to donate (Hypothesis 1) and that the visibility effect would be stronger when subjects are asked to give blood to a charitable organization (Hypothesis 2). However, these estimate are not statistically significant. For the visibility effect in the overall sample, we are able to rule out that the effects are larger than 11 percentage points with 95 percent confidence.

Table 2: Social Image Effects on Pledges to Donate Blood

	Pledged to donate			
	(1)	(2)	(3)	(4)
Baseline:	*Private*		*Private and Charitable*	
Public	0.041	0.044	0.067	0.080
	(0.035)	(0.034)	(0.047)	(0.046)
Commercial			-0.032	-0.017
			(0.046)	(0.045)
Public x Commercial			-0.057	-0.080
			(0.069)	(0.069)
Control variables				
Double lasso		✓		✓
Baseline mean	0.219	0.219	0.232	0.232
Observations	614	614	614	614
R^2	0.002	0.084	0.008	0.089

$^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$

Notes: Ordinary least square regression, where the outcome is a binary variable indicating whether the respondent pledged to donate blood. Robust standard errors in parentheses. Control variables are selected using double lasso among all personal characteristics (which include gender, whether the subject is with friends or family at the time of the interview, age group, migration background, frequency of altruistic activity, perceived relevance of donating blood, and perceived altruism of people who donate blood, years lived in town), indicators of awareness of the blood market (which include binary variables indicating awareness of the Red Cross, awareness of the commercial blood bank, and awareness of the Bonn university hospital blood collection center), and preference for where they would donate (between Red Cross, commercial blood bank, and Bonn university hospital). "Baseline mean" is the pledging rate in the baseline group – which corresponds to Private treatments for columns 1–2, and to the Private and Charitable treatment for columns 3–4.

3.1.2 Heterogeneity of Treatment Effects by Audience Composition

In the previous subsection, we established the lack of statistically significant average treatment effects of our experimental manipulations on the take-up of pledges. In this subsection, we investigate audience composition as a source of heterogeneity in the treatment effect.

Our study was designed to make social image concerns salient in front of a natural audience in the city hall. The simple theoretical framework outlined in Section 2.1 indicates that our visibility should have stronger effects when participants care more about this audience. Our study measured whether friends or family members came along to the city hall appointment and were thus present during the treatment. This is the case for 23 percent of participants.[3] We would expect that the presence of others is an important non-random source of variability for our visibility treatment.

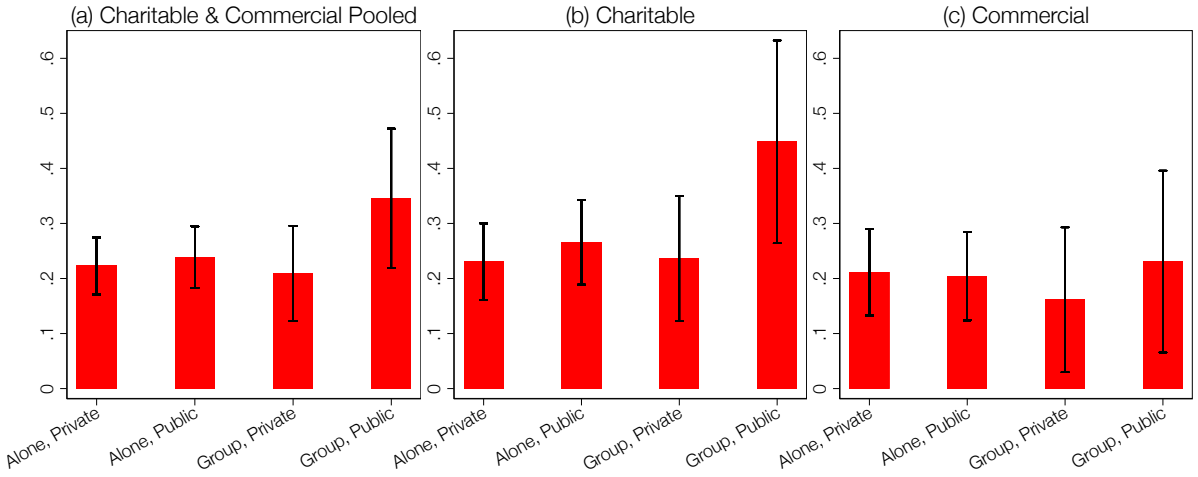
Before moving to the estimation of heterogeneous treatment effects, we confirm the importance of this source of heterogeneity in a more agnostic approach based on machine learning methods. We apply the generalized random forest algorithm by Athey et al. (2019) to train a causal forest that can be used to estimate conditional

[3]Conditional on coming in a group, an average of 1.3 friends or family members accompanied our participants.

average treatment effects of the visibility manipulation on the uptake of pledges (Online Appendix B provides details). As covariates we include all observable participant characteristics and all survey questions about participant charitable behavior and awareness of different avenues to donate blood (cf. Table 1). In our estimated forest, the indicator of whether or not participants came in a group is the most important covariate in explaining heterogeneity.[4] This validates our theoretically-motivated focus on the interaction between social image concerns and social proximity, but does not imply that other covariates are not important in explaining heterogeneous treatment effects.[5]

Figure 1 descriptively illustrates the take-up of pledges by our visibility treatment for subgroups of participants that came in a group versus those that came alone. We note that the visibility treatment has stronger effects for subjects that come in a group (panel a), which appears to be driven mostly by pledges in the *CHARITABLE* treatment (panel b) as opposed to pledges in the *COMMERCIAL* treatment (panel c).[6]

Figure 1: Share of Subjects Pledging a Blood Donation Across Treatments, Split by Whether They Visit the City Hall Alone



Notes: "Public" and "private" are randomly assigned treatments while "alone" and "group" are based on whether or not the subject is accompanied by one or more friends or family members. Error bars indicate 95% confidence intervals.

To assess the interaction quantitatively, we estimate the following linear probabil-

[4]The 'importance' of each variable is a simple weighted sum of how many times the variable was split on at each depth in the forest. See Online Appendix B for a more detailed explanation.

[5]In Online Appendix Table B1, we provide heterogeneity analyses for gender and age and find no evidence of heterogeneous treatment effects along these dimensions.

[6]The figure also illustrates that pledges are lower in the *COMMERCIAL* treatment, which could be interpreted as a crowding out effect of incentives. We do not favor this interpretation. There are other reasons that make the German Red Cross in the *CHARITABLE* treatment potentially more attractive to donors despite the lack of material incentives, including lower awareness of or reputational concerns associated with the commercial blood bank.

ity model:

$$P_i = \alpha + \beta\,(PUBLIC_i \times GROUP_i) + \mathbf{X}_i'\delta + \varepsilon_i \tag{3.2}$$

where $GROUP_{e,i}$ is an indicator for whether individual i came to the city hall alone ($GROUP_{e,i} = 0$) or in a group ($GROUP_{e,i} = 1$) and all other variables are defined as in Equation (3.1).[7]

Table 3: Heterogeneous Social Image Effects on Pledge to Donate Blood
(Coefficient Estimates, Standard Errors in Parentheses)

	Pooled			Charitable			Commercial		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
				Baseline: Private, Alone					
Private, Group	-0.013	-0.051	-0.053	0.006	-0.039	-0.045	-0.050	-0.064	-0.064
	(0.051)	(0.051)	(0.051)	(0.068)	(0.068)	(0.068)	(0.078)	(0.079)	(0.079)
Public, Alone	0.016	0.008	0.002	0.035	0.015	-0.001	-0.007	-0.028	-0.028
	(0.039)	(0.039)	(0.039)	(0.053)	(0.053)	(0.055)	(0.058)	(0.058)	(0.058)
Public, Group	0.123	0.125	0.121	0.218*	0.197*	0.183*	0.019	0.024	0.024
	(0.070)	(0.065)	(0.065)	(0.099)	(0.090)	(0.089)	(0.093)	(0.091)	(0.091)
				Control variables					
Double lasso		✓	✓		✓	✓		✓	✓
Social attention			✓			✓			✓
Public: Group-Alone	0.120	0.168	0.171	0.177	0.220	0.229	0.077	0.116	0.116
(p-value)	(0.169)	(0.042)	(0.037)	(0.146)	(0.049)	(0.041)	(0.526)	(0.331)	(0.331)
Observations	614	614	614	355	355	355	259	259	259
R^2	0.007	0.090	0.093	0.017	0.122	0.128	0.002	0.130	0.130

$^*p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$

Notes: Table shows estimates from ordinary least square regressions where the outcome is a binary variable indicating whether the respondent pledged to donate blood. Columns 4 to 6 (7 to 9) restrict the sample to treatments in which we solicit pledges to donate blood either with the German Red Cross (commercial blood bank). Robust standard errors in parentheses. Control variables are selected using double lasso among all personal characteristics (which include gender, whether the subject is with friends or family at the time of the interview, age group, migration background, frequency of altruistic activity, perceived relevance of donating blood, and perceived altruism of people who donate blood, years lived in town), indicators of awareness of the blood market (which include binary variables indicating awareness of the Red Cross, awareness of the commercial blood bank, and awareness of the Bonn university hospital blood collection center), and preference for where they would donate (between the Red Cross, commercial blood bank, and Bonn university hospital). "Social attention" captures enumerator assessment of social attention intensity during the decision to pledge. "Public: Group-Alone" provides the difference of the social image effect between Group and Alone conditions and tests the null hypothesis that the linear combination $(PUBLIC \times GROUP - PRIVATE \times GROUP) - (PUBLIC \times ALONE - PRIVATE \times ALONE)$ is equal to 0. Online Appendix Table A3 presents a logit model as robustness check.

Table 3 presents estimates of Equation (3.2) on our full sample and separately for each of the two visibility treatments (*CHARITABLE* or *COMMERCIAL*).[8] In each sample, we estimate the model without controls, with controls chosen by the double lasso method as described above, and with an additional control for enumerator assessment of social attention intensity during the decision to pledge. The bottom of Table 3 presents a test of the null hypothesis that the linear combination $(PUBLIC \times$

[7] Online Appendix Table A3 presents results from a logit model as additional robustness check. All results hold.

[8] We prefer the estimation in separate subsamples to a triple interaction term for ease of interpretability.

$GROUP - PRIVATE \times GROUP) - (PUBLIC \times ALONE - PRIVATE \times ALONE)$ is equal to 0.

We find that after including the lasso-selected set of controls to increase precision, the *PUBLIC* treatment increases willingness to pledge among participants who came in a group without affecting participants coming alone (column 2, $p = 0.042$). This effect is driven by participants in the *CHARITABLE* treatment (column 5, $p = 0.049$), not by participants in the *COMMERCIAL* treatment (column 8, $p = 0.331$). This effect is consistent with the theoretical mechanism that individuals care more about signaling altruism to a socially closer audience (Hypothesis 3).

3.1.3 Discussion of Treatment Effects on Pledges

In our theoretical framework, all three factors determining social image utility can explain this null result: (i) it could be that the probability that others can update their assessment of the subject's generosity based on the pledge is very small, i.e. that the signal is not effective, (ii) it could be that subjects do not care to be perceived in a positive light by the group of people in the city hall waiting area, or (iii) it could be that subjects believe that pledging to donate to either of the blood banks is not seen as socially desirable by the group of people in the waiting area. We now discuss each of the three factors in turn.

Our survey data suggests that (iii) alone is unlikely to explain why social image effects are not operational. When we ask subjects pre-treatment whether they agree or disagree that blood donors are perceived as altruists, we find that 41 percent of subjects strongly agree and another 40 percent agree (mean of 4.15 on a 5-point Likert scale).

Turning to (ii), Section 3.1.2 suggests that audience composition matters.[9] One potential concern with this interpretation is that when family and friends are in the audience, visibility may also become more salient. We can shed more light on this interpretation using additional data that we collect after each interview. After each interview is completed, enumerators provide a subjective evaluation of the salience of visibility during the interview. In selected specifications (Table 3, columns 3, 6, and 9) we control for this measure and we do not find that it explains why visibility effects are stronger among subjects surrounded by friends and family. In sum, orthogonality of the visibility treatment allows us to establish that people coming in a group are more sensitive to visibility: This can be either because audience composition matters or because of differences in unobservable characteristics of people visiting the city hall

[9] A related interpretation is that respondents that visit the city hall with friends or family are systematically more concerned about how others perceive their actions. Making progress on this distinction requires experimental manipulation of the audience composition, which we leave to future research.

in groups.

Turning to (i), we cannot rule out that our visibility manipulation failed to increase the probability that others could update their assessment of the subject's generosity based on the pledge. Pledges are inherently different from actual prosocial behavior because they depend on later fulfillment. It could be that public image concerns are weak because a reference group of strangers in the municipal service center cannot hold subjects accountable to fulfill the pledge later. This would be consistent with our finding that social image concerns are only operational for subjects who are accompanied by other people.

Finally, we consider attrition as a potential confounder. Of the 194 subjects who dropped out after consenting to participate, only 7 did so after treatment assignment, with no significant difference between treatments. This attrition is negligible and suggests that internal validity of our study is not affected.

3.2 Fulfillment of Pledges at Blood Drives

Our study was designed to investigate the effect of making the choice to commit to a blood donation visible on stated willingness to donate. By matching our data with administrative records of the two blood banks, we can assess how social image concerns affect fulfillment rates of pledges, i.e. actual donations (Hypothesis 4).

We find that the conversion of pledges into actual donations is extremely low. From the initial sample of 614 study participants, we discard 18 observations for which we did not obtain full names. Of the 596 remaining observations, 141 (23.66 percent) pledged to make a blood donation in April or May 2017. Of those, only one subject donated during the suggested period. Surprisingly, of the 455 participants who did *not pledge* to donate, four donated during the same period following our survey (Table 4). These conversion rates are low in comparison to another study that similarly elicits pledges to donate blood in a diverse sample of university students that are not necessarily already blood donors (Stutzer et al., 2011).[10]

Among all 596 participants in our final sample, 65 had previously donated either at the German Red Cross or at the commercial blood bank, with no significant differences between treatment assignment. Our data does not include the dates of previous donations so we do not know how active these donors are. While the number of actual donations is too small for a statistically meaningful comparison, it appears that participants who have previously donated blood were slightly more likely to donate following our interview. Among the 65 participants that had previously donated, three

[10] Stutzer et al. (2011) document a conversion rate of about 54 percent for pledges over blood donations that take place on the same day.

Table 4: Fulfillment of Pledges at Blood Drives, by Treatment Assignment (Number of Subjects)

	Whole sample	Charitable		Commerical	
		Private	Public	Private	Public
a) Name matching and donor status of study subjects					
All Participants	614	198	157	135	124
Matched with donor databases	596	193	151	131	121
Previously donated with either blood collector	65	18	16	14	17
b) Pledges and donations					
Pledged a donation in study	141	44	45	26	26
of which donated	1	1	0	0	0
Did not pledge a donation in study	455	149	106	105	95
of which donated	4	3	0	0	1

(4.6 percent) donated again following the interview. Among the 531 participants that had not previously donated, two (0.38 percent) donated following the interview.

We can benchmark these numbers to a series of experiments from Goette et al. (2009), in which a summer blood donation elicitation campaign lead to a conversion rate of approaches over donations of about 0.6 percent for Zurich citizens who had not previously donated and 45.3 percent of registered donors of the Swiss Red Cross in Zurich. Comparatively, our campaign was less effective at inducing donations particularly among subjects that have previously donated.

We can also benchmark our donation numbers to the national donation rates in Germany. Over the whole year of 2017, the rate of donations in the population was about 4.8 percent (Paul-Ehrlich-Institut, 2018). This rate is higher than the donation rate among first time and previous donors in our study, though we note that study participants only had a time window of approximately two months after the survey to donate with one of our partner organizations.

4 Conclusion

Although pledges to donate are widely used by organizations to encourage contributions, there is little evidence on their efficacy in changing behavior. Using an important real-world setting, we study experimentally how social image concerns affect both the uptake and the fulfillment of pledges to donate blood.

In our study, 27 percent of participants pledge to donate blood in the months after the experiment. Making the pledge more visible to a natural audience has no significant effect on the pledging rate. However, we find heterogeneity in the visibility treatment that is consistent with the theoretical mechanism that individuals care more

about signaling altruism to a socially closer audience.[11]

Importantly, pledges in our context do not appear to induce any additional blood donations. Almost all subjects renege on their pledge, with no detectable differences between treatments. The cost of soliciting pledges in this study clearly exceeds the benefit of the donations collected and points at a substantial loss of social welfare, even without taking into account the potential dead-weight losses of social recognition (Butera et al., 2019), pressure (DellaVigna et al., 2012), or crowding out of future donations (Adena and Huck, 2020). This finding is in line with Lacetera et al. (2016), who collaborate with a firm that runs fundraising campaigns in an online social network. They provide evidence that individuals may broadcast pledges to donate money in order to signal generosity. While broadcasting appears to be correlated with donations, they show in a separate field experiment that stated support and explicit pledges to donate largely fail to translate into donations. Our paper can be seen as important complementary evidence to Lacetera et al. (2016) for identifying the effect of an exogenous manipulation of the visibility of pledges. We also provide evidence that pledges are reneged even in the absence of intermediation fees that can discourage donations (Gneezy et al., 2014) and can serve as an excuse not to give (Exley, 2020).

We see the lack of fulfillment in our study as an important starting point for further academic and policy-oriented work: From an academic perspective, various mechanisms could explain why individuals would renege or follow through on their pledges. While our experiment was not designed to disentangle them, future studies could systematically vary the psychological costs of reneging on pledges, for example by varying the time lag between pledge and donation or by varying the framing of the initial pledge.[12] For policy, we take our findings as a reminder that simple, behaviorally-informed strategies designed to promote desirable behaviors can have their limits. While such "nudges" can steer people to perform one specific action, they may not have a sustained impact beyond a specific moment, location, or context. Organizations looking to harness pledges could use complementary strategies such as reducing the temporal or spatial gap between pledge and donation to increase conversion rates. When the pledge to donate and the actual donation have to remain separate in time or space, organizations could remind individuals of their pledge. Andreoni and Serra-Garcia (2021b) show that sending 'thank you' cards before the decision to donate can be highly effective in reducing reneging.

Compared to simple nudges such as defaults, the efficacy of pledges as a tool to

[11] Consistent with this finding, recent experimental evidence Karing (2018) indicates that social image effects on child immunization decisions are stronger for vaccines that are perceived to be more socially desirable.

[12] In our study, participants have several options to donate blood during a fixed time period after the pledge. We do not exogenously vary the time lag between pledge and donation.

change behavior likely depends on a more complex set of psychological and economic mechanisms. Far more research is needed to understand them.

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