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Choice over Payment Schemes and Worker Effort

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DISCUSSION PAPER SERIES

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NOVEMBER 2022

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Choice over Payment Schemes and Worker Effort

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ABSTRACT

Choice over Payment Schemes and Worker Effort*

We study the effect of monetary incentives on effort in a prosocial task: writing letters encouraging voter turnout. Volunteers are randomized to receive no incentive, unconditional upfront payment, payment conditional on completing the task, or to have a choice between the two payment schemes. The unconditional and conditional payment both increase task completion rates by about 18 percentage points (43%). Giving people a choice between the payment scheme doubles the effect on task completion (35 p.p., 84%). Unlike unconditional payments, a choice over contracts also increases time spent on the task and letter quality. Survey responses suggest that giving people a choice is effective because it increases task ownership rather than the desire to return a favor or avoid feelings of guilt.

JEL Classification: D86, D91, J22

Keywords: self determination, gift exchange, guilt aversion, labor supply

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1 Introduction

Finding incentive schemes that align the behavior of agents with the objectives of principals is one of the central problems in economics. The idea of conditional payments, in which agents' payments depend on their actions, follows directly from the classic agency model and is widely used in practice. For example, conditional cash grants have been used effectively to increase school enrolment and vaccination rates (Millán et al., 2019). Contingency pay is commonly used by firms and has been found to improve job performance, and to attract and retain talented workers (Lazear, 2000; Dohmen and Falk, 2011).¹ However, there are long-standing concerns that conditional payments may crowd out intrinsic motivation and hence reduce performance (Frey, 1994; Gneezy and Rustichini, 2000). Individuals may also anticipate that exerting effort will be erroneously attributed to the extrinsic reward, which reduces the sense of accomplishment and self-worth (Bem, 1972), as well as the reputational benefits from completing the task (Bénabou and Tirole, 2006).

Alternatively, a principal may compensate agents regardless of effort. Such *unconditional* payments remove the financial incentive to perform, but can enhance intrinsic motivation by inducing feelings of reciprocity or by signaling trust (Falk and Kosfeld, 2006). Agents may also exert effort to avoid feelings of guilt (Charness and Dufwenberg, 2006). Several recent papers test the effect of unconditional versus conditional incentives. Gneezy and Rey-Biel (2014) show that for most incentive levels, unconditional payments are more effective to increase survey completion rates.² Córdova et al. (2021) also find that unconditional pay is at least as effective in convincing people to participate in a recycling program. They further show that incentive schemes vary in the *type* of people they motivate. This raises the question of whether an alternative scheme can be designed that incentivizes a broader group of agents.

¹Managers are often offered share options or profit-sharing incentives, and this tends to improve corporate performance (Abowd 1990).

²For very high incentives equivalent to more than 40 USD per hour, this relationship reverses and contingent pay tends to be more effective (Gneezy and Rey-Biel, 2014).

In this paper, we test the effectiveness of offering agents the *choice* between conditional or unconditional payments. This strategy, which to our knowledge has not been studied before, may be effective as a large literature shows that people value decision-making powers (Deci et al., 2017; Bartling et al., 2014), and that providing “meaningful choice” can increase autonomy, intrinsic motivation (Ryan and Deci, 2019) and creativity (Balkin et al., 2015). It could also have instrumental value, by allowing heterogeneous agents to self-select into the contract that is optimal for them (Andreoni et al., 2016).

We experimentally test the effect of compensation schemes in a setting where people are intrinsically motivated and where the quality of worker performance is important but costly to monitor. Specifically, we recruit volunteers to craft letters encouraging people to vote in the 2020 U.S. presidential election. While task completion is observable, the principal cannot easily monitor effort or assess how convincing the letters are to others. This environment mimics that of many real-life workplaces, and is exactly the kind of setting in which conditional payments may be counterproductive. We randomize 418 volunteers into one of four compensation schemes: payment conditional on task completion (T1), unconditional payment up-front³ (T2), a choice between conditional and unconditional payment (T3), or no payment (Control). We subsequently measure whether people complete the task, the effort they provide as measured by the time they spent crafting the message, and how convincing letters are to potential voters.

Our results confirm the existence of strong intrinsic motivation amongst participants: 42% complete the task when no incentives are offered. Unconditional payments increase completion rates by 18.2 percentage points (p.p.) (43%), confirming that payment schemes that further enhance intrinsic motivation can have large effects on behavior.⁴ When offered con-

³Unlike other experiments (e.g. Fryer et al. (2012)) in which up-front payments can be recouped if tasks are not completed correctly, in our experiment these payments are completely unconditional. This also differs from Zlatev and Rogers (2020) who test the effectiveness of sending gifts that receivers can return.

⁴We follow Malmendier et al. (2014) who show that (positive) reciprocity can be attributed to intrinsic preferences, while extrinsic motives play a more important role in explaining negative-reciprocal behavior. This is in line with Rabin (1993) who posits that other’s acts of kindness increase the intrinsic utility of reciprocating.

ditional payments of the same magnitude, the effect on task completion is similar (17.3 p.p. or 41%), which suggests that extrinsic motivation partly crowds out intrinsic motivation induced by unconditional payments. Providing a choice to workers boosts completion rates by 35.2 p.p. (84%), doubling the treatment effect of both conditional and unconditional payments. Our endline survey confirms that extrinsic motivation is strongest in the conditional payment group, while positive reciprocity is strongest in the unconditional payment group. People in the choice group report that they were *less* motivated by monetary incentives than the conditional pay group and *less* motivated by positive reciprocity than the unconditional pay group. In fact, it was the treatment arm least likely to report being motivated by wanting to “return a favor”. One explanation consistent with the literature on autonomy is that having a choice leads them to exert more ownership over the task, making it less likely that they see themselves as passive recipients of a gift from the principal (Deci, 1972; Deci et al., 2017).

Comparing the quality of work conditional on completing the task reveals that conditional payments induce better performance than unconditional payments, despite the fact that neither payment is contingent on the quality of letters. Participants in the conditional payment group spend 22% more time crafting messages resulting in letters that are 0.16 standard deviations (s.d.) more convincing to potential voters. These results suggest that in our setting, extrinsic motivation is more effective in ensuring high performance in dimensions that are difficult to monitor, adding a caveat to other studies concluding that unconditional pay tends to be more effective at the *extensive* margin (Gneezy and Rey-Biel, 2014; Córdova et al., 2021). Choice also has a positive effect on letter quality: workers spend longer on writing letters and craft messages that are more persuasive than those in the control and unconditional payment groups. This supports the hypothesis that greater autonomy lets people “experience freedom to express their creativity” (Balkin et al., 2015, p. 384), even in settings where workers are not given a choice over the content of the work.

To assess the novelty of these findings, we present the research design to 52 researchers

working in related fields such as psychology, behavioral economics and labor economics and ask for their treatment effect predictions. While experts fairly accurately predict task completion rates in the unconditional payment group, they overestimate the effect of conditional payments by about 10 p.p. (59%). They also vastly under-estimate the effect of a payment choice on both participation (by 11 p.p., 32%) and task quality.

Our results allow us to estimate the cost-effectiveness of different payment schemes by calculating the amount that a principal needs to pay for each *additional* letter submitted (compared to the number submitted in the control group). This marginal cost is 60% higher in the unconditional compared to the conditional payment group as principals pay all agents regardless of task completion. However, the marginal cost in the choice group is 25% lower than in the conditional payment group as the large increase in completion rate outweighs paying the 8% of workers who choose upfront compensation but do not complete the task. Taking task quality into account makes these differences, if at all, even more pronounced. Giving people a choice pays off in this setting both on the extensive and intensive margin.

We add to an established literature on incentive design, which shows that both variation in monetary incentives such as lump vs. fixed pay and non-monetary factors such as recognition affects worker selection and productivity (for recent reviews see [Cassar and Meier \(2018\)](#) and [Lazear \(2018\)](#)). Providing choice over contracts introduces a novel approach that leverages the value of self-determination. Many experiments confirm that giving agents choice over tasks improves autonomy, intrinsic motivation and performance (see [Patall et al. \(2008\)](#) for a review). However, these effects vary with the type of choice and in some cases has been found to have no effect (e.g. [Iyengar and Lepper \(1999\)](#)), highlighting the need to understand the relevant mechanisms in different settings. Methodologically, a choice over incentives for the *same* task may be better suited to isolate the effect of autonomy than choice between tasks (as typically done in the literature) as it rules out that performance improvements are driven by agents with heterogeneous skills picking tasks for which they have a comparative advantage.

Showing that choice over incentives can harness positive effects of self-determination has important practical implications, as many real-world jobs (e.g. assembly line production) have limited scope for choice over work content. Our results dovetail with a small set of recent papers showing that granting workers decision power and ownership has positive effects. Building on the seminal work on the profitability of worker cooperatives by [Craig and Pencavel \(1992\)](#) and others, these studies show that shared governance raises capital formation (e.g. [Heining et al. \(2019\)](#)), cooperative ownership increases productivity in staple crops ([Montero, 2022](#)), giving workers a “voice” through surveys reduces absenteeism and turnover (e.g. [Adhvaryu et al. \(2019\)](#); [Cai and Wang \(2020\)](#)) and letting employees vote over compensation schemes increases productivity ([Mellizo et al., 2014](#)).

Our study also contributes to the extensive literature on gift exchange building on seminal work by [Akerlof \(1982\)](#) and others. Across many settings, studies show that recipients are more likely to comply with the giver’s requests after receiving unconditional gifts.⁵ However, the literature also highlights limitations of gift exchange, showing that it may not be a sufficiently strong motivator to change many behaviors ([DellaVigna et al., 2022](#)) and that positive effects can quickly dissipate ([Gneezy and List, 2006](#)). Closely related to our study, [Alpizar et al. \(2008\)](#) find that although small gifts increase the number of charitable donations, they also decrease conditional contributions, making the intervention unprofitable. Along similar lines, we find that while the conditionality of pay does not affect behavior at the extensive margin (task completion), intensive margin outcomes (e.g. letter quality) are lower under unconditional pay. One explanation is that participants may feel obligated to reciprocate, but unwilling to exert more effort than is necessary to conform to social norms ([Zlatev and Rogers, 2020](#)). Our results suggest that providing choice can address this limitation - even for participants who choose to be paid unconditionally.

Last, we contribute to the literature on the intention-behavior gap as we work with participants who have expressed an intention to write a letter. People struggle to follow through

⁵For example, a meta-analysis by [Church \(1993\)](#) finds that response rates increase by 13.2% when a monetary or non-monetary reward is attached to a mailed survey.

on their intentions in domains ranging from voting (Nickerson and Rogers, 2010), health screenings (Milkman et al., 2013), getting vaccinated (Milkman et al., 2011) and job search (Abel et al., 2019). Interventions such as action planning, reminders, and commitment devices have helped people to narrow but not close the intention-behavior gap (Rogers et al., 2015). In this paper we test a new approach by varying the conditionality of and choice over incentives at the point where they express their intentions.

2 Framework

Our theoretical framework is a modification of the Bénabou and Tirole (2006) (henceforth BT) model of incentives and prosocial behavior. An agent faces a binary decision, $x \in \{0, 1\}$, of whether to perform a prosocial task. The agent’s intrinsic motivation to perform the task is v . The individual also cares about money; following Bénabou and Tirole (2006, p.1665) we assume this valuation is the same across the population and equal to 1. There is also a cost to performing the prosocial task of κ . If v is a random variable that is unobserved by others then the agent also receives a reputational benefit from performing the task. Although the reputational benefit is a central feature of BT, we expect this to be less relevant in our task as the identity of the agent is not known to the principal and others cannot easily observe the agent’s participation decision.⁶

We extend the BT model to allow for four different payment schemes for task performance: no payment, an unconditional payment of π_u , a conditional payment of π_c , and a choice between the conditional or unconditional payments. The level of intrinsic motivation depends on the payment scheme: $v(\pi_u, \pi_c)$ represents intrinsic motivation when offered a choice between the unconditional payment and conditional payment, whereas intrinsic motivation under the no payment, unconditional payment and conditional payment schemes are

⁶While reputation effects play an important role on Amazon MTurk and is measured through the share of approved tasks, all of our participants work was approved before they were invited to submit the letter to ensure that reputational concerns do not factor into their decision.

represented as $v(0, 0)$, $v(\pi_u, 0)$ and $v(0, \pi_c)$, respectively. In line with the psychology literature, we extend the model to allow intrinsic motivation to consist of different components, which may be differently affected by the payment scheme: care for the public good, or pure altruism, p , reciprocity towards the principal and the perception of trust from the principal, r ⁷, and the perceived sense of autonomy, a . We can therefore express intrinsic motivation as the sum of these sources:

$$v(\pi_u, \pi_c) = p(\pi_u, \pi_c) + r(\pi_u, \pi_c) + a(\pi_u, \pi_c) \quad (1)$$

The agent can also experience guilt g if the task is not completed. The agent's utility function can then be written as

$$U(x, \pi_u, \pi_c) = \pi_u + (v(\pi_u, \pi_c) + \pi_c - \kappa)x - g(\pi_u, \pi_c)(1 - x) + R(x, \pi_u, \pi_c) \quad (2)$$

where $R(x, \pi_u, \pi_c) \equiv \mu_x E(v|x, \pi_u, \pi_c)$ is the value of the reputation effect. The reputation concern parameter μ_x is assumed to be constant across individuals and common knowledge. In order to make the model more tractable, we add the simplifying assumption that \tilde{v} is uniformly distributed between 0 and 1.⁸ This allows us to define the reputational benefit of participation as

$$\rho(\pi_u, \pi_c) \equiv \mu_x (E(v|x = 1, \pi_u, \pi_c) - E(v|x = 0, \pi_u, \pi_c)) = \frac{1}{2}\mu_x \quad (3)$$

For notational convenience we define the default level of reciprocity, guilt and autonomy

⁷Since positive reciprocity and perceived trust from the principal should respond similarly to incentives, we combine these two channels in r . We could also assume that positive reciprocity operates mainly through guilt avoidance (Zlatev and Rogers, 2020) in which case it would be subsumed in the guilt term introduced in equation (2).

⁸This distributional assumption means our model cannot generate the over-justification effect that occurs when extrinsic rewards crowd out reputational benefits. Although this effect may be important in certain contexts, we think this simplification is justified in our experiment, where reputation concerns are unlikely to be very important.

as those that exist when no payments are offered: $r(0, 0) = g(0, 0) = a(0, 0) = 0$, and $\tilde{v} \equiv v(0, 0) = p(0, 0)$. This means that the levels of reciprocity, guilt and autonomy experienced in any of the treatment payment schemes are defined relative to those that exist in the control treatment. Following the literature, we assume that conditional payments will increase extrinsic motivation, unconditional payments may trigger positive reciprocity towards the agent and feelings of guilt from not completing the task, and offering agents a choice between payments may increase their sense of autonomy: $r(\pi_u, 0) = \tilde{r}$, $g(\pi_u, 0) = \tilde{g}$ and $a(\pi_u, \pi_c) = \tilde{a}$. We assume that these sources of intrinsic motivation are unaffected by other payment schemes, and that care for the public good does not vary across payment schemes: $r(0, \pi_c) = g(0, \pi_c) = a(\pi_u, 0) = a(0, \pi_c) = 0$ and $p(\pi_u, \pi_c) = p(0, 0)$.

The participation condition for agents in the first three different treatment groups are then

- No payment: $\tilde{v} + \frac{1}{2}\mu_x > \kappa$
- Conditional payment: $\tilde{v} + \pi_c + \frac{1}{2}\mu_x > \kappa$
- Unconditional payment: $\tilde{v} + \tilde{r} + \tilde{g} + \frac{1}{2}\mu_x > \kappa$

Not surprisingly, agents in the no payment control group will participate if they have relatively high intrinsic motivation and low participation costs. Given our assumption of small and constant reputational effects, a conditional payment should increase participation relative to the control group by providing extrinsic motivation to participate.⁹ Under the BT assumption of fixed intrinsic motivation, introducing unconditional payments should have no effect on the participation decision. However, in our framework such payments may affect intrinsic motivation by inducing positive reciprocity towards the principal and feelings of

⁹In the more general case where \tilde{v} is not uniformly distributed, conditional payments may also reduce the reputational benefit of participation, which reduces the inclination to participate. The net effect of higher extrinsic motivation and lower reputation benefits could be positive or negative depending on the extent to which extrinsic motivation crowds out intrinsic motivation (Frey, 1994; Georgellis et al., 2011). The decision to abstract from payments affecting reputation is supported by our data, which demonstrate that conditional payments have a large positive effect on participation, despite the theoretical possibility that reputation concerns could cause a decrease in participation. One explanation for why reputation is less important is that principals and agents only interact once in our setting.

guilt if the task is not completed despite receiving payment. Our model therefore predicts that an unconditional payment will increase the participation rate if $\tilde{r} + \tilde{g} > 0$, in which case the composition of participants in this treatment group should also include agents who are more responsive to feelings of guilt and positive reciprocity.

When agents are offered a choice between payment schemes, this may further increase intrinsic motivation through a sense of autonomy. According to self-determination theory (Ryan and Deci, 2000) autonomy is one of the three primitive causes of intrinsic motivation: motivation is enhanced when people experience ownership of a task and reduced when they feel controlled. While rewards that are perceived as controlling can frustrate people’s need for autonomy and reduce intrinsic motivation (Falk and Kosfeld, 2006), experiments have shown that providing agents with meaningful choice tends to enhance autonomy and intrinsic motivation (Patall et al., 2008). Much of this experimental literature has focused on the effects of providing agents with a choice over *which* task to perform, or *how* to perform a specified task. Only a small number of studies have investigated the effect of allowing agents to choose some aspect of the rewards they receive for task completion (Margolis and Mynatt, 1986; Feehan and Enzle, 1991).¹⁰ To the best of our knowledge, no study has yet considered the effect of a choice between conditional and unconditional payments.

Based on this literature, we assume that offering agents a choice between payment schemes may increase perceived autonomy, in which case $\tilde{a} > 0$. When agents are offered a choice of payments, feelings of guilt and reciprocity are likely to depend on the payment scheme they choose. We assume agents who choose the unconditional payment will experience levels of positive reciprocity and guilt for non-participation similar to those in the unconditional payment group, whereas those who choose the conditional payment are unlikely to experience more than default levels of reciprocity or guilt. The participation conditional for agents in

¹⁰In the context of performance contingent pay, Balkin et al. (2015) propose providing employees with a choice over the amount and timing of pay in order to reduce the negative effects on perceived autonomy. Balkin et al. (2015) cite the example of knowledge-based pay for teachers, where salaries depend on higher education qualifications in their field, but teachers have the choice of whether, where and when to obtain such qualifications. To our knowledge, these proposals have not been empirically tested.

the choice treatment group will then be:

- Choose conditional payment: $\tilde{v} + \tilde{a} + \frac{1}{2}\mu_x + \pi_c > \kappa$
- Choose unconditional payment: $\tilde{v} + \tilde{r} + \tilde{g} + \tilde{a} + \frac{1}{2}\mu_x > \kappa$

In either case, the participation condition for those who opt into a payment scheme is the same as for those who were randomly allocated to that scheme, except for the addition of the autonomy term which should increase the participation rate if $\tilde{a} > 0$.

Of course, the agent's choice of payment scheme is endogenous and could create additional selection effects. Our framework allows us to reflect on which agents will select unconditional rather than conditional payments. Under the assumption that agents are expected utility maximizers who know the values of their own intrinsic motivation but are uncertain about the future cost of participation, the derivations in the Appendix show that unconditional payments will be selected by agents who are more sensitive to positive reciprocity and who care more about money. Intuitively, it seems like agents who anticipate high levels of guilt from non-participation would prefer conditional payments, but the effect of guilt on payment choice is ambiguous. The selection of high reciprocity agents into unconditional payments could strengthen this effect, while the selection of agents who care more about money into unconditional payment should weaken the effect.

3 Study Design

3.1 Recruitment

In September and early October 2020, we recruited a sample of 957 participants online for a one-time task of completing a short survey aiming to “*learn more about how to motivate*

people to help in get-out-the-vote efforts” ahead of the November presidential election.¹¹ (The consent form is in Online Appendix B1.) We require that participants are at least 18 years old and be located in the U.S.. At the beginning of the survey we collect data on participants’ demographic characteristics and their political leaning. We also elicit participants’ time preferences, guilt sensitivity and tendency to reciprocate.¹²

After completing the survey, we ask respondents if they are willing to participate in a get-out-the-vote campaign. Specifically, we first remind people that “*High voter turnout is important for a democracy.*” We then inform them that we are looking for volunteers to “*write a short non-partisan message to potential voters encouraging them to vote*”, which should take about five minutes and will need to be completed online in the next few days. (The full message can be found at Appendix Figure A1.) Importantly, the invitation is framed as a volunteering opportunity that is not required to get compensated for the the survey they are currently completing. We also do not mention receiving additional compensation, which likely leads to a selection of participants who are more intrinsically motivated. In order to shut down repeated-game incentives, we frame this as a one-time task.

45% of respondents say they are interested in participating in the campaign. Table A2 shows that we observe higher rates of volunteering among participants who are older, liberal, and voted in the last election (Col. 1-3). The average age among volunteers is 39.2 years

¹¹Following several recent papers on worker productivity (e.g. DellaVigna and Pope (2018); Abel (2022); DellaVigna et al. (2022)), we recruit these workers people via Amazon’s Mechanical Turk (MTurk). Buhrmester et al. (2016) concludes that data quality of samples collected from MTurk is at least equal to or even more reliable than both undergraduate lab samples and other Internet samples. However, recent research questions the data quality of MTurk (Gupta et al., 2021). To address these concerns we use the platform Cloud Research, which pre-screens MTurk participants and thus leads to more reliable data (Gupta et al., 2022). To further address concerns about data quality, participants need to have at least 95% of previous tasks approved and need to pass an attention test.

¹²We measure guilt sensitivity through the Test of Self-Conscious Affect (TOSCA-3) questionnaire, which is commonly used to assess people’s sensitivity to social emotions (Tangney et al., 1989). Specifically, we give participants four hypothetical scenarios and ask about respondents’ emotional reaction. (See Online Appendix Figure B2 for details). This survey-based measure has been shown to be highly correlated with commonly used measures of guilt sensitivity elicited through trust and dictator games (Bellemare et al., 2019). For (positive) reciprocity we use a survey question of how likely people are to return a favor that is predictive of behavior in incentivized investment games Falk et al. (2018). We estimate time-preference parameters beta and delta using data from hypothetical choices over monetary choices (Toubia et al., 2013)

and 51% identify as female. 64.8% report having a college degree and the average individual income in our sample is USD 45,200. 84.7% report participating in the last election and 95% plan to vote in the upcoming presidential election. The political affiliation is somewhat tilted with 55% identifying as liberal and 25% as conservative.

3.2 Randomization

Figure 1 summarizes the research design. People interested in participating are randomized into one of four groups. The control group is informed that they will receive a separate invite with a link to complete the task within a two day window that starts two days after the initial survey. The conditional payment group (T1) receives the following additional information “*As a thank you for volunteering, you will receive USD 1.50 after submitting the letter, paid as a bonus for this Human Intelligence Task (HIT)*”. The unconditional payment group (T2) receives the following message “*As a thank you for volunteering, you will receive USD 1.50 paid as a bonus for this HIT today.*” Last, the message for the choice group (T3) reads “*As a thank you for volunteering, you will receive USD 1.50 paid as a bonus for this HIT. You can receive the payment today or after submitting the letter.*” Participants then have to choose when they prefer to be paid. (See Appendix A.2.2 for detailed language.) Table A1 suggests that randomization was successful: none of the differences in characteristics between control and treatment groups are significant and the the joint significance of difference is well below conventional significance thresholds.

After completing this initial survey, we pay all participants and approve their HIT the *same day*. Being paid before they receive the invitation to submit the letter ensures that there are no monetary or reputational incentives for completing the task beyond those that are randomly assigned. On the day that they can start submitting the letter, we send a message reminding them that they said they were willing to write a message encouraging people to vote. We tell participants that they can write about whatever they think is relevant (and include some examples) and reiterate that there “*are no requirements for the content*

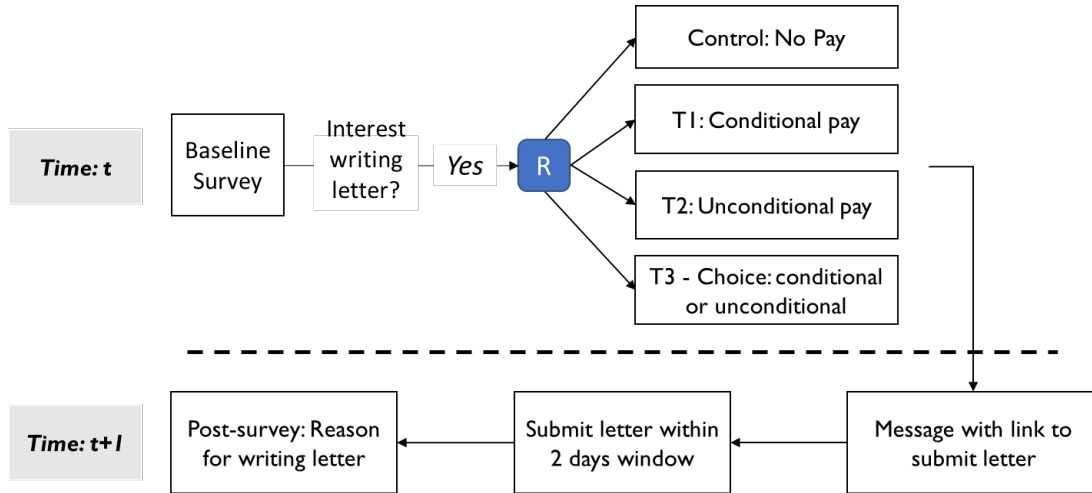


Figure 1: Experimental Design Overview

or length of your letter”. (See Appendix A6 for details.) The instructions includes a link to an external survey website where people can write the letter.¹³ This allows us to record the exact time people spent on completing this task.

We ask participants who submit the letter about their motivation to do so. First, we ask “*Why did you decide to write this letter?*”. People can choose multiple answers from a list of motivations (presented in random order) including “*For the compensation*”, “*To return a favor to the requestor*”, and “*Because I made a commitment to write it*” or write in their own answer. Afterwards, we ask them “*One a scale from 0 to 10, how guilty would you have felt if you had not written the letter?*”

3.3 Empirical Strategy

In measuring the effect of the payment schemes on the behavior of agents, we use two main empirical specifications:

¹³There are no additional MTurk tasks to ensure that participants have no reputational incentive to complete the task.

$$y_i = \alpha + \beta_1 \text{Conditional}_i + \beta_2 \text{Unconditional}_i + \beta_3 \text{Choice}_i + \beta_4 \mathbf{x}_i + u_i \quad (4)$$

$$y_i = \alpha + \beta_1 \text{Conditional}_i + \beta_2 \text{Unconditional}_i + \gamma_1 \text{ChoiceCon}_i + \gamma_2 \text{ChoiceUn}_i + \beta_4 \mathbf{x}_i + u_i \quad (5)$$

Coefficients β_1 , β_2 , and β_3 in equation 4 measure the effect of the three treatments on outcome y_i relative to the control group. Equation 5 splits group T3 according to participants' choice of payment timing, so γ_1 and γ_2 measure the effects of choosing the conditional and unconditional payments on y_i relative to the control group. One important caveat for the interpretation of γ_1 and γ_2 is that these coefficients may partly reflect the effect of self-selection of participants into their preferred payment schemes. Vector \mathbf{x}_i controls for individual covariates, including gender, age, education and income. All standard errors are computed to be robust to heteroscedasticity.

Our empirical analysis investigates three main categories of outcomes y_i . First, a binary variable measuring whether people complete the task, which measures the effect of treatment on effort at the extensive margin. Second, we use two measures of effort provision at the intensive margin: (i) how much time they spend writing the letter and (ii) how convincing the letter is to potential voters (who are not aware of the experiment or treatment assignment). Third, we use information on people's motivation to write the letter captured in a post-experiment survey for all participants who completed the task. This allows us to scrutinize the validity of hypothesized mechanisms for the observed treatment effects. Specifically, we use these responses to test whether changes in payment schemes indeed induce changes in extrinsic motivation, guilt or positive reciprocity. All of the empirical strategies were specified in the registered pre-analysis plan.

4 Main Effects

4.1 Extensive Margin: Task Completion

Table 1: Treatment Effects on Letter Submission

	Write Letter				
	(1)	(2)	(3)	(4)	(5)
T combined	0.232*** (0.057)				
T1: Conditional Pay		0.173** (0.069)	0.167** (0.069)	0.173** (0.069)	0.166** (0.069)
T2: Unconditional Pay		0.182*** (0.069)	0.189*** (0.070)	0.182*** (0.069)	0.189*** (0.070)
T3: Choice		0.352*** (0.066)	0.341*** (0.066)		
T3: Choice - Conditional				0.370*** (0.087)	0.360*** (0.088)
T3: Choice - Unconditional				0.343*** (0.073)	0.332*** (0.073)
Observations	418	418	417	418	417
Control Mean	0.42	0.42	0.42	0.42	0.42
R-square	0.040	0.061	0.075	0.061	0.075
Std Dev	0.50	0.50	0.50	0.50	0.50
Control Variables	N	N	Y	N	Y
P-value: T1=T2		0.891	0.742	0.891	0.741
P-value: T1=T3		0.005	0.006		
P-value: T2=T3		0.007	0.018		
P-v: T3 cond. = T3 uncond.				0.764	0.754

Notes: The outcome is an indicator for whether volunteers complete the task. Control variables include gender, age, education, and income. All estimations are OLS. Robust standard errors are in parentheses. P-values of test of equal treatment coefficients are reported in the last rows. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 1 reports treatment effects on the probability of submitting a letter.¹⁴ In the control

¹⁴Table A2 shows that only being older is (positively) correlated with the probability of submitting a letter conditional on volunteering (Col. 6). Other characteristics including political affiliation is not predictive of participating.

group 42% complete this task without any financial incentive to do so. This confirms that participants in our sample are intrinsically motivated to complete the task. It also demonstrates that, even in a sample of individuals who expressed an interest to perform a prosocial task, many fail to follow through on such intentions.

Column 1 shows that being assigned to any of the treatment arms increases the share of participants who complete the letter by 23.2 p.p. (55.2%). This effect is unpacked in column 2, which reveals that conditional and unconditional pay groups have similar treatment effects: task completion rates are 17.3 p.p. (41.2%) and 18.2 p.p. (43.3%) larger than the control group, respectively. Although extrinsic motivation have been documented to crowd out intrinsic rewards, in the context of our experiment – where reputation concerns are unlikely to be prevalent – this effect appears not to be very important. Perhaps more surprisingly, we find that an unconditional payment has a similarly large effect on participation as a conditional payment, despite this treatment offering no financial incentive to complete the task. The most obvious explanation for this result is captured by our theoretical framework: unconditional payments induce an increase in intrinsic motivation, possibly in the form of positive reciprocity (either because the payment is perceived as a gift, or as a signal of trust from the experimenter) or guilt for non-completion of the task.

The highest participation rate is achieved in the choice group, for whom the treatment effect is 35.2 p.p. (83.8%). This effect is nearly twice as large as that of the conditional or unconditional pay groups, and the differences between the choice and both other treatment arms are significant at the 1% level. All estimated treatment effects are robust to controlling for covariates. Giving participants a choice of whether they receive conditional or unconditional payments therefore further increases the inclination to perform the task. Since this choice is not associated with an increase in financial incentives, the most plausible interpretation would be that such a choice further increases intrinsic motivation to complete the task. This interpretation is consistent with the literature on autonomy, which has found that giving agents a “meaningful choice” regarding a task increases the sense of autonomy and in-

trinsic motivation experienced by agents, which in turn increased effort and performance. It is also possible that participants want to perform the tasks, and knew themselves well enough to select into payment schemes that would serve as a stronger commitment device for their future actions (Ariely and Wertenbroch, 2002; Kaur et al., 2015). In this case agents who are strongly motivated by financial incentives would select a conditional payment, whereas those who are motivated by reciprocity or guilt would select an unconditional payment.

In column 4 we split the choice group into those who chose to receive conditional payments (roughly a third of all participants) and those who chose unconditional payments (two-thirds). We observe that both groups experienced a similarly large treatment effect. When a worker chooses a conditional (unconditional) payment the probability that they submit a letter is 19.7 p.p. (16.1 p.p.) higher than when they are randomly assigned to this treatment. The magnitudes of these treatment effects are also very stable when we control for covariates, which is notable given concerns about self-selection into payment schemes within the choice group discussed above (Column 5).

4.2 Intensive Margin: Task Effort and Quality

Table 2 reports the effect on two measures of effort on the intensive margin, namely the time people take to write the letter and voters' assessments of how convincing their messages are. Measuring the time people choose to spend on a task rather than output over a fixed unit of time has been shown to be more elastic to incentives and has been used as a metric of worker motivation in several recent studies (Abeler et al., 2011; DellaVigna and Pope, 2018; DellaVigna et al., 2022). To evaluate the quality of letters, we recruit 315 participants and ask each person to rate the effectiveness of four letters on a 1-10 scale. We assigned raters' letters from different randomly assignment groups, which allows us to estimate specifications with rater fixed effects. This effectively estimates within-rater differences in how convincing letters are across assigned groups.

We find that offering any form of payment increases the time spent on the task by about 60 seconds (22%) and makes letters 0.58 points (0.21 s.d.) more convincing (Table 2, Column 1, 4).¹⁵ However, this average effect masks large differences between treatment groups. Both the conditional pay and choice group spend about 80 seconds (30%) longer on the task than the control group and almost 60 seconds (22%) more than the unconditional pay group (Column 2). Correspondingly, letters of these two groups are more convincing than those written by the control and unconditional pay group (Column 5). This adds an important caveat to our results on the effectiveness of unconditional pay: although it is effective in increasing effort at the extensive margin, it is less effective at the intensive margin where effort is more difficult to monitor.¹⁶ One possible explanation is that social norms stipulate that one reciprocates - either to avoid guilt (Zlatev and Rogers, 2020) or to feel a “warm glow” (Andreoni, 1990) - but not how much effort to exert.

Within the choice group, there are no significant difference between those who choose to be paid conditionally or unconditionally (Column 3, 6). However, these within-group estimates are relatively imprecise and there is suggestive evidence that participants choosing conditional pay tend to spend more time on the task (Column 3).

4.3 Cost-Effectiveness

Our results allow us to estimate the cost-effectiveness of different payment schemes by calculating the amount that a principal needs to pay for each *additional* letter submitted (compared to the number submitted in the control group). Conditional incentives (T1) increase the completion rate over the no pay condition from 42% to 59%, and are only paid to those who complete the letter. Since the payment value is 1.50 USD, this means the marginal

¹⁵Time to complete the letter is winsorized at the 5% level to account for outliers. Results are robust to other winsorization levels including at the 10% and 20% level.

¹⁶These results go against predictions of a multitasking model in which agents direct effort towards the metric used for incentive pay (Holmstrom and Milgrom, 1991). One explanation is that some agents do not internalize the message that payment is independent of the quality of the letter.

Table 2: Treatment Effects on Letter Quality

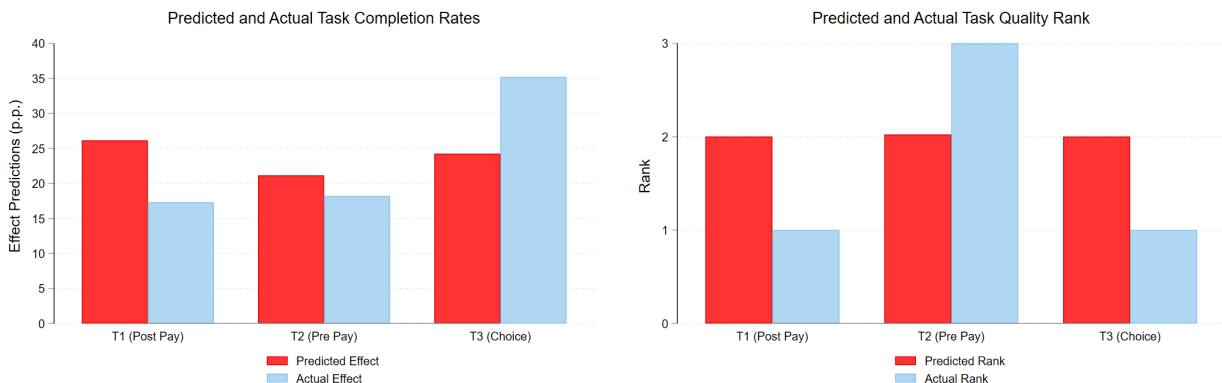
	Letter: Time			Letter: Convincing		
	(1)	(2)	(3)	(4)	(5)	(6)
T combined	60.3** (27.3)			0.580*** (0.179)		
T1: Conditional Pay		80.1** (35.4)	80.1** (35.5)		0.737*** (0.211)	0.737*** (0.212)
T2: Unconditional Pay		22.3 (31.5)	22.3 (31.6)		0.311 (0.216)	0.311 (0.216)
T3: Choice		79.9** (32.6)			0.655*** (0.205)	
T3: Choice - Conditional Pay			127.3*** (42.1)			0.685*** (0.255)
T3: Choice - Unconditional Pay			59.4 (36.4)			0.635*** (0.235)
Observations	234	234	234	1250	1250	1250
Control Mean	268.7	268.7	268.7	5.93	5.93	5.93
R-square	0.016	0.036	0.045	0.562	0.564	0.564
Std Dev	154.6	154.6	154.6	2.71	2.71	2.71
Control Variables	N	N	N	N	N	N
Fixed Effects	N	N	N	Rater	Rater	Rater
P-value: T1=T2		0.081	0.082		0.031	0.031
P-value: T1=T3		0.994			0.651	
P-value: T2=T3		0.056			0.071	
P-v: T3 cond. = T3 uncond.			0.124			0.85

Notes: The outcome in Col. 1-3 is the time people take to write the letter. The outcome in Col. 4-6 are ratings of how convincing letters are (on 1-10 scale). These regression include rater fixed effects. All estimations are OLS. Robust standard errors are in parentheses. P-values of test of equal treatment coefficients are reported in the last rows. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

letter for conditional pay costs the principal $1.50 \cdot 0.59 / 0.17 \approx 5.21$ USD. By contrast, the cost of the marginal letter for unconditional payments (T2) is $1.50 / 0.18 \approx 8.33$ USD. Conditional pay is more cost-effective than unconditional pay despite both payments having similar treatment effects, because conditional payments are restricted to those who complete the task. Giving workers a choice between payments (T3) is the most cost-effective monetary incentive, with each additional letter costing $1.50 \cdot (0.67 + 0.33 \cdot 0.79) / 0.35 \approx 3.99$ USD. In this group the large increase in completion rate outweighs paying the small share of workers who choose upfront compensation but do not complete the task. Taking task quality into account makes these differences, if at all, even more pronounced. Giving people a choice pays off in this setting both on the extensive and intensive margin.

4.4 Expert Predictions

Figure 2: Expert Predictions



Notes: The graph is based on predictions of 52 experts. The left panel shows the predicted and actual treatment effects size on task completion. The right panel shows the predicted and actual rank in the quality of letters.

The left panel of Figure 2 reports the predicted effect sizes across treatment groups, i.e. over the share completing the task in the control group (which experts were told is 42%). Experts make relatively accurate predictions for the effect size of unconditional payments (21.1 p.p. vs. actual 18.2 p.p.). By contrast, they overestimate task completion rates in the conditional payments group by almost 9 p.p. (51%), while underestimating task completion

in the choice group by about 11 p.p. (31%). This suggests that people overestimate the power of extrinsic (monetary) incentives. They also underestimate the effectiveness of providing workers with a choice, which may explain why this type of intervention has not been studied before.

The right panel of Figure 2 shows the average rank experts assigned to the treatment groups with respect to task quality, i.e. a lower rank implies higher quality. On average, experts predict that all treatment groups lead to a very similar quality rank, thus underestimating the positive effect of both conditional payment and payment choice on task quality.

5 Mechanisms

Our results demonstrate that while both conditional and unconditional payments can encourage agents to complete a pro-social task, the effectiveness is doubled when agents can choose between these two contracts. Guided by our theoretical framework (Section 2), this section uses self-reported motivations for completing the survey and data on personality traits (guilt sensitivity, reciprocity, time preferences) to test for the underlying mechanisms of our results.

Table 3 reports results on the motivation for completing the task (Equations 4 and 5). As predicted by the framework, receiving compensation for completing the task is a stronger motivator for the conditional payment group than for the control, unconditional or choice groups (Column 1). This supports the notion that conditional payments increase participation via increased extrinsic motivation. Within the choice group, compensation is also a stronger motivator for those who selected conditional payments (Column 2). In contrast, wanting to return a favor is most frequently cited as a motivating factor for participants in the unconditional payment group (Column 3), consistent with an increase in intrinsic motivation due to positive reciprocity. We also hypothesize that unconditional payments

Table 3: Motivation for writing the letter

	Compensation		Return Favor		Made Commitm.		Avoid Guilt	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
T1: Conditional Pay	0.580*** (0.101)	0.580*** (0.101)	0.273** (0.119)	0.273** (0.120)	-0.023 (0.070)	-0.023 (0.070)	-1.322* (0.774)	-1.322* (0.778)
T2: Unconditional Pay	0.257** (0.108)	0.259** (0.107)	0.390*** (0.113)	0.389*** (0.114)	-0.046 (0.074)	-0.046 (0.074)	-0.337 (0.749)	-0.335 (0.753)
T3: Choice	0.379*** (0.109)		0.162 (0.112)		-0.127 (0.080)		-0.746 (0.786)	
T3: Choice - Conditional Pay		0.651*** (0.118)		0.054 (0.133)		-0.118 (0.102)		-0.466 (0.996)
T3: Choice - Unconditional Pay		0.218* (0.127)		0.226* (0.129)		-0.133 (0.098)		-0.911 (0.947)
Observations	159	159	159	159	159	159	159	159
Control Mean	0.22	0.22	0.22	0.22	0.93	0.93	6.93	6.93
R-Square	0.190	0.240	0.116	0.124	0.045	0.045	0.061	0.062
Std Dev	0.42	0.42	0.42	0.42	0.27	0.27	2.87	2.87
Control Variables	N	N	N	N	N	N	N	N
P-value: T1=T2	0.001	0.001	0.292	0.297	0.760	0.761	0.187	0.188
P-value: T1=T3	0.046		0.308		0.174		0.471	
P-value: T2=T3	0.252		0.029		0.332		0.596	
P-v: T3 cond. = T3 uncond.		0.002		0.229		0.903		0.699

Notes: The dependent variable in Column (1) and (6) is whether participants state that compensation, returning a favor or making a commitment were reasons why they completed the task. Column (7) and (8) measure how guilty they would have felt on a 1-10 scale had they not submitted a letter. All estimations are OLS. Robust standard errors are in parentheses. P-values of test of equal treatment coefficients are reported in the last rows. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

may induce participants with an increased sense of guilt for not completing the task, as concluded by [Zlatev and Rogers \(2020\)](#). However, we find no evidence that participants in the unconditional payment group are more motivated by either wanting to avoid feelings of guilt (Column 7), or the fact that they made a commitment (Column 5) to write the letter (both of which we think would capture guilt avoidance behavior). This suggests that the effectiveness of unconditional payments may operate primarily through positive reciprocity rather than the avoidance of guilt.

Turning to the choice group, participants are *less* likely to report that they wanted to return a favour (Column 3). This suggests that their increased motivation to complete

the task and to write persuasive letters operates through some other channel than positive reciprocity. One potential explanation that has featured prominently in the psychology literature (Ryan and Deci, 2000) is that choice increases intrinsic motivation through greater perceived autonomy. The experimental literature (Patall et al., 2008) has confirmed that such effects can be strong, especially when such choices are instructionally irrelevant, limited in number and in a natural rather than a contrived laboratory context, all of which apply to our setting. This interpretation is also consistent with some recent studies (Adhvaryu et al., 2019; Mellizo et al., 2014), showing that offering workers decision power and ownership has positive effects on outcomes like productivity.

The results on personality traits are broadly consistent with the findings on self-reported motivations (Table A.3). Those with above median levels of reciprocity are substantially more likely (9 p.p.) to submit the letter and spend more time writing it (19%) when assigned to the unconditional pay group (compared to conditional pay). We find an even larger difference in submission rates (21 p.p.) for those selecting into unconditional rather than conditional payments (Col. 1). These effects are large, but not precisely estimated. By contrast, participants with higher levels of guilt sensitivity are not more likely to complete the letter when being assigned to unconditional pay compared to other incentives (Columns 3, 4). Although our sample size does not allow us to draw confident inferences from these regressions, it is worth noting that the pattern conforms to that observed in self-reported motivations: unconditional pay is effective because it leverages the desire to reciprocate, rather than sensitivity to guilt.

In Section 2, we postulate that choice of payments may increase letter submissions by enhancing agents' autonomy and intrinsic motivation. This section also discusses the possibility that the increase in participation is driven by selection effects: agents choose their preferred contract, which changes the composition of groups and affects participation rates. However, our framework in Section 2 suggests that if agents are time-consistent but uncertain about the future cost of participation, selection effects may also reduce participation rates. Agents

who care more about money will select into the unconditional pay group, and this selection effect will weaken the incentive to participate. The effect of guilt aversion on payment choice is ambiguous, so this can either increase or decrease the participation rate. Only selection based on reciprocity, where people who receive utility from reciprocity (e.g., in the form of a “warm glow”) choose the unconditional payment, will unambiguously increase participation rates. If we instead assume agents are time-inconsistent and sophisticated, then they may select into a payment scheme as a commitment mechanism. In this case, we would expect selection effects to be stronger for those who are more time-inconsistent and more self-aware.

Results from personality data, while estimated imprecisely, provide evidence against the hypotheses that selection can explain the effectiveness of the choice treatment. High reciprocity and high guilt sensitive workers are *less* likely (by 7 and 10 p.p. respectively) to choose unconditional payments, and these selection effects should reduce the effectiveness of the choice treatment. While we do not have a measure of how much participants value money, any selection would *reduce* the effectiveness of the choice treatment for time-consistent agents as those who are most motivated by extrinsic incentives would choose to receive the unconditional pay. We also find no correlation between a measure of time inconsistency and the choice of payment contract.¹⁷

6 Conclusion

Many modern workplaces include features similar to those in our study: intrinsically motivated agents completing tasks that are difficult for principals to precisely monitor. We test a novel dimension of choice in such a context - letting workers decide whether they want

¹⁷We follow [Toubia et al. \(2013\)](#) and implement an adaptive method to estimate time preference parameters. We furthermore find that demographic characteristics conditional on submitting a letter do not vary significantly by incentive scheme, suggesting that treatment effects do not operate primarily through a selection mechanism (Table B1).

to be paid conditionally or unconditionally. Similar to other studies on autonomy, which typically give choice over task content, we find large positive effects, both for performance that is easy (letter submission) and difficult (letter quality) for the principal to observe. These results suggest that principals have an additional tool and can harness the positive effects of autonomy including in settings where giving workers a choice over work content is not feasible. Future research should test whether these results extend to other (e.g. non pro-social) tasks and explore whether giving choice over other aspects of the principal-agent relationship is equally effective.

Last, we turn to the question of worker welfare. A few recent studies examine whether nudges can have negative welfare effects ([Allcott and Kessler, 2019](#); [DellaVigna et al., 2012](#); [Zlatev and Rogers, 2020](#)). This concern is relevant for our unconditional payment treatment, which may be effective by inducing guilt, leaving some participants worse off if they fail to submit the letter. If positive reciprocity operates primarily through the desire to avoid guilt, then this mechanism may be similarly onerous. One of the benefits of offering agents a choice over payments, apart from increasing intrinsic motivation through autonomy, is that it allows agents to opt out of welfare reducing payment schemes. While we leave the question of welfare effects to future research, we find suggestive supportive evidence that choice can mitigate potential negative welfare effects as agents who are prone to feeling guilt are more inclined to select conditional payments.

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A Appendix

A.1 Tables

Table A1: Balance Table

Variable	(1) Control		(2) Uncond. (T1)		(3) Cond. (T2)		(4) Choice (T3)		T-test Difference		
	N	Mean/SE	N	Mean/SE	N	Mean/SE	N	Mean/SE	(1)-(2)	(1)-(3)	(1)-(4)
Age	98	39.531 (1.185)	110	39.700 (1.118)	109	38.349 (1.048)	99	39.313 (1.354)	-0.169	1.182	0.217
Female	98	0.551 (0.051)	110	0.491 (0.048)	109	0.450 (0.048)	100	0.570 (0.050)	0.060	0.101	-0.019
College	98	0.663 (0.048)	110	0.673 (0.045)	110	0.609 (0.047)	100	0.650 (0.048)	-0.009	0.054	0.013
Income	98	46224 (2081)	107	44836 (2197)	108	46065 (2138)	97	43608 (2227)	1388	160	2616
Voted (last)	98	0.847 (0.037)	110	0.873 (0.032)	110	0.827 (0.036)	100	0.820 (0.039)	-0.026	0.020	0.027
Vote (next)	98	0.949 (0.022)	110	0.973 (0.016)	110	0.945 (0.022)	100	0.910 (0.029)	-0.024	0.004	0.039
Guilt	98	0.880 (0.060)	110	0.861 (0.069)	110	0.911 (0.062)	100	0.993 (0.071)	0.019	-0.031	-0.113
Shame	98	0.601 (0.080)	110	0.442 (0.084)	110	0.455 (0.074)	100	0.534 (0.077)	0.160	0.146	0.067
Conservative	98	0.296 (0.046)	110	0.255 (0.042)	110	0.227 (0.040)	100	0.240 (0.043)	0.041	0.069	0.056
Liberal	98	0.500 (0.051)	110	0.591 (0.047)	110	0.536 (0.048)	100	0.570 (0.050)	-0.091	-0.036	-0.070
F-test of joint significance (p-value)									0.759	0.438	0.713

Notes: The value displayed for t-tests are the differences in the means across the groups. The value displayed for F-tests are p-values. Standard errors are robust. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table A2: Correlates of Volunteering and Letter Submission

	Volunteer			Submit Letter		
	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.004*** (0.001)	0.003** (0.001)	0.003** (0.001)	0.004** (0.002)	0.004** (0.002)	0.004** (0.002)
Female	0.028 (0.032)	0.034 (0.033)	0.020 (0.033)	0.030 (0.048)	0.028 (0.048)	0.027 (0.049)
4 Yr College		0.059* (0.036)	0.033 (0.036)		-0.008 (0.053)	-0.007 (0.054)
Income		0.006 (0.008)	0.006 (0.008)		-0.008 (0.012)	-0.010 (0.012)
Voted (last)			0.130*** (0.046)			-0.014 (0.078)
Voted (next)			0.030 (0.067)			0.129 (0.129)
Conservative			-0.000 (0.048)			-0.045 (0.073)
Liberal			0.072* (0.043)			-0.073 (0.064)
Observations	957	927	920	431	423	423
Control Mean	0.45	0.45	0.45	0.58	0.58	0.58
R-square	0.01	0.01	0.03	0.01	0.01	0.02

Notes: Dependent variables are binary variables for agreeing to volunteer (Col 1-3) and submitting the letter conditional on volunteering (Col. 4-6). All estimations are OLS. Robust standard errors are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A3: Effort and Personality Traits

	Write letter	Letter time (log)	Write letter	Letter time (log)
	(1)	(2)	(3)	(4)
T1: Conditional Pay	0.138 (0.093)	0.174 (0.162)	0.093 (0.100)	0.117 (0.207)
T2: Unconditional Pay	0.096 (0.096)	-0.136 (0.153)	0.138 (0.100)	-0.005 (0.156)
T3: Choice - Conditional Pay	0.276** (0.107)	0.152 (0.188)	0.308*** (0.110)	0.051 (0.185)
T3: Choice - Unconditional Pay	0.493*** (0.104)	0.498*** (0.162)	0.302* (0.154)	0.491** (0.218)
Reciprocity	-0.013 (0.103)	-0.199 (0.152)		
Reciprocity*T1	0.097 (0.142)	0.174 (0.237)		
Reciprocity*T2	0.181 (0.141)	0.367* (0.213)		
Reciprocity*T3Con	-0.125 (0.164)	-0.001 (0.233)		
Reciprocity*T3Unc	0.095 (0.153)	0.064 (0.250)		
Guilt			-0.014 (0.101)	-0.079 (0.165)
Guilt*T1			0.156 (0.138)	0.198 (0.252)
Guilt*T2			0.086 (0.138)	0.121 (0.220)
Guilt*T3Con			0.105 (0.189)	-0.031 (0.265)
Guilt*T3Unc			0.064 (0.147)	0.186 (0.246)
Observations	395	220	418	234
Control Mean	0.42	5.45	0.42	5.45
Std Dev	0.50	0.52	0.50	0.52
T1=T2	0.542	0.410	0.602	0.747
T3 Unc = T3 Con	0.197	0.806	0.833	0.431

Notes: The dependent variables are an indicator for whether volunteers completed the task (Columns (1) and (3)) and the log time people take to write the letter (Column (2) and (4)). All estimations are OLS. Robust standard errors are in parentheses. The mean of the dependent variable for the control group is reported in the last row. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

A.2 Experimental Design

A.2.1 Soliciting Participation

Figure A1: Volunteer Recruitment

High voter turnout is important for a democracy.

We are looking for **volunteers** to write a short (1-2 paragraph) **non-partisan message** to potential voters encouraging them to vote. This should only take about **5 minutes** and can be done **online**. It would need to be completed in the next few days.

Are you interested in participating? (This is **completely voluntary** and not required to get compensated for this HIT.)

- Yes
- No

A.2.2 Randomly Assigned Messages

Figure A2: Control group message

Thank you for your help in this important matter.

You can **submit** the letters between **Tuesday (Oct 27) and Thursday (Oct 29)**.
You will receive a separate message with the link to submit the letter on Tuesday.

Figure A3: Conditional Pay (T1) Message

Thank you for your help in this important matter.

You can **submit** the letters between **Tuesday (Oct 27) and Thursday (Oct 29)**.
You will receive a separate message with the link to submit the letter on Tuesday.

As a thank you for volunteering, you will receive **\$1.50** after submitting the letter, paid as a **bonus** for this HIT.

Figure A4: Unconditional Pay (T2) Message

Thank you for your help in this important matter.

You can **submit** the letters between **Tuesday (Oct 27) and Thursday (Oct 29)**.

You will receive a separate message with the link to submit the letter on Tuesday.

As a thank you for volunteering, you will receive **\$1.50** paid as a **bonus** for this HIT **today**.

Figure A5: Choice over Pay (T3) Message

Thank you for your help in this important matter.

You can **submit** the letters between **Tuesday (Oct 27) and Thursday (Oct 29)**.

You will receive a separate message with the link to submit the letter on Tuesday.

As a thank you for volunteering, you will receive **\$1.50**, paid as a **bonus** for this HIT.

You can receive the **payment today OR after submitting** the letter.

- Receive bonus for letter today
- Receive bonus after writing letter

A.2.3 Writing Instructions

Figure A6: Writing Instructions

As a reminder, you said you are willing to write a **1-2 paragraph non-partisan message** to potential voters encouraging them to vote. We will share it with potential voters.

You can write about whatever you think is relevant including:

- The importance of voting for a functioning time
- Why is voting important to you
- Current affairs that make it especially important to vote in this election.

There are no requirements for the content or length of your letter.

Thank you for your effort.

B Online Appendix

B.1 Consent

Figure B1: Consent Form

You have been asked to complete this survey as part of a research project conducted by Martin Abel, faculty at Middlebury College. The research project is designed to learn more about how to motivate people to help in get-out-the-vote efforts. You will be asked to complete a seven-minute survey for which you receive \$0.40. If you are interested, you will also have the chance to participate in a follow-up task in which you write a short message encouraging others to vote.

Your responses are **entirely voluntary**, and you may refuse to complete any part or all of this survey. This survey is designed to be **confidential**, meaning that we will take measures to ensure that information obtained from participants is not revealed. Toward that end, please do not enter your name in this survey or include any information in your responses that makes it easy to identify you.

By completing and submitting the survey, you affirm that you are at least 18 years old and that you give your consent for Martin Abel to use your answers in their research. If you have any questions about this research before or after you complete the survey, please contact Martin Abel (mabel@middlebury.edu). If you have any concerns or questions about your rights as a participant in this research, please contact the Chair of the Middlebury Institutional Review Board at irb@middlebury.edu.

- I agree
- I don't agree (will exit survey)

B.2 Survey Questions

Figure B2: Guilt / Shame Sensitivity Questions (TOCA)

Imagine you and a group of colleagues worked very hard on a project. Your boss singles you out for a bonus.

	Very unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Very likely
You would feel you should not accept it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You would feel alone and apart from your colleagues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You make a big mistake on an important project at work. People depended on you, and your boss criticizes you.

	Very unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Very likely
You would think: "I should have recognized the problem and done a better job."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You would feel like you wanted to hide.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You attend a colleague's party and spill red wine on their new light carpet, but you think no one notices.

	Very unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Very likely
You would stay late to help clean up the stain after the party.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You would wish you were anywhere but at the party.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You are driving down the road, and you hit a small animal.

	Very unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Very likely
You'd feel bad you hadn't been more alert driving down the road.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You would think: "I'm terrible."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Table B1: Comparison of characteristics of workers submitting the letter

Variable	(1) Control		(2) Uncond. (T1)		(3) Cond. (T2)		(4) Choice (T3)		T-test Difference		
	N	Mean/SE	N	Mean/SE	N	Mean/SE	N	Mean/SE	(1)-(2)	(1)-(3)	(1)-(4)
Age	41	38.98 (2.09)	65	41.83 (1.50)	65	38.29 (1.42)	76	40.289 (1.579)	-2.855	0.683	-1.314
Female	41	0.585 (0.078)	65	0.508 (0.062)	66	0.455 (0.062)	77	0.584 (0.057)	0.078	0.131	0.001
College	41	0.610 (0.077)	65	0.692 (0.058)	66	0.621 (0.060)	77	0.688 (0.053)	-0.083	-0.011	-0.079
Income	41	45183 (3260)	62	45685 (2905)	65	46615 (2850)	74	41858 (2465)	-502	-1432	3325
Voted (last)	41	0.805 (0.063)	65	0.892 (0.039)	66	0.848 (0.044)	77	0.844 (0.042)	-0.087	-0.044	-0.039
Vote (next)	41	0.951 (0.034)	65	0.985 (0.015)	66	0.970 (0.021)	77	0.922 (0.031)	-0.033	-0.018	0.029
Conservative	41	0.317 (0.074)	65	0.231 (0.053)	66	0.212 (0.051)	77	0.260 (0.050)	0.086	0.105	0.057
Liberal	41	0.463 (0.079)	65	0.569 (0.062)	66	0.500 (0.062)	77	0.584 (0.057)	-0.106	-0.037	-0.121
F-test of joint significance (p-value)									0.693	0.733	0.655

Notes: The value displayed for t-tests are the differences in the means across the groups. The value displayed for F-tests are p-values. Standard errors are robust. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

B.3 Mathematical Appendix

In order to determine selection into payment schemes, we suppose that the agent knows the values of $\frac{1}{2}\mu_x$ and $v(\pi_u, \pi_c)$, but is uncertain about the future value of κ , which varies uniformly between κ^- and κ^+ .

Suppose the agent is a risk-neutral expected utility maximizer, who does not discount future costs or benefits. If the principal offers the agent a choice between a conditional and unconditional payment, and the agent opts for the conditional payment, her participation condition becomes

$$\tilde{v} + \tilde{a} + \frac{1}{2}\mu_x + \pi_c > \kappa$$

whereas if she chooses the unconditional payment, her participation condition becomes

$$\tilde{v} + \tilde{r} + \tilde{g} + \tilde{a} + \frac{1}{2}\mu_x > \kappa$$

The agent's choice of payment scheme will be determined by which option gives the highest expected utility. The expected utility of choosing the conditional payment is

$$\begin{aligned} E(U|\text{Choose } \pi_c) &= \int_{\kappa^-}^{\tilde{v} + \tilde{a} + \frac{1}{2}\mu_x + \pi_c} (\tilde{v} + \tilde{a} + \frac{1}{2}\mu_x + \pi_c - \kappa) d\kappa \\ &= P_c(\tilde{v} + \tilde{a} + \frac{1}{2}\mu_x + \pi_c - E(\kappa|\kappa < \tilde{v} + \tilde{a} + \frac{1}{2}\mu_x + \pi_c)) \end{aligned}$$

where $P_c \equiv P(\kappa < \tilde{v} + \tilde{a} + \frac{1}{2}\mu_x + \pi_c)$. The expected utility of choosing the unconditional payment is

$$\begin{aligned} E(U|\text{Choose } \pi_u) &= \int_{\tilde{v} + \tilde{r} + \tilde{g} + \tilde{a} + \frac{1}{2}\mu_x}^{\kappa^+} (\pi_u - \tilde{g}) d\kappa + \int_{\kappa^-}^{\pi_u + \tilde{v} + \tilde{r} + \tilde{a} + \frac{1}{2}\mu_x} (\pi_u + \tilde{v} + \tilde{r} + \tilde{a} + \frac{1}{2}\mu_x - \kappa) d\kappa \\ &= (1 - P_u)(\pi_u - \tilde{g}) + P_u(\pi_u + \tilde{v} + \tilde{r} + \tilde{a} + \frac{1}{2}\mu_x - E(\kappa|\kappa < \tilde{v} + \tilde{r} + \tilde{a} + \frac{1}{2}\mu_x)) \end{aligned}$$

where $P_u \equiv P(\kappa < \tilde{v} + \tilde{r} + \tilde{g} + \tilde{a} + \frac{1}{2}\mu_x)$

If $\kappa \sim \text{Uniform}(\kappa^-, \kappa^+)$ then

$$E(U|\text{Choose } \pi_c) = P_c \frac{1}{2}(\tilde{v} + \tilde{a} + \frac{1}{2}\mu_x + \pi_c - \kappa^-)$$

and

$$E(U|\text{Choose } \pi_u) = \pi_u - \tilde{g} + P_u \frac{1}{2}(\tilde{v} + \tilde{r} + 2\tilde{g} + \tilde{a} + \frac{1}{2}\mu_x - \kappa^-)$$

The relative attractiveness of choosing the unconditional payment can therefore be expressed as

$$\gamma \equiv \pi_u + P_u \frac{1}{2}(\tilde{r} + 2\tilde{g} - \pi_c) + (P_u - P_c) \frac{1}{2}(\tilde{v} + \tilde{a} + \frac{1}{2}\mu_x + \pi_c - \kappa^-) - \tilde{g} \quad (6)$$

If we focus on cases in which $\pi = \pi_c = \pi_e$, as in our application, and $0 < P_u < 1$, then the following statements follow directly from equation 6:

$$\frac{\partial \gamma}{\partial \tilde{r}} = P_u + \frac{1}{2} \frac{g}{\kappa_+ - \kappa_-} \geq 0$$

$$\frac{\partial \gamma}{\partial \pi} = 1 - P_u \geq 0$$

$$\frac{\partial \gamma}{\partial g} = \frac{3}{2} P_u - 1 + \frac{g}{2(\kappa_+ - \kappa_-)}$$

We would therefore expect agents to be more likely to chose the unconditional payment when the value of payments are high (or if they care more about the payment), and amongst agents who experience high utility from reciprocity. The effect of guilt on payment choice is ambiguous: higher guilt sensitivity can either increase or decrease the probability of choosing unconditional payments.