

Monetary Rewards, Image Concern, and Intrinsic Motivation: Evidence from a Survey on Blood Donation

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Abstract

Using original survey data, this paper examines whether monetary rewards and honor rewards encourage or discourage blood donation. On the use of monetary rewards, we find that i) the overall sample's response to monetary rewards is positive, and ii) people who volunteer more frequently, people who donated blood regularly and people who donate blood to help others respond less positively to monetary rewards than otherwise. For honor rewards, we find that i) the overall sample's response is negative, and ii) people who volunteer more frequently, and people who donated blood regularly respond more negatively than otherwise. We also find that people who derived greater social image rewards do not respond less positively to a discount on future use of blood, and respond more positively to appeals for donation than those who derived less social image rewards. Our findings are broadly consistent with predictions from Benabou and Tirole (2006).

Key words: Intrinsic Motivation; Altruism; Monetary Rewards; Social Image Concern; Blood donation; Prosocial Behavior

1 Introduction

Understanding people's prosocial behavior is important since public goods are undersupplied. Of particular interest is how people respond to extrinsic rewards, like monetary rewards and honor rewards, in prosocial behavior. Do they encourage provision of prosocial behavior or discourage it?¹

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¹There are various forms of intrinsic motivation: pure altruism or warm glow (Andreoni, 1989; Benabou and Tirole, 2006). For the literature on the interaction between intrinsic motivation and extrinsic motivation, see, e.g., Frey and Oberholzer-Gee, 1997; Kreps, 1997; Benabou and Tirole, 2003 and 2006).

One particular prosocial behavior is blood donation.² There has been a long-standing debate on the usefulness of monetary rewards in blood donation (Titmuss, 1971). Recently, there has been empirical work on whether monetary rewards encourage or discourage blood donation.³ Most existing papers examine the overall response to material rewards, yet few examine the heterogeneity across people in the possible crowding out of intrinsic motivation by extrinsic rewards.⁴ Benabou and Tirole (2006) formally prove that the use of monetary rewards makes spectators doubt the donors' motivation, and this reduces donors' reward from their social images in others. Donors who donate more or have greater intrinsic motivation have a greater chance to enjoy the social image reward. With the introduction of monetary rewards, they lose more in the social image reward than those who donate little. Our survey data allow us to measure people's number of blood donations and their degree of intrinsic motivation by using their frequency of volunteering.

Second, most existing studies focus on material rewards. Aside from material rewards, one other reward method is the honor reward – mentioning donors' names in a prominent place or bestowing donors with an honor. Benabou and Tirole (2006) again offer an intriguing prediction: Using honor rewards can make spectators doubt the donors' motivation, reducing the rewards from their images in others, and the total incentives can be reduced. This effect is stronger for donors who derive greater social image rewards absent the extrinsic rewards since they lose more social image rewards. Our paper empirically examines the interaction of intrinsic motivation, honor rewards, and social image rewards.

Moreover, most current studies, whether utilizing surveys, existing data, or experiments, use subjects who have donated before. The findings of these studies thus are mainly about the response of existing donors. However, there are people who are willing but have never donated; an issue of attracting new donors. In our study, the survey population was found by creating a social-network event on Facebook.com and inviting peers and their friends to participate. Our survey thus reached people beyond existing donors.

We find that i) overall, subjects respond positively to monetary rewards, and ii) people who volunteered more frequently or donated blood more frequently respond to the money rewards less positively. For the effect of honor rewards, we find that i) the overall response to honor rewards is negative, and ii) people who volunteered more frequently or donated blood more frequently respond more negatively to publicizing their names. This is the first piece of evidence that we are aware of that tests the prediction of Benabou and Tirole (2006) on the interaction between intrinsic motivation, extrinsic rewards, and social image concern.

²See Titmuss (1971) for an insightful treatment of the topic.

³See Mellström and Johannesson (2008), Lacetera and Macis (2009; 2010a; 2010b), Lacetera et al. (2009), Goette and Stutzer (2008), and Glynn et al. (2002).

⁴An exception is Goette and Stutzer (2008) who found that the positive response is greater for less intrinsically motivated ones.

Our survey allows us to examine people’s response to other reward methods, including appeals to donors for blood during a shortage and rewards of a discount on future use of blood (blood credit). We find that i) people with greater intrinsic motivation respond to the appeals for blood more positively, and ii) unlike the response to the use of monetary or honor rewards, people who derive greater social image rewards do not respond less positively to the blood credit reward.

On the use of monetary rewards, the current literature sees different, sometimes conflicting results on the effect of monetary rewards on blood donation. Using a field experiment, Mellström and Johannesson (2008) find that female college students participating in an experiment on attitudes toward blood donation become less likely to agree to testing for blood donation when they are informed that they will be rewarded with money for testing, while men are indifferent. That is, monetary rewards discourage subjects from donating. Lacetera and Macis (2009) find that subjects respond positively to the reward of a paid day off. Using a field experiment, Lacetera and Macis (2010b) find that subjects respond positively to gift cards, although not to a small amount of pure cash reward. Using records from Red Cross, Lacetera et al. (2010) find that subjects respond to monetary rewards positively. Using a large-scale field experiment, Goette and Stutzer (2008) find that lottery tickets (but not cholesterol tests) significantly increased blood donations. Using a survey, Glynn et al. (2003) find that the response to rewards differs by locations of the survey conducted.

Our results offer an angle to help reconcile the superficially inconsistent findings on the effect of monetary rewards: The level of intrinsic motivation varies across people, therefore the effect of monetary rewards varies across people, and the overall effect depends on the percentage of people with high intrinsic motivation. In addition, the effect depends on whether the reward methods cause noisier inference or doubt of true motivation of donors by spectators.

Our paper contributes to the literature on the social image concern in motivating prosocial behavior. Lacetera and Macis (2010a) examine the motivating effect of a social image reward, and Ariely et al. (2009) examine the interaction between the social image concern and monetary rewards. Our paper examines the interaction between intrinsic motivation, extrinsic rewards, and social image concern. Our paper provides empirical evidence that exposing donors’ names or bestowing them with honor rewards can discourage people’s supply of prosocial behavior. Lacetera and Marcis (2010a) find that a publicly awarded medal for donating blood for a significant number of times encourages prosocial behavior. There is a big difference between the image reward in our paper and in theirs: The reward in our study is name mentioned in a school newspaper for donating any number of times, while the reward in Lacetera and Macis (2010a) is a medal for a significant threshold passed. We think our results complement each other and suggest that if an honor reward is used, it should be used in a way that minimizes the negative connotation of the reward. More generally, our paper suggests that, in picking forms

of reward methods, one criterion is whether it interfere with donors' social image concern.

The remainder of the paper is organized as follows. We tailor the framework of Benabou and Tirole (2006) to the setting of blood donation and derive testable predictions in Section 2. We introduce the data in Section 3, present results in Section 4, and conclude in Section 5.

2 Theoretical Discussion

We apply Benabou and Tirole (2006) to the setting of blood donation and derive testable predictions. People derive utility from three sources: intrinsic motivation (they get direct utility from donating) which varies across people; extrinsic motivation (material or honor rewards or other forms of rewards); and utility from how others think of them (concern for social images). That is, we model people's utility as

$$utility = v_a a + v_y y a + \delta \mu_a E(v_a) - c(a)$$

where a is the act of donation, v_a is the subject (he)'s magnitude of utility from donating (degree of intrinsic motivation, which can take the form of pure or impure altruism (Andreoni, 1989)), y is the monetary reward, v_y is the subject's magnitude of utility from monetary rewards, δ is the probability of his actions being known by others, μ_a is his concern for social image, $E(v_a)$ is his image in others' minds,⁵ and $c(a)$ is the cost of actions. Let $c(a) = \frac{1}{2}a^2$. When donors' actions are not publicized, there is still the possibility that, over time, they become known to people. And it is our maintained assumption that $\delta'(a) > 0$; the more a person donates, the more likely his blood donating behavior is known (and used by spectators to infer his true v_a).

Without any extrinsic rewards. People's utility function is: $Utility = v_a a + \delta \mu_a E(v_a|a) - c(a)$. We further assume that μ_a is constant across people and at a level of $\bar{\mu}_a$.⁶ Suppose that people's degrees of intrinsic motivation v_a are unobservable and follow a distribution $v_a \sim N(\bar{v}_a, \sigma_a^2)$. When people find out the subject's action a , they form an opinion of his v_a . Knowing it, the subject chooses a at a level s.t.

$$c'(a) = a = v_a + \delta \bar{\mu}_a \frac{\partial E(v_a|a)}{\partial a}. \quad (1)$$

Spectators form their opinion of the subject as: $E(v_a|a) = \bar{v}_a + \frac{\sigma_a^2}{\sigma_a^2}(a - \bar{v}_a - \delta \bar{\mu}_a \frac{\partial E(v_a|a)}{\partial a})$. So $\frac{\partial E(v_a|a)}{\partial a} = 1$. Plug it into Equation (1), we have

$$a = v_a + \delta(a) \bar{\mu}_a. \quad (2)$$

From this, we have $\frac{\partial a}{\partial v_a} > 0$; that is, without any extrinsic rewards, people's donating activity varies with their intrinsic motivation. And since $\delta'(a) > 0$, we have $\delta'(v_a) > 0$.

⁵It can also be thought of as his own judgement of himself – the self-image reward.

⁶We will examine a non-constant μ_a in subsequent sections.

With monetary rewards but without honor rewards. People's utility function is:

$Utility = v_a a + v_y y a + \delta \bar{\mu}_a E(v_a) - c(a)$. Assume $\begin{pmatrix} v_a \\ v_y \end{pmatrix} \sim N\left(\begin{matrix} \bar{v}_a & \sigma_a^2 \\ \bar{v}_y & \sigma_y^2 \end{matrix}, \begin{matrix} \sigma_a^2 & \sigma_{ay} \\ \sigma_{ay} & \sigma_y^2 \end{matrix}\right)$. F.O.C on a yields

$$c'(a) = a = v_a + v_y y + \delta \bar{\mu}_a \frac{\partial E(v_a|a, y)}{\partial a}. \quad (3)$$

Spectators thus form their opinion of the subjects' v_a as $E(v_a|a, y) = \bar{v}_a + \frac{\sigma_a^2 + y\sigma_{ay}}{\sigma_a^2 + 2y\sigma_{ay} + y^2\sigma_y^2}(a - \bar{v}_a - \bar{v}_y y - \delta \bar{\mu}_a \frac{\partial E(v_a|a, y)}{\partial a})$. Thus $\frac{\partial E(v_a|a, y)}{\partial a} = \frac{\sigma_a^2 + y\sigma_{ay}}{\sigma_a^2 + 2y\sigma_{ay} + y^2\sigma_y^2}$. Plug it back to Equation (3), we have

$$a = v_a + v_y y + \delta(a) \bar{\mu}_a \frac{\sigma_a^2 + y\sigma_{ay}}{\sigma_a^2 + 2y\sigma_{ay} + y^2\sigma_y^2}. \quad (4)$$

Note in the case of $y = 0$, the term $\frac{\sigma_a^2 + y\sigma_{ay}}{\sigma_a^2 + 2y\sigma_{ay} + y^2\sigma_y^2}$ becomes 1. Comparing Equations (2) and (4), we have

$$a(y > 0) - a(y = 0) = v_y y + \delta(a|y > 0) \bar{\mu}_a \frac{\sigma_a^2 + y\sigma_{ay}}{\sigma_a^2 + 2y\sigma_{ay} + y^2\sigma_y^2} - \delta(a|y = 0) \bar{\mu}_a. \quad (5)$$

The intuition is as follows. With the introduction of material rewards, which is public information, the material rewards provide added incentives. In forming their beliefs of the donors' true motivations, however, spectators are unsure whether donors' actions are attributed to the monetary rewards or their intrinsic motivation, which reduces the reward donors derive from their image in spectators. Therefore the changes in incentives due to monetary rewards are the increase in incentives from monetary rewards plus the reduction in social image reward.

Equation (5) shows precisely the effect: $\frac{\partial[a(y>0)-a(y=0)]}{\partial\delta(a|y=0)} < 0$; that is, people who have a greater chance to enjoy the social image reward respond less positively than people who enjoy less. The reason is that the former enjoy a greater δ and lose more social image rewards with the introduction of monetary rewards. We have two testable predictions from this result. First, since $\delta'(a) > 0$, we have $\frac{\partial[a(y>0)-a(y=0)]}{\partial a(y=0)} < 0$; that is, the prediction is that people who donate more absent monetary rewards respond less positively than people who donate less. Relatedly, among people who are willing to donate, the prediction is that people who donate zero absent monetary rewards respond more positively than those who have donated. The reason again is that those people's δ was zero, and therefore lose the least with the introduction of monetary rewards. Second, since $\delta'(v_a) > 0$, we have $\frac{\partial[a(y>0)-a(y=0)]}{\partial v_a} < 0$. That is, people with high v_a respond less positively to monetary rewards than people with low v_a . The reason is that a donor with greater v_a will donate more (higher a), which raises the probability that his actions are known (δ), and when given monetary rewards, lose more social image rewards.

Introducing honor rewards but no monetary rewards. The utility function then becomes: $Utility = v_a a + \delta \mu_a E(v_a) - c(a)$, where μ_a captures subjects' care of their image, which varies across people as v_a does. Spectators are unsure whether the subject donates to pursue an

image (high μ_a) that profits himself, or out of intrinsic motivation (high v_a). Assume $\begin{pmatrix} v_a \\ \mu_a \end{pmatrix} \sim N\left(\begin{matrix} \bar{v}_a & \sigma_a^2 & \sigma_{a\mu} \\ \bar{\mu}_a & \sigma_{a\mu} & \sigma_\mu^2 \end{matrix}\right)$. The individual chooses a at a level s.t. $c'(a) = a = v_a + \delta\mu_a \frac{\partial E(v_a|a)}{\partial a}$. Let $\rho = \frac{\partial E(v_a|a)}{\partial a}$. Spectators form their opinion as $E(v_a|a) = \bar{v}_a + \frac{\sigma_a^2 + \delta\rho\sigma_{a\mu}}{\sigma_a^2 + 2\delta\rho\sigma_{a\mu} + \delta^2\rho^2\sigma_\mu^2}(a - \bar{v}_a - \bar{\mu}_a\delta\rho)$, therefore

$$\frac{\partial E(v_a)}{\partial a} = \rho = \frac{\sigma_a^2 + \delta\rho\sigma_{a\mu}}{\sigma_a^2 + 2\delta\rho\sigma_{a\mu} + \delta^2\rho^2\sigma_\mu^2}. \quad (6)$$

Denote δ as δ_L when the honor reward is unavailable and δ_H when there is an honor reward. Notice that without the honor reward, $a = v_a + \delta_L\mu_a$, and with the honor reward, $a = v_a + \delta_H\mu_a\rho$ with ρ given in Equation (6), and $\rho < 1$. We thus have

$$a(\delta_H) - a(\delta_L) = \delta_H\mu_a\rho - \delta_L\mu_a \text{ with } \rho < 1.^7$$

The intuition is as follows. After introducing the honor reward, on the one hand, more people get to know his action, and he is rewarded by the recognition by a larger group, and is thus more likely to donate. On the other hand, the act of publicizing the good-deed invites spectators to think that he does the action to pursue a certain image that profits himself, reducing the reward from social image. The net effect depends on the positive effect from the greater reach and the negative effect from spectators' doubt.

Precisely, from Equation (7), we have a comparative statistics result: $\frac{\partial[a(\delta_H) - a(\delta_L)]}{\partial\delta_L} < 0$; that is, the more social image reward the donor was receiving, the less useful is the honor reward. We thus have two testable predictions. First, since $\delta'(a) > 0$, we have $\frac{\partial[a(\delta_H) - a(\delta_L)]}{\partial a(\delta_L)} < 0$; i.e., people who donated more absent the honor reward respond less positively than those who donated less. Relatedly, people who donated zero absent the honor reward respond more positively than those who donated. Second, since $\frac{\partial\delta_L}{\partial v_a} > 0$, we have $\frac{\partial[a(\delta_H) - a(\delta_L)]}{\partial v_a} < 0$. That is, people with greater intrinsic motivation respond less positively than those with less. The reason is that people with high v_a donate more, enjoy a greater δ , and thus enjoy greater social image reward without the presence of honor rewards, and they lose more social image rewards with the introduction of the honor reward.

One other method to provide incentives is to inform people of the status of the blood shortage. We can get predictions of its effect by modifying the model slightly. Let $f(a)$ be the value of person i 's donation activity a ; a shortage of blood makes $f'(a)$ greater. The utility function for donor i then becomes $Utility = v_a f(a) + \delta\mu_a E(v_a|a) - c(a)$. Analogous to Equation (2), we then have $a = v_a f'(a) + \delta\bar{\mu}_a$. Hence, $\frac{\partial a}{\partial f'(a)} = v_a$, that is, the effect of appeals on donors' actions is stronger for people who are more intrinsically motivated.

⁷ Another testable prediction is that $\frac{\partial \frac{\partial E(v_a)}{\partial a}}{\partial \sigma_\mu} < 0$.

Yet another reward method is to give discounts to donors when they need blood transfusions. It currently costs more than \$150 for one unit (about a pint) of whole blood. This reward thus serves as a form of pecuniary rewards. It can be argued that spectators' doubt of donors' motivation with such a reward is much smaller than that with monetary rewards. Therefore, we predict that i) the overall response is positive, and ii) the response is similar across donors with different levels of a (number of blood donations) or v_a (level of intrinsic motivation.)

There are different models of the effect of monetary rewards on intrinsic motivation. One theory is that monetary rewards displace intrinsic motivation, as in Frey and Oberholzer-Gee (1997). In such models, the effect of monetary rewards is the same across people regardless of the degree of intrinsic motivation. In the following analysis, we examine the empirical relevance of these theories.

3 Data and Summary Statistics

The data is based on a survey done in Spring 2008. The survey designer created a social-network event on Facebook and invited peers and their friends to participate. Over 800 people were asked to participate, and 590 responded to the survey. The survey was created using the University of Washington's Catalyst Web Questionnaire online application. The sample population is mostly students from the University of Washington. The survey asked 24 questions, including questions on demographic characteristics and responses to various treatments in blood donation. The response has three categories: more likely to donate blood, less likely, or the same. The full survey is in Appendix A.⁸

The data have 590 observations. More than 60% of them are female, reflecting the survey designer's network of friends and also UW's student body. More than three-quarters are white and close to 15 percent are Asian, again reflecting the composition of UW's student body. Seven percent are vegetarian and 2 percent are vegan. Ninety-three percent of subjects have given a donation to charity. As for volunteering for a charitable organization, two percent volunteered daily, 15 percent volunteered once a week, close to 20 percent volunteered once a month, and close to 60 percent volunteered once a year or none.⁹ Half of the respondents donated blood before, with 41 percent having donated 1-9 times, 6 percent having donated 10-14 times, 1.5 percent having donated 15-19 times, 1.4 percent having donated 20-24 times, and 1 percent having donated 25-49 times. Three percent of respondents have received transfusions of blood. Forty-two percent have friends or relatives that have received blood. Interestingly,

⁸We are keenly aware of the possible implications introduced by the order of questions (Bertrand and Mullainathan, 2001); we therefore interpose the three responses to monetary rewards questions among various other questions.

⁹The surveyor pooled people who volunteered once a year with people who did no volunteering, a minor weakness of the survey.

although only half of them have donated blood, 72 percent say they are willing to donate blood now for free. The frequency of variables are listed in column 1 of Table 1.

Figure 1 provides a bar chart on the subjects' response to the various treatments. Subjects' response to money rewards of \$10, \$25, and \$50 are overall positive, and the positive effect is stronger for greater amounts of reward. Using an honor mention to reward blood donation, at least for this group of subjects, is a very bad idea – the overall effect is that people become less likely to donate.¹⁰ The effect of treating people with information depends on the information provided. People respond positively to information that reminds them of the value of blood donation and the shortage of blood, but when provided information that one needs to pay for blood when one needs the blood, while the overall effect is positive, a large proportion said they are discouraged by the information. Interestingly, when told that they might get a discount (e.g., a blood credit) for blood donation, the response is very positive. The magnitude of the effect is similar to that of paying people \$25. These findings are consistent with Glynn et al. (2003)'s findings. Yet this is only the average effect. In the following analysis we examine heterogeneity in people's response.

4 Empirical Results

In this section, we first examine the heterogeneity in people's decision to donate blood, and then their response to various forms of rewards.

4.1 Heterogeneity in Donation Without Extrinsic Rewards

Before we examine people's heterogeneous response to extrinsic rewards, we examine the heterogeneity in donating blood without the presence of any extrinsic rewards. Columns 3 and 4 of Table 1 examine people's decision to donate or not and number of blood donations as a function of their gender, race, experience in receiving blood or having friends or relatives that have received blood in the past, being vegetarian or not, being vegan or not, giving donation to a charity or not, and frequency of volunteering. We find that the act and the number of blood donations are positively associated with the fact that the person is male,¹¹ has friends and relatives that have received blood, having donated to charities, and having volunteered more than once a year.

The finding that people who have received blood, or whose friends or relatives have received blood are more likely to donate blood is evidence that people reciprocate. Note that

¹⁰Consistent with this finding, as will be shown in Section 4.3.1, is that few subjects mentioned honor reward as the reason for having donated blood. The most cited reasons are wanting to help and feeling obligated.

¹¹This is consistent with Andreoni and Vesterlund (2001).

reciprocity, where one does good to return a good deed and does bad to punish a bad deed, is different from altruism where one does good no matter what others do.

4.2 Overall Response to Monetary Rewards

Figure 2 provides a bar chart of subjects' response to a monetary reward of \$10. We see that overall, subjects are encouraged by the monetary reward – more people say they are more likely to donate (encouraged) than the number of people who say they are less likely (discouraged), and the positive response is greater for a greater amount of reward.

While the aggregate results seemingly suggest the absence of a crowding out effect, a careful examination shows that they hide the heterogeneous response across people. In the following analysis, we examine people's response to monetary rewards as a function of the degree of loss in social image. First, we test whether $\frac{\partial[a(y>0)-a(y=0)]}{\partial v_a} < 0$, and then $\frac{\partial[a(y>0)-a(y=0)]}{\partial a} < 0$.

4.3 Heterogeneity in the Response to Monetary Rewards

We use the varying frequency of volunteering to capture prosocial preference (v_a) across people.¹² Figure 2 shows that people who volunteer more frequently show a less positive response to monetary rewards¹³. For people who volunteer once a year or less, to a reward of \$10, 41 percent say they are more likely to donate (encouraged), and 3 percent say they are less likely to donate (discouraged). For those who volunteer once a week, 27 percent say more likely, and 6 percent say less likely. The response of those who volunteer once a month is in-between.

We expect volunteering activity to vary with demographic variables, being vegan or vegetarian or not, and past experience of receiving blood (by oneself or friends and relatives), and these variables might affect people's response to monetary rewards. Therefore, in the following analysis, we estimate an equation using the ordered probit model to isolate the impact of people's prosocial concern (intrinsic motivation) on their response to monetary rewards:

$$Response_to_monetary_rewards_i = \beta_x * X_i + \beta_v * volunteering_frequency_i + \varepsilon_i, \quad (7)$$

where i refers to person i , X are demographic variables including race and gender, dummy variables for having past experience of receiving blood by oneself or friends/relatives, and dummy

¹²We also examined the response to monetary rewards as a function of the dummy variable for having donated to charity, which could capture the prosocial preference. The coefficient on the variable is negative, consistent with an interpretation that people with greater intrinsic motivation respond to monetary rewards less positively. There is, however, a potential omitted variable problem: The dummy variable for having donated to charity could also capture the subject's financial ability, which would make a monetary reward less valued. Using volunteering frequency to capture intrinsic motivation is free of this issue.

¹³Those who volunteer daily reverses this pattern, but only 11 out of the 590 respondents volunteered daily.

variables for being vegan/vegetarian or not. The coefficients of interest are β_v . We first use a dummy variable for volunteering more than once a year; i.e., the dummy variable takes the value of zero if people volunteer once a year or not at all, and 1 if more than once. We then use the finer category of volunteering – dummy variables for volunteering once a week, once a month, or daily; the omitted variable is volunteering once a year or not at all.

Regression results are in columns 2-3 in Table 2. In column 2, the coefficient on the dummy variable for volunteering more than once a year is significantly negative (at 10% level.) Column 3 shows that it is those who volunteer once a week that respond to monetary rewards least positively (significant at 5% level.)

Before one can interpret the coefficient as the impact of intrinsic motivation on the response to monetary rewards, one has to worry whether the volunteering frequency variable captures other characteristics that affect the subject’s response to monetary rewards. One such possibility is that people who volunteer more frequently have a lower cost of time; i.e., their hourly earnings are low. There is indeed this possibility. However, people whose hourly earnings are low would have responded to monetary rewards in a positive way; that is, our estimate would have been biased towards zero if the concern is valid. We therefore interpret the evidence as suggesting that people with greater intrinsic motivation respond less positively than those with less.

The economic magnitude of the estimated coefficient is not small. In column 3, the coefficient on the dummy variable for volunteering once a week represents a marginal effect of 11 percent less likelihood to donate for people who volunteer once a week compared with those who donate once a year or not at all.

We then test whether the response to monetary rewards is less positive for people who enjoyed greater image reward absent monetary rewards due to greater numbers of blood donations, i.e., $\frac{\partial[a(y>0)-a(y=0)]}{\partial a} < 0$. Shown in panel B of Table 1, fifty percent of subjects have not donated blood before. Among the ones who have, the mean is 5.8. While the number of blood donations captures the possibility of being known by spectators (δ in the model) across people, it could also capture differing costs of donating blood across people, which can affect the subject’s response to monetary rewards. One crude way to absorb the possible differing costs is to include a dummy variable for having donated; the idea is that people who have donated likely have different costs than those who have not.

Column 4 reports the regression results. The coefficient on the number of blood donation is significantly negative at the 5-percent level, and the coefficient on the dummy variable of having donated is significantly positive.¹⁴ There remains the fact that among people who have donated, more frequent donors have lower costs than less frequent ones, and one worries that it might affect the dependent variable – the response to monetary rewards. The prediction of

¹⁴We will discuss in Section 4.3.1 why the coefficient on having donated is positive.

its effect is, however, unclear. We therefore cautiously interpret the negative coefficient on the number of blood donations as suggesting that people who enjoyed greater social image reward absent monetary rewards respond to monetary rewards less positively than those who enjoyed less.

The economic magnitude of the estimated coefficient is nontrivial. The coefficient on the number of blood donations implies that moving from the 25th percentile (3 donations) to the 75th percentile (7 donations) corresponds to a 3 percent reduction in likelihood of donating (changing from 0 to 1).

The bottom of Panel B of Table 1 examines the issue from another angle: it compares people who have donated blood with those who have not. The idea is that the δ for the former is likely positive while the δ for the latter is zero. From summary statistics in Table 1, we find that the average response to a reward of \$10 for those who have donated is 0.35 while the response for those who have not donated is 0.33. This superficially suggests that people who have donated responded more positively to monetary rewards, yet further examination shows that this results masks a subtle reality. The panel B of Table 1 shows this subtlety. Among those who have never donated blood, some are willing and some are not (recall only 50 percent donated but 72 percent say they are willing.) We thus compare those who are unwilling, those who are willing but have not, and those who have donated. We find an interesting pattern. Among the willing-to-yet-haven't-donated ones, 48 percent say more likely, while 2 percent say less. Among people who have donated blood, 38 percent say more likely and 3 percent say less. That is, among the willing-to-donate ones, people who have donated respond less positively than those who haven't done so, suggesting that people who are more intrinsically motivated and enjoy social image rewards without the presence of money indeed respond less enthusiastically to monetary rewards.

Column 5 of Table 2 shows the regression results. The specification uses a dummy variable for having donated before, a dummy variable for being willing to donate, and the interaction term.¹⁵ The coefficient on the two dummy variables are both positive, and the coefficient on the interaction term is significantly negative (at 5 percent level.) The regression results show that among those who are willing, people who have donated respond less positively to monetary rewards than those who have not. We interpret it as further evidence that people who enjoyed greater social image rewards respond to monetary rewards less positively. The economic magnitude is that among people who are willing, people who have donated are 22 percent less likely to donate (from 0 to 1) than those who have not.

Coefficients on other variables are broadly consistent with existing literature. Females

¹⁵We find that people who have donated respond more positively than those who have not. People who are willing to donate respond more positively than those who are unwilling.

respond significantly less positively than males to monetary rewards.¹⁶ Race appears to play little role in people’s response to monetary rewards. A vegan responds less positively to monetary rewards than a non-vegan, while a vegetarian’s response is no different from a non-vegetarian’s. People’s experience in having received blood themselves or having friends or relatives who received blood appears to play little role in people’s response to monetary rewards.

In summary, we find i) people overall respond positively to monetary rewards, ii) people who volunteer more frequently, and people who donated blood more often respond to monetary rewards less positively, and iii) among people who are willing to donate, those who have donated respond to monetary rewards less positively than those who have not. We interpret these findings as evidence suggesting that people whose social image is more compromised with the introduction of monetary rewards respond to monetary rewards less positively. That is, the encouragement effect of monetary rewards is weaker for those who enjoy greater social image rewards beforehand.¹⁷

We are, however, left with a persistent result that people who are willing to donate respond to monetary rewards more positively than those who are not (and that people who have donated respond to monetary rewards more positively than those who have not), results superficially contrary to the above mentioned findings. We also note that our sample includes people who have not donated as well as people who are unwilling – an under-studied group – while most existing studies focus on existing donors. We thus delve deeper into people’s answers to the question “Why do you donate blood?” to understand what truly differs between those who are willing to donate and those who are unwilling.

4.3.1 Types of (Dis)Utility of Donating Blood and Its Impact on Response to Monetary Rewards

Subjects’ answers to the question, “Why do you donate blood?” that we asked in the survey illuminates people’s types of utility from and the costs involved in donating blood. We detect 11 broad answers to this question (shown in Panel C of Table 1): 1. because I want to help others (38 percent said so)¹⁸; 2. because I feel obliged (13 percent)¹⁹; 3. because I or my friends and

¹⁶This is consistent with Mellstrom and Johannesson (2008)’s finding that women were discouraged to have their blood tested for donation for an offer of \$7, yet men were not.

¹⁷Goette and Stutzer (2008) find that people who responded only twice or less to the last four invitations (infrequent donors) responded more positively than those who donated three or four times (frequent donors). Their finding is consistent with our finding here. Lacetera et al. (2009) find that the positive response is greater when the blood drive is open than closed (An open drive is a blood-drive where people are free to participate and donate, while a close drive is one where only invitees are eligible to donate), which is consistent with our finding that the effect of money is particularly strong for people who want to donate but have not done so.

¹⁸This answer speaks directly to the pure altruism motivation of donating blood.

¹⁹Variants of this answer are i) I have a responsibility to do so, ii) why not?

relatives received and I would like to reciprocate (3 percent); 4. because I get rewarded (cookies, T-shirt, etc.; 4 percent); 5. I and my loved ones might need blood in the future (2 percent); 6. I just want to experience it (1 percent); 7. I was pressed to do by my friends or organizers of blood drive (2 percent); 8. I am not eligible: anemic or travelled to places that makes one ineligible or having had tattoos recently (15 percent); 9. I fear needles (9 percent); 10. No, I don't or N/A (15 percent); 11. I have not (10 percent). The answers are not exclusive so they add up to be more than 100 percent. We interpret an answer "No, I don't" as the subject seeing no value in donating. These types are also broadly consistent with those in Titmuss (1971). We notice that categories 8-11 add up to be 50 percent, exactly the percentage of people who have not donated.

Panel C of Table 1 shows various dependent variables as a function of the type of utility. Wanting to help and feeling obliged make one more willing to donate, and being ineligible, fearing needles, and seeing no value from blood donation make one less willing to donate. Interestingly, having never donated does not say anything about current willingness to donate.

Having more detailed information on the types of (dis)utility of donating, we examine people's response to money as a function of these types of (dis)utility. The Panel C of Table 1 (and the Figure 3) provides simple statistics. For people who say that they donate to help others, the average responses to money reward of \$10 is .32. For people who donate out of feeling obliged, the average response to money reward is .42. For people who have never donated before, the average response is .48. For people who answer "No, I don't", the average response is .33. For people who fear needles, average response is lower at .23. For people who are ineligible, average response is .17. These simple statistics show that people who are ineligible or fear needles or see no value in donating are more likely to be unwilling to donate, and their responses to monetary rewards are lowest.

One is concerned that the reporting of reasons for donating could capture unmeasured characteristics, which also affect the reported response to monetary rewards. For example, it could be that certain people care about their images, so they answered donating to help others. And having answered that, they need to be consistent with their statement and answer that they are not encouraged by monetary rewards.

To gauge the magnitude of this potential mechanism, we investigate to what extent the answers by subjects reflect true behavior or are mainly a reporting that enhances their image. We compare people who report that they donate to help with people who report that "I have not" or "No, I don't" and examine several dimensions – whether they have donated, the mean number of blood donations. In panel C of Table 1, we see that people who answered "I have not" indeed did not donate. Five percent of people who answered "No, I don't" donated in the past, and the average number is 0.4. On the contrary, eighty-six percent of people who answered "I donate to help" did donate and the average is 4.7. Based on the finding that the majority

of people who answered “I donate to help” did indeed donate (and not just report that they donate to help), we believe the issue of reporting error is limited and does not affect our main results.

These findings provide an explanation for the superficial inconsistency in Section 3.3: i) people who are unwilling to donate respond to money rewards less enthusiastically than otherwise because they are most likely ineligible or fear needles, for whom the monetary rewards can barely change the eligibility or fearing; ii) people who have donated respond more positively than those who have not because the latter are more likely people who are ineligible, fear needles or see no value in donating (seen from the panel C of Table 1).

To formally show how responses to monetary rewards vary with individual types of (dis)utility of donating, I estimate the below equation:

$$\begin{aligned} \text{Response_to_money_reward} = & \beta_1 * \text{to_help} + \beta_2 * \text{obligated} + \beta_3 * \text{reciprocate} + \beta_4 * \text{reward} \quad (8) \\ & + \beta_5 * \text{might_need} + \beta_6 * \text{experience} + \beta_7 * \text{pressed} + \beta_8 * \text{no_value} + \beta_9 * \text{have_not} + \beta_{10} * \text{fearing_needle} + \beta_{11} * \text{ineligible}. \end{aligned}$$

The omitted type is having not; therefore each coefficient shows the effect of that feature on response to monetary rewards relative to the response of people who have not. Regression results in column 6 of Table 2 confirm the findings from simple statistics: i) People who are ineligible, fear needles, or answered “I don’t” are people who respond to monetary rewards least positively, and ii) People who donated to help others respond to monetary rewards less positively than people who answered “I have not.” These two findings are consistent with the finding from column 5 that among people who are willing, those who have donated respond less positively than those who have not.

4.3.2 Response to \$25 and \$50

Shown in Figure 1, the average effect for the reward of \$25 and \$50 are 0.52 and 0.65, greater than the effect of \$10. It appears that the image-contamination effect due to a greater amount of money did not dominate the added incentives from greater amounts. Regression results for a reward of \$25 and \$50 using the same specifications as those for \$10 are in columns 7-12 of Table 2. We see that when the amount of money reward is raised, the baseline results persist: People who volunteer more frequently, people who donated blood more often respond to monetary reward less positively, and among people who are willing to donate, those who have donated respond to monetary rewards less positively than those who have not.

Gneezy and Rustichini (2000) find that “Pay well or not pay”; i.e., a very small amount of money has a bad incentive effect for supplying prosocial activity. Their finding is consistent with our model here: the use of little money brings in the image-contamination effect whereas the added incentives from money is minimal. In our survey, the lowest amount is \$10 and the overall effect is already positive.

4.4 Response to An Honor Recognition

To question 18, “If you were to receive an honorary recognition in the school paper for donating blood, how would this affect your likelihood of donating?”, 64 percent say the same, 13 percent say more, and 23 percent say less likely. Among all the potential treatments that we asked, this is the only one that got an average negative response. Column 8 of Table 1 shows the response to the honor reward as a function of subjects’ various characteristics. From the summary statistics, the response appears to be invariant to gender, being vegetarian or not, or being vegan or not. People aged under 35 respond more negatively than those above 35, totally opposite the pattern for age in the response to monetary rewards. Asians respond more positively than others, and people who have received blood respond particularly negative to the treatment. In terms of the volunteering frequency, both the column and Figure 4 show that people who volunteer more frequently are particularly discouraged by the honor reward.

Regression results using the same specifications as those for the \$10 reward are in columns 1-4 of Table 3, and they confirm the findings from the summary statistics. In column 1, the coefficient for volunteering more than once a year is significantly negative at the 5-percent level. Evaluated at the mean value of the explanatory variables, the estimated coefficient suggests that, given the honor reward, people who volunteer more than once a year are 5 percent less likely to donate than those who volunteer once a year or not at all.

In column 2 of Table 3, we examine the effect of number of blood donations on the response to an honor reward. The coefficient on the number of blood donations is significantly negative at the 5-percent level; that is, people who donated blood more frequently are more discouraged by the honor reward. Evaluated at the mean value of the explanatory variables, the estimated coefficient suggests that, given the honor reward, people who donate at the 75th percentile (7 donations) are 1.6 percent less likely to donate than those who donate at the 25th percentile (3 donations).

These findings are consistent with Benabou and Tirole (2006)’s prediction that the presence of an honor reward makes viewers suspect that donors might donate to gain a certain social image to profit themselves, rather than out of true altruism. This reduces the social image reward enjoyed by donors, and this reduction is greater for donors who enjoyed greater social image without the treatment – those who are more motivated and those who donated more.

4.5 Response to Other Kinds of Incentives

4.5.1 Response to Blood Credit

With all its due weaknesses, a survey allows one to compare people’s response to different treatments. In question 25, we asked “If you were to receive a discount on blood received at a hospital for donating on a regular basis, how would this affect your likelihood of donating?”

Forty-five percent say the same likelihood, 53 percent say more likely, and 2 percent say less. The average response, 0.51, is very close to the response to a reward of \$25. Similar overall responses to these two forms of rewards, however, masks the differential response across people.

Column 9 of Table 1 presents the response to the discount as a function of people’s characteristics. The response is invariant to gender, being vegetarian, or being vegan. Asian surveyees respond more positively than whites. People who have received blood respond less positively than those who have not. Yet people who have friends or relatives that have received respond more positively than those who do not. Shown in column 9 of Table 1 and Figure 5, we find that, contrary to the response to monetary rewards, the response to the discount reward for people who volunteer more than once is very similar to the response for people who volunteer once or not at all.

We perform regression analyses using the same specifications as those for monetary rewards, and results are in columns 5-7 of Table 3. Column 5 uses the dummy variable for volunteering more than once a year. The coefficient on it, unlike that in response to monetary rewards or in honor rewards, is statistically insignificant. In Column 6, we use the finer variable: volunteering once a week or month or daily. Again, unlike the result in response to monetary rewards, the coefficients are statistically insignificant. Column 7 examines the effect of number of past blood donations. Again, we see that while more intrinsically motivated ones respond less positively to money rewards, they do not exhibit such a response towards rewards in the form of future discounts or blood credits.²⁰ Together, the evidence suggests that people who have greater social image rewards, either because of greater intrinsic motivation or greater donations, do not respond to a blood credit less positively than people who have less social image rewards.

It is defensible that when monetary rewards or honor rewards are used, spectators might attribute donors’ actions to a pursuit of money or honor that profits themselves, whereas they would not suspect that donors donate to pursue a discount when they receive blood in the future. Therefore, the contrast in the response is consistent with the difference across the extrinsic reward forms in their impact on people’s social image rewards.

4.5.2 Response to Appeal

In question 19 we asked “There is a current shortage of available blood for distribution to hospitals and medical centers; how does this affect your likelihood of donating?” Thirty-eight percent say the same likelihood, 61 percent say more likely, and close to 1 percent say less. This question is asked after the questions related to \$10 and \$25 rewards and before that related to

²⁰We also examine the specification with the “willingness to donate” variable, the variable for having donated, and their interaction. Unlike in the regression for monetary rewards, the coefficient for the interaction term is insignificant. We further use the type of source of utility variables. Consistent with previous findings, the coefficient on the “donating to help” variable is non-negative and insignificant.

the \$50 reward.

The positive response to the information provision is greater than that to the \$10 treatment (.34) and the \$25 treatment (.52), and less than that to the \$50 treatment (.65). The last column of Table 1 shows people’s response to appeal as a function of their characteristics.²¹ The summary statistics show that females respond to the appeal more positively. The average response by people who volunteer once a week and once a month is 0.65 and 0.67, respectively, while that by people who volunteer once a year is 0.59. The average response for people who donate to help others is 0.72 and that for people who answered “I have not” is 0.63.

This pattern is confirmed in the regression results in columns 8-10 in Table 3. We use the same specifications as those for \$10 reward except that the dependent variable is the response to the appeal for help. First, in columns 8-9, we find that people who volunteer once a week or month respond to the treatment greater than those who volunteer once a year. The coefficient, however, is statistically insignificant. Given that appealing for help does not cause spectators to doubt the donors’ true motivation, this finding is consistent with the previous findings that people who derive greater social image rewards are not discouraged by rewards that do not diminish their image reward. Second, in the last column, we find that people who donated to help others and out of an obligation respond significantly positively to the information treatment than those who answered “I do not.” This evidence is consistent with the model in Section 2 where people with greater intrinsic motivation derive greater utility when the blood (and help) is more keenly needed.²²

We perform robustness checks on the results. Across Tables 2 and 3, we investigate whether our results are sensitive to the use of age dummies for each age instead of dummies for every 5 years, and find that it barely changes the results.

4.6 Summarizing and What It Says About Theory

These evidence is consistent with a model by Benabou and Tirole (2006) and less with Frey and Oberholzer-Gee (1997), in which the introduction of monetary rewards just replaces the incentives from intrinsic motivation. Under that framework, the effect is the same no matter

²¹Our findings on response to information treatment is comparable to Goett and Stutzer (2008)’s. Their baseline treatment is that “the blood donation service found it difficult to meet demand during the summer and that this might possibly lead to significant shortages.” Forty-seven percent of subjects who received the appeal letter responded by stepping up to donate. Sixty-one percent of our subjects responded that they are more likely to donate given this information. If we focus on subjects who have donated, as were the focus of Goett and Stutzer (2008), 66.7% say more likely. One thing to notice is that the average age of our subjects is 21.5 while that in Goett and Stutzer (2008) is 43.

²²We also find that people who donated blood for a greater number of times respond more negatively to the information treatment than those who donate less often (not shown in the table.) This evidence is consistent with the fact that there is a physical limit to the number of times one can donate blood.

the degree of intrinsic motivation. Yet, we find that the effect differs across people who enjoyed different levels of social image reward (due to different degrees of intrinsic motivation).

4.7 Relation to the Literature

Ariely et al. (2009) find that the presence of monetary rewards partially neutralizes the effect of image rewards, but says little about the interaction between image rewards and intrinsic motivation. Lacetera and Macis (2010a) examine the use of an honor reward where the reward is a medal for people whose donation of blood surpasses a significant number, an honor reward that is substantially more significant than that in our study and differs on how it affects spectators' perception of donors' motivation. We believe our findings complement Lacetera and Macis (2010a) and offer the first set of results on the interaction between an honor (image) recognition and its impact on total incentives via the social image reward.

Glynn et al. (2003) survey people who have donated at least once for their response to a comprehensive list of possible incentives. Their samples cover a wide range of ages and locations. Our study complements their study in that their focus is on existing donors while our study sheds light on people who want to donate but haven't done so, an extensive margin. In addition, Glynn et al. (2003) do not have information on the subjects' volunteer activity, their number of blood donations, nor their reasons for donating, characteristics that we explore as determinants of people's responses to various extrinsic rewards. We thus differ from Glynn et al. (2003) in that we aim to understand the source of the crowd-out effect.

4.8 Limitations of this study

While the survey data can help us understand people's responses, a weakness of our paper is that the survey is an oral response, which may not translate into actions. We have tried to assess the impact of biases introduced by the reporting. Relatedly, we can't determine the longer-term response; in particular, does the current positive response crowd out later donations, especially when monetary rewards are withdrawn? Caution also needs to be taken when generalizing our results since our sample is mainly college students.

5 Conclusion

This study uses survey data to examine people's response to monetary and honor rewards in their blood donation behavior. For monetary rewards, we find that i) the overall response to monetary rewards is positive, ii) the positive response is less for people who enjoyed greater social image rewards; that is, people who have donated blood more often and those with greater intrinsic motivation, and iii) among people who are willing to donate, people who have not

donated responded more positively to monetary incentives than people who have donated. We interpret our results as suggesting that the crowding out effect is greater for people who derive greater social image rewards without the extrinsic rewards. For honor rewards, we find that the overall response to an honor reward is negative, and particularly so for those who enjoyed greater social image rewards, those who donated more and the more motivated ones. We also find that i) providing information on the status of blood provides incentives, especially to the more motivated ones, and ii) non-monetary rewards like blood credits, unlike monetary rewards, do not contaminate spectators' judgment of donors' motivation, and subjects who are more intrinsically motivated are not discouraged more by these non-monetary rewards as they are in the face of monetary rewards.

The general message of our study is that when motivating prosocial behavior, one should use a reward method that does not interfere with the incentives provided via people's concern for their social image in others. For example, on the use of honor rewards, one should use a hard-to-achieve standard that makes the honor award truly meaningful. It would be useful to see whether these findings from survey results are confirmed in people's behavior.

Appendix

The Survey

What is your gender? (M or F)

How old are you?

Please indicate your race/ ethnicity (mark all that apply).

Are you a vegetarian? (Y or N)

Are you vegan? (Y or N)

Have you ever given a donation to charity? (Y or N)

Do you volunteer for a charitable organization on a regular basis? If so, how often? (Choose the best response)((once per year, once per month, once per week, or once per day.)

Have you ever received blood? (Y or N)

Has anyone in your immediate family or a close friend you know received blood? (Y or N)

Have you donated blood before? (Y or N)

How many times would you say you have donated blood?

Why do you donate blood?

Are you willing to donate blood now for free? (Y or N)

If you were paid \$10, versus receiving nothing, for an hour of donating a unit of whole blood (red blood cells, plasma, platelets and cryoprecipitate), how would this affect your likelihood of donating? (More likely, the same likely, or less likely.)

Donating one unit (about one pint) of whole blood can help save as many as three lives, how does knowing this affect your likelihood of donating? (MLike, Slike, Llike)

If you knew that donating blood could help save more than three lives, how would that affect your likelihood of donating? (MLike, Slike, Llike)

If you were paid \$25, versus receiving nothing, for giving one unit of whole blood, how would this affect your likelihood of donating? (MLike, Slike, Llike)

If you were to receive an honorary recognition in the school paper for donating blood, how would this affect your likelihood of donating? (MLike, Slike, Llike)

There is a current shortage of available blood for distribution to hospitals and medical centers, how does this affect your likelihood of donating? (MLike, Slike, Llike)

If you were paid \$50, versus receiving nothing, for giving one unit of whole blood, how would this affect your likelihood of donating? (MLike, Slike, Llike)

If you knew that you would have to pay to receive blood if you were ever to receive it at a hospital, how would that affect your likelihood of donating? (MLike, Slike, Llike)

Is there an amount of money that, if received for donating blood, would deter you from donating? (Y or N)

If Yes, what is that amount?

It currently costs more than \$150 for one unit (about a pint) of whole blood. If you were ever to need to receive blood at the hospital, this would likely appear as a cost on your total medical bill. How does knowing this information affect your likelihood of donating? (MLike, Slike, Llike)

If you were to receive a discount on blood received at a hospital for donating on a regular basis, how would this affect your likelihood of donating? (MLike, Slike, Llike)

The Effect of Monetary Reward on Quality of Blood

Titmuss (1971) raises the issue of possible reduced quality of blood when using money to reward donors. We find in Table 1 that people who are ineligible say they are more likely to donate facing monetary rewards, more for \$50 than for \$10. Combining results from Tables 1 and 2, we can compute the increased percentage of ineligible ones among all potential donors compared with when money is not used. Assuming that the survey results will turn into real actions, we find that if \$10 is used, 2.7 percent of donations have to be turned down. If \$25 is used, 4.6 percent have to be rejected. If \$50 is used, 5.7 percent will be. The magnitude of these estimates are consistent with that in Goette and Stutzer (2008) and Lacetera et al. (2009) and need to be taken into consideration when evaluating the desirability of using money to encourage blood donation.

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Table 1: Summary Statistics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Per-centage	Mean of will-ing to donate	Mean of havg dona-ted	Mean no. of blood dona-tion	Mean res-ponse to \$10 reward	Mean res-ponse to \$25 reward	Mean res-ponse to \$50 reward	Mean res-ponse to honor	Mean res-ponse to dis-count	Mean res-ponse to appeal
Panel A										
Gender is male	0.38	0.72	0.51	3.4	0.45	0.60	0.73	-0.09	0.54	0.55
Gender is female	0.62	0.72	0.49	2.6	0.28	0.47	0.61	-0.11	0.50	0.65
Race is white	0.76	0.72	0.5	2.9	0.32	0.52	0.65	-0.12	0.49	0.6
Race is Asian	0.24	0.73	0.46	2	0.39	0.53	0.66	0.13	0.64	0.69
Have received blood before	0.03	0.6	0.65	4	0.3	0.45	0.55	-0.4	0.45	0.4
Have not	0.97	0.73	0.49	2.9	0.34	0.52	0.66	-0.1	0.51	0.62
Have friends/relatives that rcvd	0.42	0.76	0.54	3.6	0.32	0.50	0.63	-0.1	0.56	0.62
Have not	0.58	0.69	0.47	2.4	0.36	0.54	0.68	-0.1	0.48	0.60
Vegetarian	0.07	0.74	0.70	4	0.26	0.52	0.63	0.09	0.53	0.72
Not vegetarian	0.93	0.72	0.48	2.8	0.35	0.52	0.66	-0.12	0.52	0.60
Vegan	0.01	0.86	0.43	1.5	0	0.57	0.71	-0.14	0.43	0.57
Not vegan	0.99	0.72	0.50	2.9	0.34	0.52	0.65	-0.1	0.51	0.61
Panel B										
Have donated to charity	.93	.74	.52	3.1	.33	.52	.65	-.11	.62	.51
Have not	.07	.53	.19	.42	.51	.58	.70	.02	.49	.49
Volunteering frequency:	0.02	0.64		6.1	0.36	0.36	0.36	-0.46	0.36	0.18
Daily			0.55							
Once per week	0.15	0.79	0.61	3.8	0.21	0.43	0.57	-0.16	0.5	0.65
Once per month	0.21	0.71	0.55	3.9	0.31	0.52	0.66	-0.16	0.55	0.67
Once per year	0.63	0.71	0.46	2.3	0.38	0.55	0.68	-0.05	0.51	0.59
Having donated blood before	0.50	0.90	1	5.8	0.35	0.56	0.69	-0.06	0.58	0.67
Have not	0.50	0.54	0	0.07	0.33	0.48	0.62	-0.14	0.45	0.55
Are willing to	0.72	1	0.62	3.8	0.39	0.58	0.70	-0.07	0.59	0.69
Have donated	0.45	1	1	6.0	0.35	0.55	0.68	-0.06	0.60	0.68
Have not	0.27	1	0	0.05	0.46	0.63	0.74	-0.09	0.57	0.69
Unwilling to	0.28	0	0.17	0.71	0.20	0.37	0.52	-0.18	0.32	0.40
Panel C										
Want to help	0.38	0.91	0.86	4.7	0.32	0.56	0.71	-0.03	0.57	0.72
Feel obligated	0.13	0.95	0.91	5.3	0.42	0.55	0.68	-0.09	0.61	0.70
Reciprocate	0.03	0.93	0.73	4	0.47	0.67	0.8	0.2	0.8	0.93
Outside reward	0.04	0.78	0.91	6.3	0.57	0.74	0.74	-0.13	0.83	0.35
For future use	0.02	10.00	0.79	5.9	0.21	0.43	0.57	-0.14	0.57	0.36
For the experience of it	0.01	0.50	0.88	12.5	0.38	0.5	0.5	0.25	0.25	0.13
Pressed to do	0.02	0.70	0.80	4.9	0.3	0.5	0.4	-0.3	0.6	0.4
Ineligible	0.15	0.59	0.20	0.76	0.17	0.35	0.50	-0.18	0.47	0.56
Fear of needle	0.09	0.32	0.06	0.40	0.23	0.36	0.51	-0.19	0.34	0.51
No, I don't or N/A	0.15	0.43	0.05	0.38	0.33	0.51	0.67	-0.17	0.38	0.52
I have not	0.1	0.73	0	0	0.48	0.64	0.80	-0.02	0.49	0.63

Notes.

1. The number of observation is 590.
2. In response to treatments, “more likely” takes the value of 1, “equally likely” 0, and “less likely” -1.

Table 2:**Regression Analysis of Response to Monetary Rewards as a Function of People's Characteristics**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Resp onse to \$10	Resp onse to \$10	Resp onse to \$10	Resp onse to \$10	Resp onse to \$10	Resp onse to \$10	Resp onse to \$25	Resp onse to \$25	Resp onse to \$25	Resp onse to \$50	Resp onse to \$50	Resp onse to \$50
Age 25 or under	1.3 (0.33)	1.3 (0.32)	1.3 (0.32)	0.63 (0.13)	0.75 (0.16)	0.75 (0.20)	1.3 (0.37)	0.96 (0.14)	1.0 (0.16)	1.0 (.41)	1.1 (.32)	1.2 (.33)
Age 26 to 35	1.1 (0.38)	1.1 (0.37)	1.1 (0.37)	0.46 (0.23)	0.53 (0.25)	0.42 (0.28)	0.92 (0.40)	0.58 (0.21)	0.61 (0.23)	0.82 (0.46)	0.81 (0.37)	0.87 (0.39)
Female	-0.33 (0.11)	-0.33 (0.11)	-0.33 (0.11)	-0.36 (0.11)	-0.35 (0.11)	-0.28 (0.11)	-0.22 (0.11)	-0.24 (0.11)	-0.22 (0.11)	-0.24 (0.11)	-0.28 (0.12)	-0.25 (0.12)
Donate to charity	-0.31 (0.19)											
Volunteer more than once a year		-0.18 (0.11)										
Once a week			-0.30 (0.15)				-0.21 (0.14)			-0.20 (0.15)		
Once a month			-0.11 (0.13)				-0.06 (0.13)			-0.01 (0.14)		
# of blood donation				-0.02 (0.01)				-0.017 (0.01)				-0.025 (0.01)
Having donated blood				0.25 (0.11)	0.41 (0.27)			0.37 (0.12)	0.77 (0.26)		0.39 (0.12)	0.65 (0.27)
Willing					0.68 (0.15)				0.67 (0.14)			0.61 (0.14)
Willing* dummy_donated					-0.59 (0.30)				-0.85 (0.29)			-0.72 (0.30)
Want to help						-0.28 (0.13)						
Feel obligated						-0.001 (0.17)						
Ineligible						-0.65 (0.17)						
Fear of needle						-0.59 (0.20)						
No, I don't or N/A						-0.46 (0.19)						
I have not						--						
Pseudo- R^2	0.037	0.037	0.039	0.040	0.060	0.064	0.031	0.038	0.060	0.034	0.042	0.056

Notes.

1. The regression method is ordered probit.

2. Across all specifications, the explanatory variables include age 36 to 45, age 46 or above (the omitted group), a dummy variable for being white, a dummy variable for having friends or relatives that have received blood transfusions, a dummy variable for having received blood themselves, a dummy variable for being vegan, a dummy variable for being vegetarian. In column 6, the specification further includes the categories reciprocate, "outside reward", "for future use", "for the experience of it", "pressed to do", and "I have not" (the omitted group).

3. Robust standard errors are in parentheses.

Table 3: Response to various treatments

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Honor	Honor	Honor	Honor	Dis count	Dis count	Dis Count	Appeal	Appeal	Appeal
25 under	-0.83 (0.30)	-0.24 (0.20)	-0.13 (0.22)	0.05 (0.25)	-0.03 (0.38)	-0.02 (0.38)	0.34 (0.40)	-0.87 (0.56)	-0.86 (0.56)	-0.70 (0.52)
26-35	-1.0 (0.36)	-0.40 (0.27)	-0.33 (0.29)	-0.18 (0.30)	-0.28 (0.42)	-0.25 (0.42)	0.01 (0.43)	-1.0 (0.59)	-0.94 (0.59)	-0.88 (0.55)
Female	-0.06 (0.10)	-0.10 (0.10)	-0.08 (0.10)	-0.09 (0.11)	-0.12 (0.11)	-0.11 (0.11)	-0.10 (0.11)	0.19 (0.11)	0.21 (0.11)	0.19 (0.11)
Volunteer more than once a year	-0.24 (0.10)				0.05 (0.11)			0.10 (0.11)		
Once a week						0.02 (0.15)			0.12 (0.16)	
Once a month						0.11 (0.13)			0.20 (0.13)	
# of blood donation		-0.02 (0.01)					0.002 (0.01)			
Dummy for having donated blood		0.23 (0.11)	0.27 (0.23)				0.30 (0.12)			
Willing			0.21 (0.13)							
Willing*dummy_ donated			-0.24 (0.26)							
Want to help				0.16 (0.13)						0.39 (0.14)
Obligated				-0.03 (0.17)						0.35 (0.19)
Ineligible				-0.16 (0.15)						-0.19 (0.17)
Fear of needle				-0.13 (0.20)						-0.19 (0.20)
No, I don't or N/A				-0.11 (0.17)						-0.12 (0.19)
I have not				--						--
Pseudo-R2	0.026	0.026	0.024	0.037	0.013	0.014	0.022	0.020	0.030	0.077

Notes.

1. The regression method is ordered probit.

2. Across all specifications, the explanatory variables include age 36 to 45, age 46 or above (the omitted group), a dummy variable for being white, a dummy variable for having friends or relatives that have received blood transfusions, a dummy variable for having received blood themselves, a dummy variable for being vegan, a dummy variable for being vegetarian. In column 6, the specification further includes the categories of "reciprocate", "outside reward", "for future use", "for the experience of it", "pressed to do", and "I have not" (the omitted group).

3. Robust standard errors are in parentheses.

Figure 1: Response to Various Treatments

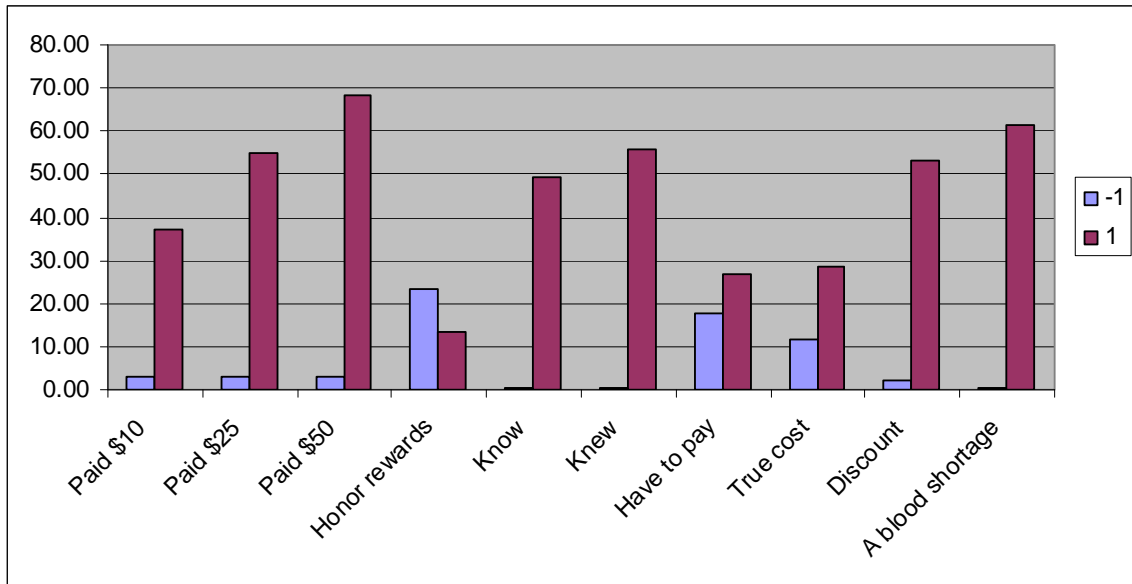


Figure 2: Response to \$10 Rewards as a Function of Volunteering Frequency

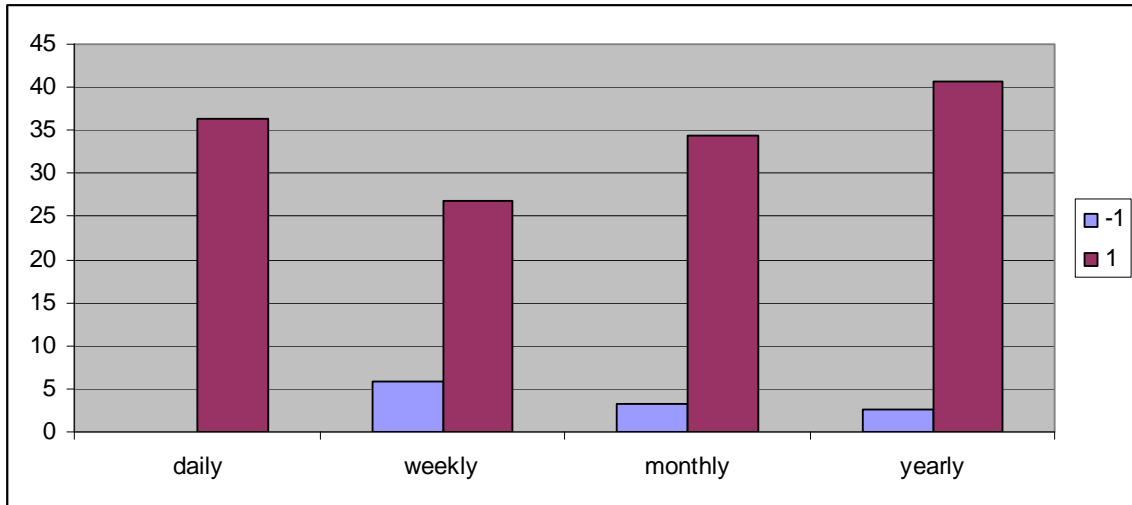


Figure 3: Response to \$10 reward as a function of types of (dis)utility

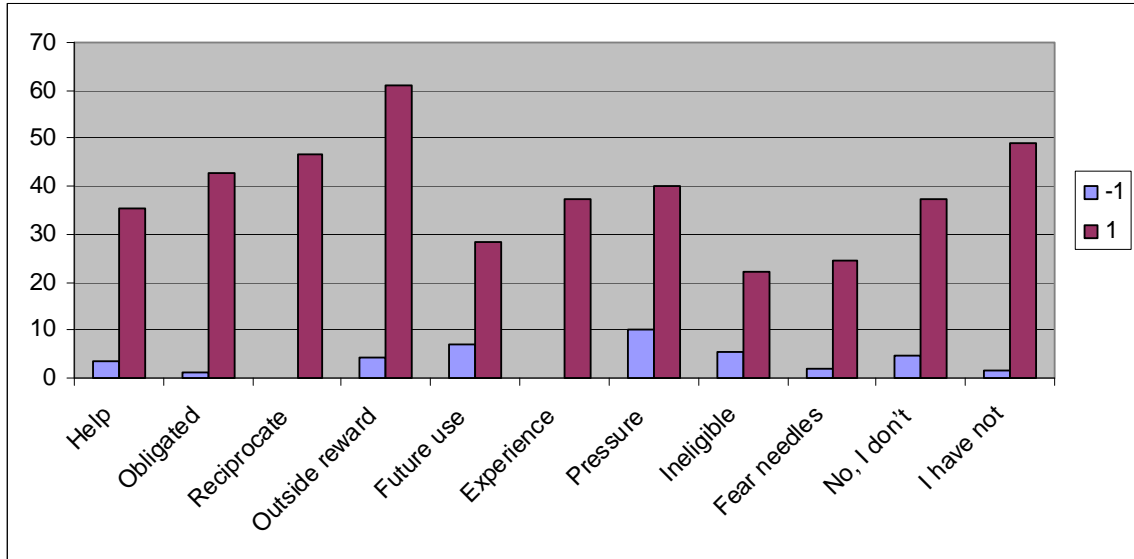


Figure 4: Response to Honor Rewards

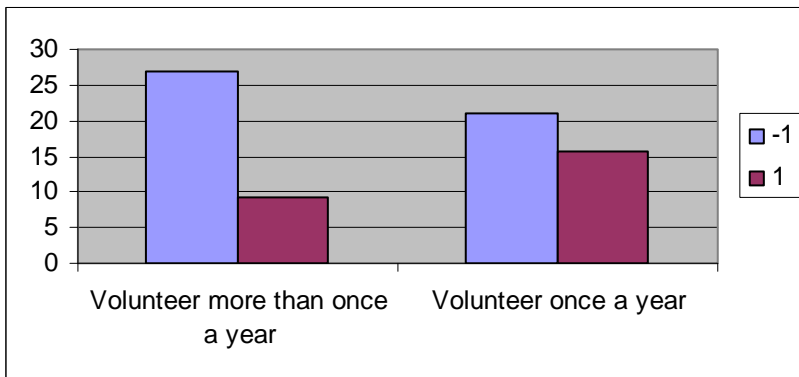


Figure 5: Response to Future Discount

