A Gift with Thoughtfulness: A Field Experiment on Work Incentives^{*}

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Abstract

We conduct two field experiments to investigate whether and how different forms of monetary gifts influence workers' performance in the workplace. Temporary research assistants are surprised with a monetary gift after completing a pre-announced task and decide whether to work on an additional one. We find in both experiments that the impact of gift type on workers' productivity is contingent on the gift amount. Specifically, for the larger but not the smaller gift amount, a more thoughtful presentation of the gift cash enclosed in a red envelope outperforms plain cash by increasing workers' overall productivity, willingness to participate, and work quality. More importantly, these effects prevail under an unappealing pay scheme in the task, as workers are more likely to perceive the thoughtful gift as the employer's appreciation, which counteracts the negative income effect stemmed from reference dependence.

Keywords: thoughtful gift, gift exchange, reciprocity, reference dependence, field experiment

JEL Classification: C93, D9, J3

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1 Introduction

How to motivate employees to exert a high level of effort is an important and challenging topic in economics. Since the seminal work by Akerlof (1982) and Akerlof and Yellen (1988, 1990), a large volume of literature in experimental and behavioral economics has documented the importance of gift exchange, i.e., workers exert more effort to reciprocate better payments than market-clearing wages—"gifts" from the employers (see Fehr et al., 1993; Hannan et al., 2002; Charness, 2004; Gneezy and List, 2006; Hossain and Li, 2013).

Studies in the literature show that the efficacy of gifts in generating workers' reciprocity depends on the size of the gift (Hannan et al., 2002; Ariely et al., 2009; Ockenfels et al., 2015; Gilchrist et al., 2016). Workers' performance largely increases with the gift size (Hannan et al., 2002; Ockenfels et al., 2015; Gilchrist et al., 2016). The effect, however, can be nonmonotonic. Offering monetary incentives does not always improve workers' performance (Gneezy and Rustichini, 2000), and very high incentives may have a detrimental impact on performance (Pokorny, 2008; Ariely et al., 2009). In addition, the effect of the gift varies with work environments (Hossain and Li, 2013; Dellavigna et al., 2019; Englmaier and Leider, 2019) and workers' types and experiences (Hannan et al., 2002; Gneezy and List, 2006; Bellemare and Shearer, 2009; Hennig-Schmidt et al., 2010; Kube et al., 2013; Al-Ubaydli et al., 2015). For example, in certain social contexts, e.g., when the work is framed as a prosocial activity, a small monetary gift could crowd out workers' intrinsic motivation (Hossain and Li, 2013). When workers' effort is consequential to employers' payoffs, reciprocal workers are more likely to respond positively to gifts than are non-reciprocal workers (Dellavigna et al., 2019; Englmaier and Leider, 2019). Esteves-Sorenson (2017) conducts a field experiment and tests different confounds (e.g., agent disutility from being perceived as selfish, small samples, insufficient wage raises, etc.) that may lead to the mixed findings on gift exchange in the workplace. They find that workers' responses are consistent with a standard model—they increase effort in response to a piece rate rather than fixed wage increases.

One important area that has been understudied in the literature is the impact of different *forms* of gifts on workers' productivity. Economic theories that primarily focus on monetary incentives predict that conditional on the monetary value, gifts of different forms should have the same impact on motivating workers' effort as cash. This prediction, however, is at odds with the real-life gift-giving practices in which a tremendous amount of time and effort is spent on the choices of the *forms* of gifts, e.g., chocolates, flowers, and gift cards. In the U.S., 45% of workers reported that they gave gifts to their colleagues during holiday seasons, and 56% of them spent more than \$20 on gifts (CBS News, 2015).

Besides non-monetary gifts, monetary gifts are also widely used and take different forms

across cultures. For example, gift cards (also called gift certificates in North America or gift vouchers in the U.K.) are often used as alternatives to a cash gift among friends or coworkers. In some East and Southeast Asian cultures (e.g., China), cash gifts, often wrapped inside opaque red envelopes with auspicious phrases printed on the cover, are given to family members or friends during holiday seasons, or given to employees by supervisors or business owners as their appreciation or wish for good fortune.¹ In Japan, special kinds of envelopes called "kyuryo bukuro" or "shareikin fukuro" are used to wrap cash gifts given by employers to employees to show appreciation for their work.

Although the specific forms of monetary gifts vary by culture, they all require additional time and effort, signaling the gift givers' kind thoughts, and hence add warmth and fuzziness to plain cash. Surprisingly, the critical importance of the *forms* of gifts, as suggested in the ubiquitous gift-giving practices, has been noted in only a handful of studies in economics. Kube et al. (2012) find that an in-kind gift which signals more time and effort spent by the employer in gifting is more effective in increasing workers' productivity; a cash gift, when presented more thoughtfully as an artistically folded origami, is as effective as the in-kind gift and leads to 23 percent more output than when the same gift amount is presented in plain cash. Bradler and Neckermann (2019) find that while the monetary gift and thank you card individually induce higher performance, they do not work well together relative to the baseline without a gift unless a personal touch is added to the monetary gift with cash being hand folded into a bow tie or butterfly. These findings suggest that the employees' responses to gifts are malleable by the presentation and interpersonal elements of the gifts. Dellavigna and Pope (2017) compare the effects of standard economic incentives, non-monetary psychological motivators, and behavioral factors in a large-scale experiment. They find that monetary incentives have a strong and monotonic motivating effect on workers' effort. The psychological motivators are moderately effective but less so than economic incentives.

Our study adds to this emerging literature. We conduct two field experiments in China to investigate if and how a more thoughtful form of a monetary gift, relative to plain cash, influences workers' performance. Undergraduate students are offered a lump-sum pay to enter surveys into the computer. They are given a surprise monetary gift after completing the task and decide whether to work on an additional task with piece rate. The gift varies in amount and is given in plain cash or, more thoughtfully, wrapped in a red envelope. Experiment 1 focuses on a setting in which the piece rate in the additional task is substantially less appealing than the lump sum plus the gift. This setting simulates a pay cut, an important economic instance to study but hard to observe in practice due to the widely held belief on its adverse impact on employees' morale and productivity.

¹The color red is believed to symbolize good luck and ward off evil spirits in these cultures.

We find that for the larger but *not* the smaller gift, the more thoughtful cash gift in a red envelope works more effectively in increasing the overall output, participation, and work quality in the additional task than does plain cash. This result suggests an interaction effect between the gift type and size. Compared to the baseline with no gift, workers' performance increases substantially when they are offered a smaller surprise gift, but this increase deteriorates when they are given a larger gift, yielding an inversely U-shaped pattern in performance with respect to the gift size.

Two questions arise. What accounts for the inverse U-shape in performance? We conjecture that it is driven by reference dependence—an unappealing piece rate preceded by the generous lump-sum pay plus a surprise gift. The second question is whether the interaction between the gift size and type is robust. We construct a theoretical framework to elucidate these questions.

To investigate these questions empirically, we follow the guidance of our theoretical framework to design Experiment 2 based on a minor change of the design of Experiment 1. Specifically, we replace the low piece rate with a higher one so that reference dependence is predicted by our theory to play a less important role in Experiment 2. We find that the positive red envelope effect continues to exist for the larger but not the smaller gift size. We no longer find the inverse U-shape in performance with respect to the gift size. Both results are consistent with the predictions of our theoretical framework. They not only substantiate the robustness of the gift-size-and-type interaction but also shed light on reference dependence and the inverse U-shape observed in Experiment 1.

The rest of the paper is organized as follows. Section 2 presents the design of Experiment 1 and introduces hypotheses. Section 3 discusses the empirical analyses and results in Experiment 1. Section 4 introduces a theoretical framework to organize our findings in Experiment 1 and motivate Experiment 2. Section 5 presents Experiment 2 and the results. Section 6 concludes.

2 Experiment 1

In this section, we introduce the design of Experiment 1 and motivate the hypotheses based on previous findings in the literature.

2.1 Design

To investigate how the gift size and type influences workers' performance, we implement a 2x2 factorial between-subject design. In the four treatments, a monetary gift, varying in the

Table 1: Experiment 1 Design

	Gift Type						
		Cash	Red Envelope	Control(No Gift)			
Gift	Large (20 RMB)	45	45	48			
Amount	Small (5 RMB)	46	46	10			

Note: The number of participants are reported by treatment.

amount and type, is offered in a surprising fashion in the middle of the experiment. No gift is offered in the control treatment.

Task The real-effort task is for participants to enter survey answers in Chinese into a Microsoft Excel spreadsheet. Each survey contains the answer to one question, which takes 2 to 3 minutes on average to enter. This task is common for temporary research assistant jobs on campus and requires only reading and typing in Chinese.

Incentives The experiment consists of two phases. In the first phase, participants are given 50 copies of the survey and told to enter as many as possible in 40 minutes. Although they are told to enter the surveys as accurately as they can, everyone is paid a fixed amount of 60 RMB in this phase, and the payment does not depend on the accuracy of their entries.

Upon completion of their work, participants receive 60 RMB each in cash as pre-announced. In addition, they are each offered a surprise gift as a token of appreciation for their work. They are then asked if they are willing to stay to help with more survey entries in the second phase. The gift is a surprise since the participants are only informed about the 60 RMB fixed payment in the recruiting email. No information is given on the gift or the second phase until the end of phase one of the experiment.



Figure 1: Red Envelope Used in the Experiment

As shown in Table 1, the surprise gift varies in the type and amount across treatments.

The RMB cash bills are given to each participant directly in the Cash treatments or enclosed in a $16.3cm \times 8.8cm$ ($6.4in \times 3.5in$) opaque red envelope (Figure 1) in the Red Envelope treatments. These red envelopes are commonly used for gifting at the workplace in China and other East and Southeast Asian countries. The red envelopes we use have a generic design with "Best Wishes" printed in Chinese on the cover. They are conveniently available in stores for several cents each, so the monetary value is negligible. Similar to gift cards, the red envelope adds warmth and fuzziness to the cash gift. Different from gift cards, the use of cash enclosed in the envelope is not restricted to any particular stores or businesses. Therefore, cash wrapped in a red envelope in our experiment can be considered a *weak* manipulation of the thoughtfulness in presenting the monetary gift. ²

Two amounts, 5 RMB and 20 RMB, are considered. The smaller gift, 5 RMB, is about 8 percent of the 60 RMB fixed pay in phase one and the cost of a bottle of soft-drink beverage sold in vending machines on campus. The larger gift, 20 RMB, is about 33 percent of the 60-RMB fixed pay and the cost of a McDonald's combo meal sold in China.

Therefore, our choices of gift amount and type yield four treatments, Small Cash (SC), Large Cash (LC), Small Red Envelope (SRE), and Large Red Envelope (LRE).

In all the treatments, participants are told that the gift is offered as a token of appreciation for the work that they have just completed. In the two Cash treatments, a 5 RMB or 20 RMB bill is given to the participants. Since the amount of the cash gift cannot be seen through the opaque envelopes, the participants in the Red Envelope treatments are asked to open the envelopes to confirm the amount inside while the experimenter publicly announces the gift amount to ensure common knowledge.

Along with the surprise gift, each participant also receives a letter that asks for help with more survey entries for 1 RMB per copy. Note that the 1 RMB piece rate is substantially lower than the fixed pay of 60 RMB plus the surprise gift of 5 or 20 RMB in phase one.³

We use this low incentive purposefully in the second phase to investigate the participants' willingness to reciprocate in an unrequired task under a substantially less appealing incentive condition. The participants are asked to decide individually and privately whether to continue to work and if yes, how many copies (between 1 and 40) to complete. They record their decisions privately on their letters and return them to the experimenter. Those who

²In the Money Origami treatment in Kube et al. (2012), the monetary gift was given in the form of an origami shirt (artistically folded out of a 5-euro bill) and a 2-euro coin (with a smiley face drawn on it) glued together on a plain postcard. In Bradler and Neckermann (2019), cash is folded into a bow tie or butterfly to add a personal touch. Compared to the handmade element in the gifts in these two studies, the generic red envelope used in our study signals less time and effort invested by the employer.

³In the pilot experiment, participants completed 16 copies on average within 40 minutes, yielding an average payment of 3.75 RMB per survey including the surprise gift. The piece rate is chosen to be 1 RMB in the second phase of our experiment since it is substantially lower than 3.75 RMB.

choose to stay are each given another 40 copies of the survey and are asked to complete the number of copies specified in their letter.⁴ Figure 2 presents the timeline of the experiment.⁵

In the control treatment, no gift is offered. The experiment proceeds to phase two after each participant receives the 60 RMB payment at the end of phase one. The design is otherwise the same as in the treatments with a gift. A post-experiment questionnaire collects information on participants' demographics and perceptions on different gift types.



Figure 2: Experiment Timeline

Experiment 1 was conducted at Tsinghua University, Beijing, China from Fall 2016 to Summer 2017. Two hundred thirty undergraduate students participated in 40 sessions, eight sessions for each treatment, with an average of six participants per session. Table 1 reports the number of participants across treatments. We used a large computer lab, and the participants sat far away from each other to minimize any peer effects (Falk and Ichino, 2006). The participants were randomly assigned to the treatments with each person participating in only one treatment. Since they were told to do some temporary research assistant work for an economics professor, no one was aware that they were participating in an experiment. Each session lasted for about 100 minutes. The average payment was 82 RMB (around \$13) per participant. Appendix A includes the experiment instructions and Appendix B the post-experiment questionnaire.

2.2 Hypotheses

We next introduce our hypotheses on how the gift type and size affect participants' overall output. In the introduction, we have discussed higher efficacy of more thoughtful gifts, rela-

⁴Participants wrote down their name and student ID along with the number of surveys that they wanted to work on. Every participant did this privately to minimize any potential peer effects or coordination among participants. No one changed the decisions after returning the letters to the experimenter, and no one completed more or less than the number of copies that they had pre-committed.

⁵This two-phase experiment design is similar to the protocol in Hossain and Li (2013) and Bradler and Neckermann (2019). Hossain and Li (2013), however, does not include any surprise gift since their focus is how the social context (i.e., work frame or social frame) affects individual decisions in a follow-up task. In contrast, we are interested in the impact of gift *type* and its contingency on gift size. Similar to our study, the experiment in Bradler and Neckermann (2019) consists of two phases with the experimental interventions being introduced at the beginning of the second phase. After being informed about the interventions, however, their workers are told to continue to work rather than *choosing* whether to do so.

tive to less thoughtful ones, in promoting worker effort (e.g., Kube et al. (2012) and Bradler and Neckermann (2019)). This important finding in the literature leads to Hypothesis 1.

Hypothesis 1 (Gift Type and Overall Output) The overall output in the second phase is higher in the red envelope treatments than in the corresponding plain-cash treatments, conditional on the gift amount.

Regarding the effect of monetary incentives, many studies in the literature show that workers exert higher effort when offered with a gift, for example, a wage increase (e.g., Hannan et al. (2002); Gneezy and List (2006); Ockenfels et al. (2015); Gilchrist et al. (2016)). Some other studies document detrimental impact of high incentives, however. Camerer et al. (1997) study the driving behavior of New York City cab drivers and find that they quit working once a loosely set daily income target—a reference point—is reached. In a real-effort lab experiment conducted in Germany, Pokorny (2008) reports an inversely Ushaped relationship between effort levels and piece-rate incentives—a negative impact of high-powered incentives on performance consistent with reference-dependent preferences. Ariely et al. (2009) find that very high monetary rewards result in lower performance in cognitive tasks such as adding numbers. Hennig-Schmidt et al. (2010) find that the increase in workers' productivity in an abstract-transcribing task is qualitatively lower when they receive a substantial surprise raise in the hourly wage than when they receive no raise. Overall, these studies suggest that a larger gift may promote or hamper worker productivity, relative to a smaller gift, thus leading to two alternative hypotheses below.

Hypothesis 2 (Gift Size and Overall Output) 2a) Conditional on the gift type, the overall output is the highest by the large gift receivers, followed by the small gift receivers and then those who receive no gift.

2b) Conditional on the gift type, the overall output is the highest by the small gift receivers, followed by the large gift receivers and then those who receive no gift.

3 Results in Experiment 1

Our research interest pertains to the effects of the surprise gift on workers' performance in the second phase. We also investigate how individual perceptions mediate these effects. For ease of presentation, a cash gift without a red envelope is referred to as "cash", and a cash gift enclosed in a red envelope is referred to as "red envelope". Each participant is treated as an independent observation in both the non-parametric tests (i.e., Wilcoxon rank-sum tests unless otherwise noted) and regression analyses. Bars representing 95% confidence intervals are included in all figures.

3.1 Overall Output



Figure 3: Unconditional Number of Copies Entered in the Additional Task

Figure 3 shows that participants complete more copies when the gift is given in a red envelope than in cash of the same amount, but this difference is marginally significant for the larger gift amount (13.689 in LRE vs. 9.689 in LC, p = 0.071) and insignificant for the smaller amount (15.413 in SRE vs. 13.978 in SC, p = 0.780). We also observe an inverse U-shape of the impact of the gift amount on performance, conditional on the gift type. Specifically, the average unconditional number of copies completed is 13.978 in SC, significantly higher than 7.688 in the control treatment (p = 0.019). But it declines to 9.689 in LC despite the greater gift amount, insignificantly different from in the control treatment (p = 0.734) and marginally *lower* than in SC (p = 0.076). Similarly, the average copies increase substantially from 7.688 in the control treatment to 15.413 in SRE (p = 0.013) but then decline slightly to 13.689 in LRE (LRE > Control, p = 0.019; LRE < SRE, p = 0.808).

These observations are confirmed in the Tobit regressions presented in Table 2. The dependent variable is the number of surveys entered by individual participants in the additional task with zero for non-participants. The main independent variables are the treatment dummies with the control treatment in the omitted category. Marginal effects are reported.

Evaluating the impact of gift type conditional on gift size, we find that the impact of the Large RE is significantly higher than Large Cash (7.700 v. 1.915, p = 0.087 in Column 1; 8.269 v. 1.422, p = 0.043 in Column 2) while the difference between Small RE and Small Cash is not significant (p > 0.10). This leads to Result 1.

	(1)	(2)
Small Cash	7.650**	9.068***
	(3.349)	(3.387)
Large Cash	1.915	1.422
	(3.291)	(3.249)
Small RE	8.140**	8.621**
	(3.362)	(3.372)
Large RE	7.700**	8.269**
	(3.368)	(3.356)
Copies in phase one		0.660***
		(0.169)
Female		2.984
		(1.902)
Afternoon		-4.694
		(3.497)
Night		-3.518
		(2.296)
Observations	230	230
Log Likelihood	-545.2	-535.1
Pseudo \mathbb{R}^2	0.010	0.028
Across-treatment c	omparison $(p \text{ value o})$	f two-sided Wald test)
SC vs. SRE	0.880	0.891
LC vs. LRE	0.087	0.043
SC vs. LC	0.088	0.026
SRE vs. LRE	0.891	0.913

Table 2: Overall Output—Unconditional Survey Entries (Tobit)

Notes: The dependent variable is the number of surveys entered by individual participants in the second phase. It is coded as zero for those who choose not to participate in phase two. The control treatment is in the omitted category. Column 2 also includes covariates such as participants' gender, performance in phase one, and the time dummies—morning (omitted), afternoon, or night—for the experimental sessions. Marginal effects are reported. Standard errors are reported in parentheses. *p < 0.1, **p < 0.05, ***p < 0.01. **Result 1 (Gift Type and Overall Output)** Workers' overall output is significantly higher when the larger surprise gift is offered in the red envelope than in cash. Such impact of gift type does not exist for the smaller gift, however.

Result 1 supports Hypothesis 1 for the larger, but not the smaller, gift size. It indicates that the effect of red envelope may be contingent on the gift size.

Evaluating the impact of the gift size conditional on the gift type, we find that the smaller gift in both cash and red envelope improves workers' overall performance relative to the control treatment with no gift (7.650 and 9.068 for SC, 8.140 and 8.621 for SRE in Columns 1 and 2, respectively, p < 0.05 for all the cases). The larger gift size, however, leads to a decrement in workers' performance. Specifically, the improvement in workers' performance weakens dramatically for the larger cash compared to the smaller cash (7.650 for SC v. 1.915 for LC, p = 0.088 in Column 1; 9.068 v. 1.422, p = 0.026 in Column 2). In contrast, this performance improvement decays only slightly for the red envelope (8.140 for SRE v. 7.700 for LRE, p = 0.891 in Column 1; 8.621 v. 8.269, p = 0.913 in Column 2). These discussions lead to Result 2.

Result 2 (Gift Size and Overall Output) In both the cash and the red envelope treatments, workers' overall output improves substantially when offered a smaller surprise gift, compared to the control treatment with no gift. An increase in the gift size, however, leads to a substantial decrement in workers' performance when the gift is offered in cash. This decrement in performance is mitigated when the gift is offered in the red envelope.

Result 2 supports Hypothesis 2b). It indicates that the impact of gift size on worker's productivity exhibits an inverse U-shape, suggesting the interplay between gift exchange and its competing force—reference dependence due to the decrement in pay in phase two. A novel finding in Result 2 is that the detrimental impact of high monetary incentives on performance is mitigated if the generous gift is presented more thoughtfully. We will return for possible explanations in Subsection 3.4. We will further investigate the impact of reference dependence and thoughtfulness in gifting in a theoretical framework (Section 4) and in Experiment 2 (Section 5).

3.2 Extensive and Intensive Margins

To decompose the treatment effects on the overall performance, we analyze the participation rate in the additional task (the extensive margin) and the number of survey entries conditional on participation (the intensive margin).



Figure 4: Extensive and Intensive Margins

As shown in Figure 4(A), participation rates across treatments exhibit the same patterns as the overall performance in Results 1-2. Specifically, the participation rates in the additional task are 60.9% in SC, 37.8% in LC, 58.7% in SRE, and 62.2% in LRE. All of them are significantly higher than 37.5% in the control except LC (SC > Control, p = 0.023; LC > Control, p = 0.978; SRE > Control, p = 0.040; LRE > Control, p = 0.017, test of proportions). The participation rate is similar between red envelope and cash for the smaller gift (58.7% vs. 60.9%, p = 0.832, test of proportions), but it is significantly higher for red envelope than for cash for the larger gift (62.2% vs. 37.8%, p = 0.020, test of proportions). These observations are further confirmed in the Probit regressions in Table 3. Similar to Table 2, all the treatment dummies except Large Cash are positive and significant in Columns 1-2 (p < 0.05). The participation rate is significantly higher in LRE than in LC (p = 0.013, χ^2 tests). Therefore, red envelope effectively motivates participation in the additional task regardless of the gift size while cash works for the smaller but not the larger gift size.

Figure 4(B) reports the number of survey entries *conditional* on participation, i.e., the intensive margin. No differences are found across treatments (p > 0.10, Wilcoxon rank-sum tests), which is confirmed by the OLS analysis in Columns 3-4 of Table 3. Our analyses on the intensive and extensive margins can be summarized in the following result.⁶

⁶The numbers of participants who enter the additional task are 18 in Control, 28 in SC, 17 in LC, 27 in SRE, and 28 in LRE. To examine the patterns of participation, we classify the workers into high and low productivity categories based on the number of survey entries in the first phase. Appendix C shows that high productivity workers are significantly more likely to participate than low productivity ones in SC, LC, and LRE (p = 0.035 in SC, 0.042 in LC, 0.042 in LRE) but not in SRE (p = 0.958). The participation patterns by both the high and low productivity workers are similar to the overall pattern in Figure 4(A). In addition, the participation decision could be potentially influenced by one's prosocial preferences (Dellavigna et al.,

	A. Participation (Probit)		B. Conditiona (OLS	al Entries
	(1)	(2)	(3)	(4)
Small Cash	0.229**	0.263***	2.464	2.961
	(0.095)	(0.095)	(3.770)	(3.743)
Large Cash	0.003	-0.004	5.147	4.061
Ŭ	(0.105)	(0.108)	(4.220)	(4.250)
Small RE	0.208**	0.224**	5.759	5.860
	(0.096)	(0.097)	(3.797)	(3.770)
Large RE	0.241**	0.257^{***}	1.500^{-1}	2.057
0	(0.094)	(0.094)	(3.770)	(3.788)
Copies in phase one	()	0.018***	()	0.442**
1 1		(0.006)		(0.206)
Female		0.118*		1.274
		(0.068)		(2.343)
Afternoon		-0.091		-3.364
		(0.126)		(4.128)
Night		-0.092		-2.599
0		(0.083)		(2.688)
Constant		()	20.500***	11.808*
			(2.941)	(6.042)
Observations	230	230	118	118
\mathbb{R}^2	0.037	0.079	0.028	0.013
Across-treatment com	parison (p valu	e of two-sided W	(ald test)	
SC vs. SRE	0.832	0.681	0.330	0.388
LC vs. LRE	0.021	0.013	0.344	0.606
SC vs. LC	0.028	0.012	0.486	0.778
SRE vs. LRE	0.731	0.731	0.208	0.268

Table 3:	Participation	and	Conditional	Survey	Entries
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Notes: The dependent variable of the Probit model in Columns 1-2 is the likelihood of participating in the additional task. Marginal effects are reported. The dependent variable of the OLS model in Columns 3-4 is the *conditional* number of survey entries. Pseudo R² is reported in Columns 1-2 and adjusted R² in Columns 3-4. Standard errors are in parentheses. *p < 0.1, **p < 0.05, ***p < 0.01.

Result 3 (Extensive and Intensive Margins) 3a) The treatment effects on the overall performance in Results 1-2 are primarily driven by the treatment effects on participation rather than on the conditional performance.

3b) No statistically significant difference is found in the conditional number of survey entries across treatments.

3.3 Work Quality

We construct a measure for work quality based on the Levenshtein distance (Vladimir, 1966). It is a metric used in linguistics and computer science to calculate the minimum number of single-character edits (i.e., insertions, deletions or substitutions) that are required to change one string into the other.⁷ For each survey, the accuracy rate is calculated as $(1 - \frac{d}{s})$ where d denotes the Levenshtein distance between the entered survey and the original one, and s denotes the total number of numerals, Chinese characters, and English letters in the original survey. The average accuracy rate of all surveys is used to measure one's work quality.



Figure 5: Work Quality—Accuracy Rate in the Additional Task

Figure 5 shows that the accuracy rate varies from 85.6% to 93.1% across treatments, but none of them is significantly different from 92.2% in the control (p > 0.10, Wilcoxon rank-sum test). The accuracy rate in the red envelope treatment is significantly higher than in the cash treatment for the larger gift size (93.1% in LRE vs. 85.6% in LC, p = 0.037),

^{2019;} Englmaier and Leider, 2019). A thorough investigation on this possibility is beyond the scope of this study.

⁷For example, the Levenshtein distance is 3 between "HONDA" and "HYUNDAI" and 2 between two Chinese strings "爱吃香蕉" (like bananas) and "爱吃橘子" (like oranges) (Che et al., 2005).

but the difference is not statistically different for the small gift size (89.7% in SRE vs. 90.2% in SC, p = 0.459). The OLS regressions in Table A1 yield similar results. These findings suggest that red envelope induces higher work quality than does plain cash, but its impact is statistically significant only for the larger gift size.⁸ These results are summarized below.

Result 4 (Work Quality) 4a) Compared to the control, the survey entry accuracy rate is significantly lower when participants are offered the larger cash gift.

4b) For the smaller gift, the accuracy rate is similar between cash and red envelope. For the larger gift, however, the accuracy rate is significantly higher with red envelope than with cash.

Results 1-4 combined indicate that while red envelope and plain cash fare similarly for the smaller gift, red envelope dominates plain cash for the larger gift on multiple fronts including overall performance, participation, and work quality. One possible explanation for the advantages of red envelope over plain cash for a large gift is that a large gift may inadvertently accentuate a salient monetary exchange relationship between the employer and employees. Presenting the gift as plain cash may further enhance its pecuniary aspect, whereas presenting it in a more thoughtful way may divert workers' attention to its social aspect and thus ameliorate reference dependence stemmed from the subsequent low piece rate. The survey measure on individuals' perceptions of the gift in our post-experiment questionnaire allows us to conduct a mediation test to investigate this possible explanation.

3.4 Perceptions

In the post-experimental questionnaire, we ask participants about their perceptions of each gift type in the corresponding treatments.⁹ Figure A3 (Appendix F) shows that 60% of red envelope receivers in LRE, compared to 31.1% of cash receivers in LC (p = 0.006, test of proportions), perceive the gift as the employer's appreciation; 37.8% of cash receivers in LC, compared to 15.6% of red envelope receivers in LRE (p = 0.017), perceive the gift as additional income. Figure A4 further shows that those who perceive the gift as appreciation are more likely to participate in LRE than in LC (81.5% vs. 42.9%, p = 0.012). These observations indicate that the higher participation rate in LRE relative to in LC (Result 3a) is the outcome of the positive impact of red envelope on participants' perception of appreciation and their greater willingness to enter the task conditional on this perception.

 $^{^8 \}rm We$ apply the Lee bounds method (Lee, 2009) to show that our result on work quality is unlikely to be driven by selection. The analysis is presented in Appendix E.

⁹The participants are asked to choose what they think the gift represents a) a nice surprise, b) the employer's appreciation, c) good luck, d) additional income, and e) others. Multiple choices are allowed.

In Table 4, we conduct the Sobel-Goodman mediation test to examine to what extent participants' perceptions drive the differences in the impact of red envelope and cash in LRE and LC.¹⁰ The dependent variable is whether a student participates in the additional task. The independent variable is Large RE (with Large Cash in the omitted category). The mediator is whether the participant perceives the gift as the employer's appreciation.

Results in Columns 1-2 indicate that compared to the large cash receivers, the large red envelope receivers are more likely to participate in the additional task (0.244, p = 0.020) and are more likely to perceive the gift as the employer's appreciation (0.289, p = 0.006). When the appreciation variable is included in the analysis on participation, the independent variable Large RE becomes 0.161 and statistically insignificant (p = 0.126, Column 3) while the coefficient of the mediator—appreciation—is 0.289 and statistically significant (p = 0.007). The mediation test with covariates in Columns 4-6 yields similar results. The Sobel coefficient is 0.084 (p = 0.047) or 0.077 (p = 0.062), and the proportion of the total effect mediated through perception is 34.2% or 27.7% without or with the covariates. This implies that the participants' perception of appreciation.¹¹ These observations are summarized as Result 5.

Result 5 (Perceptions of Gift) For the larger gift amount, the red envelope is more likely to be perceived as the employer's appreciation relative to cash. This difference in perception explains part of the difference between LRE and LC in participation in the additional task.

In sum, our results in Experiment 1 reveal several important points. First, the substantial improvement in workers' overall performance and participation in the gift treatments (except LC), relative to the baseline without a gift, highlights the role of gift exchange. It is also compatible with existing theories on reciprocity (e.g., Rabin (1993); Fehr et al. (1997); Fehr and Schmidt (1999); Bolton and Ockenfels (2000)) or gift exchange (Akerlof (1982); Akerlof and Yellen (1990); Dellavigna et al. (2019)).

Second, the decay in the positive effect of the gift in LC (or LRE) relative to SC (or SRE) may be accounted for by reference dependence, i.e., workers evaluate and respond to their current wage in comparison to a reference point (e.g., the market wage or the wage offer set by the initial contract). The literature shows that although a gift or a wage increase above the reference point triggers employees' reciprocity (e.g., Ockenfels et al. (2015); Gilchrist et al. (2016)), a wage cut or a gift below the reference point may hamper productivity (e.g., Kube

¹⁰Our mediation test focuses on LC and LRE since no differences are found in participants' participation (Result 3a), their perceptions of appreciation (Figure A3), and participation rates conditional on the perceptions (Figure A4) between SC and SRE.

¹¹The mediation effect of appreciation mainly occurs in the decision on participation rather than the intensive margin of performance or the accuracy rate.

	Participation	Appreciation	Participation	Participation	Appreciation	Participation
	(1)	(2)	(3)	(4)	(5)	(6)
Large RE	0.244^{**}	0.289***	0.161	0.279^{***}	0.305***	0.202^{*}
	(0.103)	(0.102)	(0.104)	(0.102)	(0.101)	(0.104)
Appreciation			0.289***			0.253^{**}
			(0.105)			(0.107)
Copies in phase one				0.026***	0.017^{*}	0.022**
				(0.009)	(0.009)	(0.009)
Female				-0.031	-0.108	-0.004
				(0.102)	(0.102)	(0.100)
Afternoon				0.075	-0.238	0.135
				(0.238)	(0.236)	(0.233)
Night				0.017	-0.201^{*}	0.068
				(0.120)	(0.119)	(0.119)
Constant	0.378^{***}	0.311^{***}	0.288^{***}	-0.214	0.146	-0.251
	(0.073)	(0.072)	(0.078)	(0.241)	(0.239)	(0.235)
Observations	90	90	90	90	90	90
Adjusted \mathbb{R}^2	0.049	0.074	0.116	0.098	0.103	0.145

Table 4: Mediation Test of Appreciation Perception on Participation

Notes: We focus on LC and LRE for the Sobel-Goodman mediation test. The dependent variable is whether one participates in the additional task. The main independent variable is Large RE with Large Cash in the omitted category. The mediator is whether the participant perceives the gift as the employer's appreciation. The analysis in Columns 1-3 does not consist of any covariates. These covariates are added in Columns 4-6. Standard errors are in parentheses. *p < 0.1, **p < 0.05, ***p < 0.01.

et al. (2013); Ockenfels et al. (2014)). In our study, the effort deterioration in response to the larger gift amount is compatible with the spirit of Kahneman and Tversky's (1979) prospect theory and Koszegi and Rabin's (2006) model of reference-dependent preferences. It can also be explained by other existing theories such as the behavioral model that Dellavigna et al. (2019) construct to capture reference dependence in their loss treatment, or the reference-dependence model in Sliwka and Werner (2017) in which workers respond to wage increases by comparing wages to a fixed or an adaptive reference standard.¹²

Third, we find that the impact of gift type depends on the amount, a result identified for the first time in the literature to our best knowledge. Although it cannot be explained by the existing theories discussed above, this finding is in line with the essence of Heyman and Ariely (2004) that propose two kinds of markets, monetary and social, that determine the relationships between effort expended and compensations. Their experiments show that effort responds to the magnitude of compensation sensitively in monetary markets but not in social markets. Our design of a thoughtful presentation of a cash gift conjoins both types of markets. It invokes the non-monetary norms in the employer-employees' relationships and consequently increases employees' sense of reciprocity. In addition, this role of thoughtfulness

¹²Unlike Sliwka and Werner (2017) that examine the timing of wage increases across eight periods, our experiment consists of two periods, and therefore both the fixed and the adaptive processes proposed by Sliwka and Werner (2017) would predict the same reference-dependent reciprocal reaction in our study.

of a gift may be more essential when the social aspect of employment relationships tends to succumb to the monetary aspect in the presence of a large financial reward.

4 A Theoretical Framework

To organize our thoughts on the findings in Experiment 1, we construct a theoretical framework which consists of pecuniary utility, reference-dependent utility, and gift-type-based reciprocity. Recall our primary research question is how the monetary reward offered for a previously completed task affects the employee's performance in a subsequent task. Suppose the employee (A) has completed q_0 units for a lump sum pay I in the previous task, and she receives a monetary reward R for her work. R may be presented in plain cash or in a more thoughtful form, e.g., artistically folded or enclosed in a red envelope. The employee is then informed of the piece rate w in the subsequent task and needs to choose her output level $q \ge 0$ to maximize her utility

$$u_A = y_A^c + \theta y_P + \eta y_A^r. \tag{1}$$

The first component of Equation (1) is her pecuniary utility, defined as $y_A^c = w \cdot q - c(q)$, where c(q) satisfies c'(q) > 0 and c''(q) > 0. The second component (θy_P) represents reciprocity and captures how much she cares about the employer's (P) payoff $y_P = b \cdot q - w \cdot q$, where b (b > w) is the employer's marginal benefit of the output q. The kindness function θ ($0 \le \theta < 1$) denotes the employee's perceived level of kindness of the employer (Rabin, 1993; Charness and Rabin, 2002) and is determined by the size and form of R as follows

$$\theta = \theta_0 + (\alpha + \mathbf{1}_{\mathbf{R}\mathbf{E}} \cdot \alpha_{RE}) \cdot \frac{R^\beta}{\beta}.$$
 (2)

In our setting, θ consists of two parts. The first part θ_0 ($\theta_0 > 0$) is the employee's initial belief of the employer's kindness based on the lump sum payment I in the previous task. The second part is determined by the size and type of surprise gift R. A concave functional form, $\frac{R^{\beta}}{\beta}$ ($0 < \beta < 1$), is adopted since the literature has shown that individuals' reciprocity utility is less sensitive to the size of the payoff than the material utility (Rabin, 1993). The impact of R's type on θ is reflected by α for cash and $\alpha + \alpha_{RE}$ for a more thoughtfully presented cash gift ($\alpha > 0$, $\alpha_{RE} > 0$). The higher α (or α_{RE}) is, the more the employee believes that the gift shows the employer's appreciation and thoughtfulness.¹³

¹³Note our theoretical framework applies to broader examples of thoughtful gifts above and beyond cash

The third component of Equation (1) (ηy_A^r) , where $\eta \ge 0$) is the reference-dependent utility (Koszegi and Rabin, 2006, 2007; Dellavigna and Pope, 2017) since the employee's payoff for the previously completed task may serve as a reference point and influence her response to the incentive in the subsequent task. We use $y_A^r = \mu(w - w_r) \cdot q$ to represent the impact of reference dependence on the employee's utility and assume the following piece-wise linear function for $\mu(.)$ (Esteves-Sorenson and Broce, 2018):

$$\mu(w - w_r) = \begin{cases} w - w_r, w \ge w_r \\ \lambda(w - w_r), w < w_r, \end{cases}$$
(3)

where $\lambda > 1$ captures loss aversion (Kahneman and Tversky, 1979), and w_r denotes the reference wage. Since the employee is originally informed of the lump sum pay I and then adapts to the new referential by incorporating the reward R, the earnings per unit in the previous task can serve as a reference point for the current task, that is, $w_r = \frac{I+R}{q_0}$.

The employee's optimization problem then becomes:

$$\max_{q} \quad u_A = w \cdot q - c(q) + \theta \cdot (b \cdot q - w \cdot q) + \eta \cdot \mu(w - w_r) \cdot q.$$
(4)

Solving the first order condition leads to her optimal output level:

$$q^* = g(w + \theta \cdot (b - w) + \eta \cdot \mu(w - w_r))$$

=
$$\begin{cases} g(w + \theta \cdot (b - w) + \eta \cdot (w - w_r)), & w \ge w_r \\ g(w + \theta \cdot (b - w) + \lambda \cdot \eta \cdot (w - w_r)), & w < w_r, \end{cases}$$
(5)

where g(x) is the inverse function of c'(x), i.e., $g(x) = [c'(x)]^{-1}$, and g'(x) > 0. Propositions 1 and 2 are derived from the comparative statics with respect to the gift type and size.

Proposition 1 (Effect of Gift Type on Employee's Output)

$$\forall R, q_{RE}^*(R) > q_{Cash}^*(R)$$

Proof. See Appendix G.1.

Proposition 1 indicates that conditional on the amount, a more thoughtful gift signals the care and kindness of the employer and thus helps better leverage the employee's reciprocity to boost her performance, relative to a plain-cash gift.

Proposition 2 (Effect of Gift Size on Employee's Output)

 $\exists \ \overline{R} \ s.t. \ \frac{\partial q^*}{\partial R} > 0 \ for \ R < \overline{R}, \ and \ \frac{\partial q^*}{\partial R} < 0 \ for \ R > \overline{R},$

wrapped in a red envelope. They are denoted as "RE" here for ease of communication.

where

$$\overline{R} = \begin{cases} \left[\frac{(b-w)(\alpha+\mathbf{1}_{\mathbf{RE}}\cdot\alpha_{RE})q_0}{\lambda\eta}\right]^{\frac{1}{1-\beta}}, w < w_r\\ \left[\frac{(b-w)(\alpha+\mathbf{1}_{\mathbf{RE}}\cdot\alpha_{RE})q_0}{\eta}\right]^{\frac{1}{1-\beta}}, w \ge w_r. \end{cases}$$
(6)

Proof. See Appendix G.2.

Proposition 2 indicates that the optimal output q^* is concave in the gift size R since the net effect of gift size on output depends on two competing forces. When the positive effect of gift exchange dominates, a more generous gift leads to higher output. When the negative income effect due to reference dependence dominates, a generous gift may backfire and discourage the employee from choosing a high output level. The net effect of gift size on the output, therefore, depends on the parameters in the model and how the gift amount compares to the threshold \overline{R} —the value of R where $q^*(R)$ reaches its peak, and where reference dependence takes over as the dominating force.

Note $\overline{R}(\text{RE}) > \overline{R}(\text{Cash})$ in Equation (6), i.e., the threshold \overline{R} occurs at a higher level of R for the more thoughtful gift than for plain cash since thoughtfulness in the gift elevates the employee's reciprocity. Moreover, $\overline{R}(\text{RE})$ or $\overline{R}(\text{Cash})$ is determined by a set of parameters including α or $(\alpha + \alpha_{RE})$. In other words, α (or $\alpha + \alpha_{RE}$) determines the range of R over which q* is an increasing function of R, which in turn determines where the actual gift amount (R = 5 and 20 in our experiment) falls relative to $\overline{R}(\text{RE})$ and $\overline{R}(\text{Cash})$, respectively.

Figure 6 provides two examples for illustration. If α (or $\alpha + \alpha_{RE}$) exceeds a certain cutoff, the positive effect of gift exchange prevails, hence workers' output increases with the gift size monotonically (Figure 6(A)). If α (or $\alpha + \alpha_{RE}$) falls below the cutoff, reference dependence prevails, and the impact of gift size may exhibit an inverse U shape (Figure 6(B)).¹⁴



Figure 6: Illustrations on Effects of Gift Size and Type on Workers' Optimal Output

¹⁴Appendix G.2 provides more discussions on the cutoffs for α (or $\alpha + \alpha_{RE}$).

Proposition 2 also suggests a possible interaction effect between the gift type and size. Denote the difference in the optimal output level between red envelope and plain cash as $\Delta q^* \equiv q_{RE}^*(R) - q_{Cash}^*(R)$. How a change in R affects Δq^* can be demonstrated by the partial derivative $\frac{\partial(\Delta q^*)}{\partial R} = \frac{\partial q_{RE}^*}{\partial R} - \frac{\partial q_{Cash}^*}{\partial R}$. As detailed in Appendix G.3. $\frac{\partial(\Delta q^*)}{\partial R}$ depends on the curvature of the marginal cost function c'(.) and how the actual gift amount R compares to \overline{R}_{Cash} and \overline{R}_{RE} —the two thresholds for reference dependence to become the dominating force for plain cash and red envelope, respectively. So $\frac{\partial(\Delta q^*)}{\partial R} = 0$ may not hold, indicating that the impact of the gift type on the optimal output may interact with the gift amount.

The main results in Experiment 1 are explainable by our theoretical framework. Result 1 on the effect of the gift type is consistent with Proposition 1. Result 2 on the effect of the gift size is consistent with Figure 6(B), one possible case suggested by Proposition 2. The framework helps elucidate the gift-size-and-type interaction. Moreover, it shows that all these results extend to the decision on participation (Result 3) in Appendix G.4.

This theoretical framework also indicates that a small change in Experiment 1 can help empirically investigate reference dependence and the robustness of the gift-size-and-type interaction. As detailed in Appendix G.5, it predicts that increasing the phase-two piece rate w just to surpass $w_r = \frac{I+R}{q_0}$ will, ceteris paribus, alleviate the impact of reference dependence. Intuitively, as the new piece rate w' moderately exceeds w_r , the hump-shaped curves in Figure 6 will expand upward with the peaks \overline{R} moving toward the upper-right corner. Therefore, R = 5 (or 20) will be more likely to fall in the upward sloping range of $q^*(R)$. This suggests that the impact of the gift amount on workers' performance is less susceptible to reference dependence under w'. Unsurprisingly, the higher w' will result in a higher overall output and participation. Other predictions of the theoretical framework will otherwise stay unchanged.

5 Experiment 2 with Higher Piece Rate

We conducted Experiment 2 from November 2018 to November 2019 and replaced the phasetwo piece rate with w' = 4 RMB per copy. This higher rate was chosen to minimize the potential influence of reference dependence and thus give the impact of gift exchange the best shot. The number of participants was 41 in SC-w4 and LC-w4, respectively, and 40 in each of the other treatments.¹⁵ The design was otherwise identical to Experiment 1.

¹⁵The average payoff per copy in phase one of Experiment 1 is 3.66 RMB in the treatments with gift and 3.95 RMB in LC and LRE. These numbers are used as proxies for the reference point and our benchmark for

We state the theoretical predictions for Experiment 2 as follows.

- 1. With w', the overall output and participation will be greater than in Experiment 1.
- 2. Different from Experiment 1, the inverse U-shape in performance and participation with respect to monetary incentives is unlikely to occur in Experiment 2.
- 3. The effect of the gift type and its interaction with the gift size will remain for Experiment 2.



Figure 7: Unconditional Number of Survey Entries in Experiment 2

Figure 7 reports the average unconditional productivity in Experiment 2. The comparisons between Figures 3 and 7, conditional on the gift type and amount, reveal improvements in productivity across the board associated with the higher piece rate, as predicted. Examining the effect of gift type, conditional on the amount, we find that the average unconditional copies in LRE-w4 significantly exceed those in LC-w4 (23.850 vs. 14.634, p = 0.004). The Tobit analysis in Table A3 of Appendix H provides a similar result.¹⁶ This difference is driven

the new piece rate 4 RMB. The numbers of participants who enter the additional task are 25 in Control-w4, 29 in SC-w4, 28 in LC-w4, 27 in SRE-w4, and 35 in LRE-w4.

¹⁶These improvements in overall performance in Experiment 2, relative to Experiment 1, are substantial for the larger gift size but less so for the smaller one (7.688 in Control vs. 11.650 in Control-w4, p = 0.051; 13.978 in SC vs. 14.390 in SC-w4, p = 0.721; 15.413 in SRE vs. 16.075 in SRE-w4, p = 0.678; 9.689 in LC vs. 14.634 in LC-w4, p = 0.030; 13.689 in LRE vs. 23.850 in LRE-w4, p = 0.002). They take place for two reasons—the higher piece rate not only alleviates the negative income effect of reference dependence but also provides more incentive for the participants to work. Distinguishing these two reasons, however, is beyond the scope of this paper. We, therefore, refrain from drawing conclusions from the comparisons between the two experiments and focus instead on the cross-treatment comparisons within each experiment.



Figure 8: Extensive and Intensive Margins in Experiment 2

by both the extensive and intensive margins as the participation rate and *conditional* copies are both significantly higher in LRE-w4 than LC-w4 (87.5% vs. 68.3%, p = 0.038, test of proportions; 27.257 vs. 21.429, p = 0.042, Figure 8). The accuracy rate is also significantly higher in LRE-w4 than in LC-w4 (93.5% vs. 92.2%, p = 0.034, Figure 9). In sharp contrast, no significant difference is found in average productivity between SRE-w4 and SC-w4 (16.075 vs. 14.390, p = 0.729, Figure 7). In addition, SRE-w4 does not differ from SC-w4 in participation rate, conditional number of copies, or accuracy rate. These results confirm the robustness of the interaction effect between the gift type and size, as found in Experiment 1 and predicted in our theoretical framework.

Regarding the impact of gift size, we find that the unconditional copies increase from 11.650 in Control-w4 to 14.390 in SC-w4 and further to 14.634 in LC-w4 (p > 0.10 for any pairwise comparisons); they increase from 11.650 in Control-w4 to 16.075 in SRE-w4 (p = 0.204) and further to 23.850 in LRE-w4 (p < 0.001 when compared to Control-w4; p = 0.020 when compared to SRE-w4). These observations are confirmed by the Tobit regressions in Table A3 of Appendix H.¹⁷ Therefore, conditional on the gift type, workers'

¹⁷Additional analyses demonstrate that the efficacy of LRE-w4 in promoting workers' effort, relative to Control-w4 and SRE-w4, extends to participation, conditional copies, and work quality. Specifically, the participation rate in LRE-w4, 87.5%, is higher than 62.5% in Control-w4 (p = 0.010, test of proportions) and 67.5% in SRE-w4 (p = 0.032). The conditional copies in LRE-w4, 27.257, is higher than 18.640 in Control-w4 (p = 0.006) and 23.815 in SRE-w4 (p = 0.254). The accuracy rate in LRE-w4, 0.935, is higher than 0.925 in Control-w4 (p = 0.002) and 0.925 in SRE-w4 (p = 0.001). Regression results are provided in Tables A4 and A5 in Appendix H. Table A6 presents the Sobel-Goodman mediation test which shows that similar to Experiment 1, the difference in participation between LRE-w4 and LC-w4 is partially driven by participants' perceptions.



Figure 9: Work Quality—Accuracy Rate in Experiment 2

overall productivity exhibits a monotonically increasing pattern, albeit *qualitatively* for plain cash, rather than an inverse U shape as previously observed in Experiment 1. This result is consistent with our theoretical prediction and lends support to our conjecture on reference dependence.

In sum, the results in Experiments 1 and 2 are mostly in line with each other except the absence of the inversely U-shaped performance in gift size in Experiment 2. It is worth noting that the cash gifts wrapped in red envelopes in our study are similar in design to the Thank You Card and Money treatment in Bradler and Neckermann (2019), given the generic form of the red envelope and its wide availability outside our study. Bradler and Neckermann (2019), however, find that their thank-you card and money combination does not increase workers' performance unless the money is hand folded into an artistic form— "a common way of presenting cash gifts in Germany" (p. 12). In contrast to the personal touch of a handmade element in their study, our design involves a *weaker* manipulation of thoughtfulness in gifts. Our findings indicate that such a weak form of thoughtful gifts offered to a previously completed task—can generate a positive spillover effect on workers' performance in a subsequent, uncontracted task; such beneficial effect may prevail even under a pay cut.

6 Conclusion

In reality, a variety of gifts are used by employers to promote employees' productivity in the workplace. In this paper, we conduct two field experiments to investigate how gift type affects workers' performance. We find that the thoughtful gift is more effective than plain cash in motivating workers' effort, but its impact depends on the amount of the gift. For the larger but not the smaller gift amount, a more thoughtful gift—cash enclosed in a red envelope—leads to higher productivity, willingness to participate, and work quality than does a plain-cash gift. These positive effects are robust with respect to the payment in the task. Particularly, they prevail in a less lucrative task as the thoughtfulness in the gift helps divert the workers' attention from the purely pecuniary aspect of the gift to the social one (e.g., the employer's appreciation), and thus, mitigate the potential detrimental impact of reference dependence on work productivity.

Our study contributes to the literature on gift exchange from several aspects. Firstly, while previous studies mostly focus on how gift type influences reciprocity in the labor market, we add to this literature by investigating the interaction between the type of gift and its size, an important question underexplored before. We find that the effect of a thoughtful gift, relative to plain cash, is statistically significant and economically sizable for the larger gift but less so for the smaller one. This result alludes to the essential role that thoughtfulness of a gift plays in enhancing reciprocity in situations in which monetary exchange relationships are likely to overshadow social exchange relationships, for instance, in the presence of a large gift.

Secondly, this study unveils the greater potential of thoughtfulness in gifts in motivating employees than has been learned in the previous literature. On the one hand, previous studies (e.g., Kube et al. (2012) and Bradler and Neckermann (2019)) report that thoughtful gifts, such as customized, handmade artistic cash gifts, enhance gift exchange by employees to employers. We show that this positive effect also holds for an unpersonalized, hence weaker gift form. On the other hand, unlike the previous literature that primarily focuses on the settings with a *pre-specified* contract, our study shows that a thoughtful gift for a previously contracted task has a positive spillover effect on employees' productivity in a subsequent, uncontracted task; more importantly, such positive impact prevails in a pay reduction. These observations highlight the crucial role that thoughtful gifts may play in the dynamics of employer-employee interactions. Last but not least, this study expands our knowledge of the efficacy of thoughtfulness in gifting beyond the boundary of the western culture in which such impact was previously identified.

In sum, our results shed light on a well-established rule of thumb among practitioners that sometimes "how you pay" may matter more than "what you pay" (Gilchrist et al., 2016). Our findings help justify the tremendous amount of time and effort invested in daily giftgiving practices that are observed in almost all cultures throughout the world. The insights we gain here are an important complement to the emerging literature. They indicate that a thoughtful presentation of a monetary gift—strong or weak in the degree of personal touch, culture specific or neutral—can effectively motivate employees as long as it could successfully signal the employers' appreciation above and beyond the pecuniary aspect of the gift.

There are several directions for fruitful future research. Under what circumstances does a thoughtful gift yield a positive impact on employees' productivity? How long does the positive impact last? How can the positive impact be reinforced if it lasts only for a short period of time? It is also interesting to extend the investigation to questions such as the timing of providing thoughtful gifts and its interplay with employees' habit formation in a dynamic setting with repeated interactions between employers and employees. Answers to these questions will help economists and practitioners further understand the value of thoughtfulness in gifting.

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Appendix

A Experimental Instructions (Translated from Chinese)

The contents of instructions are the same for all the treatments except those paragraphs in square brackets, which are treatment specific. The instruction was given in Chinese.

Survey Entry Task

Welcome! You are going to help enter some survey answers to the computer as part of the research conducted by an economics professor.

Please do not talk to anyone else or use your cell phone during work. Keep your phone silent or power it off. If you have any questions please raise your hand. A staff member will come to help you.

Please do not mark on any questionnaires.

The work will last for 40 minutes. You will receive a fixed payment of 60 RMB at the end of the task. The rules are as follows:

- 1. Open the Microsoft Excel file "Survey Questionnaire" on your desktop computer.
- 2. There are 50 copies of presorted questionnaires. The number of each survey is located on the upper left corner.
- 3. Please enter the answer of the second question as accurately as you can into the "content" column (highlighted in yellow) of the "Survey Questionnaire" spreadsheet. Don't forget to save your work! Note: Please enter the content in the numerical order of the questionnaires. The order is not allowed to be altered!
- 4. This work will last for 40 minutes. We'll let you know when the time is up.

(40 minutes later) The time is up. You may stop working. Please remain seated. Our staff will come to check if your work has been saved properly and then distribute the 60 RMB payment.

Surprising reward and invitation letter

Control: Meanwhile, we have prepared a short letter for everyone. Please read it carefully and fill in the information needed on the letter.

[LC (or SC): As a token of appreciation for the work you just completed, we will offer you an additional 20 RMB (or 5 RMB for SC) cash bonus. The staff will bring you the bonus. Meanwhile, we have prepared a short letter for everyone. Please read it carefully and fill in the information needed on the letter.]

[*LRE (or SRE)*: As a token of appreciation for the work you just completed, we will offer you an additional cash bonus in a red envelope. The staff will bring you the bonus. Please don't open the red envelope until you are told to do so. (Experimenter makes a public announcement when everyone has received a red envelope.) Everyone receives 20 RMB (or 5 RMB for SRE) in the red envelope. Please open the envelope now and check the amount

inside. Meanwhile, we have prepared a short letter for everyone. Please read it carefully and fill in the information needed on the letter.]

Content of the letter:

"Thank you again for your work. We have some more questionnaires that need to be entered. The payment for this additional task will be 1 RMB per copy.

- If you do not want to enter more copies, please write down zero below. Then you will be allowed to leave.
- If you want to enter more copies, please write down the number of copies you would like to work on (you may choose any number between 1 to 40 copies). For example, if you choose to enter y copies, you will be paid y RMB when you finish your work.

Please fill in the following information quietly. Don't communicate with other RAs. Name:______ Student ID:_____ Computer Number:_____ I would like to enter_____ copies. Please hand in this sheet to our staff. Thank you."

If your choice is zero copies you may quietly leave the room now. If your choice is greater than zero copies please remain seated.

Additional Task

Thank you for agreeing to participate in the additional survey entry task. The rules are as follows:

- 1. Please close "Survey Questionnaire" and open "Survey Questionnaire2" on your desktop computer.
- 2. There are 40 new copies of questionnaires.
- 3. Please enter the answer of the second question as accurately as you can into the "content" column (highlighted in yellow) of the "Survey Questionnaire2" spreadsheet. Don't forget to save your work! Again, please enter the content in the numerical order of the questionnaires. The order is not allowed to be altered!
- 4. Please enter the number of copies that you have agreed upon and put down on the letter. You will be paid 1 RMB for each copy you enter to the computer.
- 5. Raise your hand when you are done.

B Post-experiment Questionnaire

Name:_____Gender:____Computer ID:_____

Thanks again for your participation in the RA work. To improve our work, we hope to invite you to finish this survey.

- 1. How did you feel in the first round of entry work?
 - (a) Extremely unhappy
 - (b) Unhappy
 - (c) Feeling nothing
 - (d) Happy
 - (e) Extremely happy
 - (f) If you have any other feelings, please describe them:
- 2. How did you feel when you received the 20 RMB cash bonus/5 RMB cash bonus/ 20 RMB red envelope/ 5 RMB red envelope reward? (Treatment Only)
 - (a) Extremely unhappy
 - (b) Unhappy
 - (c) Feeling nothing
 - (d) Happy
 - (e) Extremely happy
 - (f) If you have any other feelings, please describe them:
- 3. How did you feel in the second round of entry work? (For those who stayed only)
 - (a) Extremely unhappy
 - (b) Unhappy
 - (c) Feeling nothing
 - (d) Happy
 - (e) Extremely happy
 - (f) If you have any other feelings, please describe them:
- 4. Why did you choose to take participate in the additional work? (For those who stayed only)
- 5. Why did you choose to leave? (For those who left only)
- 6. How did you choose the number of copies in the additional work? (For those who stayed only)

- 7. Why do you like to receive red envelope/cash bonus? (Treatment only)
 - (a) It's a surprise
 - (b) I can feel appreciation and recognition from the employer
 - (c) It is a symbol of happiness and luck in traditional Chinese culture
 - (d) I can receive additional income
 - (e) Other reasons
- 8. Which reward do you prefer, 5 RMB RE or 5 RMB cash? (SRE, SC Treatments + Control)
 - (a) 5 RMB RE
 - (b) 5 RMB cash
 - (c) They are indifferent
- 9. Which reward do you prefer, 20 RMB RE or 20 RMB cash? (LRE, LC Treatments + Control)
 - (a) 20 RMB RE
 - (b) 20 RMB cash
 - (c) They are indifferent

C Workers' Productivity and Participation in Additional Task

To investigate what kind of participants select into the additional task, we classify the workers into the high and low productivity categories based on their productivity in the first phase. Recall that the fixed payment of 60 RMB is the same across all the treatments. A worker is categorized as high productivity if her/his number of survey entries is higher than or equal to the average of all workers in the first phase; she/he is in the low productivity category otherwise. The composition of high and low productivity workers is presented in Figure A1. Unsurprisingly, we find no statistically significant differences in any pairwise comparisons across treatments (p > 0.10, non-parametric test of proportion), which indicates the random assignment of the workers to different treatments in our experiment.



Figure A1: Composition of High and Low Productivity Workers

For each productivity category in each treatment, we report the participation rate in the additional task in Figure A2. Several observations emerge. First, high and low productivity workers are equally likely to participate in the additional task in the control treatment without the surprise gift. Second, high productivity workers are significantly more likely to participate than low productivity ones in SC, LC, and LRE (p = 0.035 in SC, 0.041 in LC, 0.042 in LRE) but not in SRE (p = 0.958). Third, for both the high and low productivity workers, the impact of the surprise gift exhibits an inverse U-shaped pattern in SC and LC relative to the control treatment—the same pattern that we observe in the overall sample in Figure 4(A). Specifically, among the high productivity workers, the participation rate is 78.9% in SC, significantly higher than 38.5% in the control (p = 0.007), but it decreases to 52.2% in LC (p = 0.071). Among the low productivity workers, the participation rate is 48.1% in SC, insignificantly higher than 36.4% in the control, but it decreases to 22.7% in LC (p = 0.066). Four, the participation rate is insignificantly different between SC and SRE for both low and high productivity workers (p > 0.10), but it is marginally higher in LRE than in LC for both categories of workers (77.3% vs. 52.2%, p = 0.079 for high productivity



Figure A2: Participation Rate in the Additional Task

workers; 47.8% vs. 22.7%, p = 0.079 for low productivity workers).¹⁸ These observations are again consistent with those in the overall sample in Figure 4(A).

¹⁸The marginal statistical significance may be due to the smaller number of observations when the sample is split into the high and low productivity categories.

D Work Quality in Experiment 1

	(1)	(2)
Small Cash	-0.021	-0.017
	(0.025)	(0.024)
Large Cash	-0.067^{**}	-0.073^{***}
-	(0.028)	(0.028)
Small RE	-0.025	-0.025
	(0.025)	(0.025)
Large RE	0.009	0.015
	(0.025)	(0.025)
Copies in phase one		0.003**
		(0.001)
Female		0.016
		(0.015)
Afternoon		-0.007
		(0.027)
Night		-0.015
		(0.018)
Constant	0.922^{***}	0.852^{***}
	(0.019)	(0.039)
Observations	118	118
Adjusted \mathbb{R}^2	0.051	0.077
Across-treatment co	omparison $(p \text{ value of } p)$	two-sided Wald test)
SC vs. SRE	0.840	0.715
LC vs. LRE	0.003	0.001
SC vs. LC	0.069	0.029
SRE vs. LRE	0.122	0.072

Table A1: Work Quality—Accuracy Rate (OLS)

Notes: The dependent variable is the accuracy rate by individual participants in the additional task. Standard errors are in parentheses. We find that the accuracy rate is significantly lower in LC than in the control (p < 0.05) and than in LRE (p < 0.01). *p < 0.1, **p < 0.05, ***p < 0.01.

E Analysis on Potential Selection Bias in Work Quality

We investigate whether Result 4 on work quality is influenced by non-random sample attrition. We use Lee bounds, a method developed by Lee (2009), to estimate the upper and lower bounds of the true treatment effects. Specifically, the bounds estimator trims the treated or untreated observations to equalize the share of observations with observed outcome across treatments. That is, data is trimmed such that the participation rates (Column 1 of Table 3) are equalized across treatments. Trimming applies from below (or above), and the analysis is redone using the trimmed data. This procedure yields the upper (or lower) bound of the treatment effects, reported in Columns 2 (or 3) in the table below. For the ease of comparison, the benchmark OLS estimates on work quality, taken from Table A1, are included in Column 1 below. As shown in the estimates and the cross-treatment comparisons in the lower panel, the Lee-bounds results are similar to Result 4 on work quality. We, therefore, conclude that this result are unlikely to be driven by non-random sample selection.

	Work Quality	Upper Bound	Lower Bound
	(1)	(2)	(3)
Small Cash	-0.021	0.010	-0.036
	(0.025)	(0.020)	(0.027)
Large Cash	-0.067^{***}	-0.066^{***}	-0.067^{**}
	(0.028)	(0.021)	(0.028)
Small RE	-0.025	0.009	-0.033
	(0.025)	(0.020)	(0.026)
Large RE	0.009	0.023	-0.003
	(0.025)	(0.020)	(0.027)
Constant	0.922***	0.922***	0.922***
	(0.019)	(0.015)	(0.020)
Observations	118	98	99
\mathbb{R}^2	0.051	0.16	0.073
Across-treatme	ent comparison (<i>j</i>	value of two-side	ed Wald test)
SC vs. SRE	0.840	0.984	0.915
LC vs. LRE	0.003	0.000	0.022
SC vs. LC	0.069	0.000	0.026
SRE vs. LRE	0.122	0.471	0.232

Table A2: Lee (2009) Bounds on Work Quality

Notes: The dependent variable is the accuracy rate by individual participants in the additional task. Column (1) is taken from Column (1) of Table A1. Columns (2) and (3) report the upper and lower bounds of treatment effects, respectively, using Lee (2009) bounds. Standard errors are shown in parentheses. *p < 0.1, **p < 0.05, ***p < 0.01.

F Workers' Perception and Participation in Additional Task



Figure A3: Workers' Perceptions of Gift



Figure A4: Participation Rate by Workers' Perception

G Proofs and Predictions in the Theoretical Framework

G.1 Proof of Proposition 1

Proof.

We show the proof for $w < w_r$. The proof for $w \ge w_r$ is analogous.

Substitute $\theta = \theta_0 + (\alpha + \mathbf{1}_{\mathbf{RE}} \cdot \alpha_{RE}) \cdot \frac{R^{\beta}}{\beta}$ into q^* for $w < w_r$ in Equation (5), we get

$$q_{RE}^* = g(w + (b - w)(\theta_0 + (\alpha + \alpha_{RE})\frac{R^\beta}{\beta}) + \lambda\eta(w - w_r)),$$
(A1)

$$q_{Cash}^* = g(w + (b - w)(\theta_0 + \alpha \frac{R^\beta}{\beta}) + \lambda \eta(w - w_r)).$$
(A2)

Since g(x) is a monotonic increasing function and $\alpha_{RE} > 0$, $q_{RE}^* - q_{Cash}^* > 0$ always holds $\forall R$.

G.2 Proof of Proposition 2

Proof.

We substitute $\theta = \theta_0 + (\alpha + \mathbf{1}_{\mathbf{RE}} \cdot \alpha_{RE}) \cdot \frac{R^{\beta}}{\beta}$ into q^* in Equation (5) and take the partial derivative with respect to R.

When $w < w_r$, we have

$$\frac{\partial q^*}{\partial R} = g'(\cdot)(\underbrace{(b-w)(\alpha + \mathbf{1}_{\mathbf{RE}} \cdot \alpha_{RE})R^{\beta-1}}_{\text{gift exchange}} \underbrace{-\frac{\lambda\eta}{q_0}}_{\text{income effect}}), \quad (A3)$$

where q_0 is the number of units completed by the worker in the previous task. As $g'(\cdot) > 0$, the sign of $\frac{\partial q^*}{\partial R}$ is determined by the second term on the right-hand side of equation (A3).

Similarly, when $w \ge w_r$, we have

$$\frac{\partial q^*}{\partial R} = g'(\cdot)(\underbrace{(b-w)(\alpha + \mathbf{1_{RE}} \cdot \alpha_{RE})R^{\beta-1}}_{\text{gift exchange}} \underbrace{-\frac{\eta}{q_0}}_{\text{income effect}}).$$
(A4)

In addition, there exists \overline{R} where

$$\overline{R} = \begin{cases} \left[\frac{(b-w)(\alpha + \mathbf{1}_{\mathbf{RE}} \cdot \alpha_{RE})q_0}{\lambda\eta} \right]^{\frac{1}{1-\beta}}, w < w_r \\ \left[\frac{(b-w)(\alpha + \mathbf{1}_{\mathbf{RE}} \cdot \alpha_{RE})q_0}{\eta} \right]^{\frac{1}{1-\beta}}, w \ge w_r, \end{cases}$$
(A5)

such that $\frac{\partial q^*}{\partial R} > 0$ for $R < \overline{R}$, and $\frac{\partial q^*}{\partial R} < 0$ for $R > \overline{R}$.

In Equation (A5), the threshold $\overline{R}(\text{RE})$ or $\overline{R}(\text{Cash})$ is determined by a set of parameters, for example, α or $(\alpha + \alpha_{RE})$. In other words, α (or $\alpha + \alpha_{RE}$) determines the range of Rover which q* is an increasing function of R, which in turn determines where the actual gift sizes (for example, R = 5 and 20 in our experiment) fall relative to $\overline{R}(\text{RE})$ and $\overline{R}(\text{Cash})$, respectively.

If $\alpha > \alpha_1$, where $\alpha_1 = \frac{15\beta\lambda\eta}{(20^\beta - 5^\beta)(b-w)q_0}$, $q^*(0) < q^*(5) < q^*(20)$ holds for cash; if $\alpha + \alpha_{RE} > \alpha_1$, $q^*(0) < q^*(5) < q^*(20)$ holds for red envelope. In this case, workers' output increases with the gift size monotonically.

If α (or $\alpha + \alpha_{RE}$) falls below α_1 , however, reference dependence dominates gift exchange. Specifically, if $\alpha_0 < \alpha < \alpha_1$ (where $\alpha_0 = \frac{20\beta\lambda\eta}{20^\beta(b-w)q_0}$), $q^*(0) < q^*(20) < q^*(5)$ holds for plain cash. The same statement holds for red envelope if $\alpha_0 < \alpha + \alpha_{RE} < \alpha_1$. In this case, the impact of the gift size on workers' output may exhibit an inversely U-shaped pattern.¹⁹

G.3 Interaction between Gift Type and Size

We examine how a change in R affects Δq^* , the difference in the optimal output level between red envelope and plain cash. We assume $w < w_r$ below. The case for $w \ge w_r$ is analogous.

$$\frac{\partial(\Delta q^*)}{\partial R} = \frac{\partial q^*_{RE}}{\partial R} - \frac{\partial q^*_{Cash}}{\partial R}
= g'(c'(q^*_{RE}))((b-w)(\alpha + \alpha_{RE})R^{\beta-1} - \frac{\lambda\eta}{q_0})
- g'(c'(q^*_{Cash}))((b-w)\alpha R^{\beta-1} - \frac{\lambda\eta}{q_0})$$
(A6)

where $c'(q_{RE}^*) = w + (b-w)(\theta_0 + (\alpha + \alpha_{RE})\frac{R^{\beta}}{\beta}) + \lambda\eta(w-w_r)$ and $c'(q_{Cash}^*) = w + (b-w)(\theta_0 + \alpha \frac{R^{\beta}}{\beta}) + \lambda\eta(w-w_r)$. Note $c'(q_{RE}^*) > c'(q_{Cash}^*) \forall R$ since $\alpha_{RE} > 0$. Equation (A6) indicates that $\frac{\partial(\Delta q^*)}{\partial R} = 0$ may not necessarily hold. Examining the sign

¹⁹Mathematically, $q^*(5)$, $q^*(20)$ or both may be lower than $q^*(0)$ if α (or $\alpha + \alpha_{RE}$) falls below certain cutoff values. Empirically, such a phenomenon on incentives crowding out real effort is found only when incentives were very low (Gneezy and Rustichini, 2000). There lacks a consensus, however, in this stream of literature. For example, Pokorny (2008) and Dellavigna and Pope (2017) fail to find the crowding-out effect in their real-effort experiments that involve very low incentives.

of $\frac{\partial(\Delta q^*)}{\partial R}$ leads to the following cases.

Case 1: c'''(x) < 0, i.e., $g'(c'(q_{RE}^*)) > g'(c'(q_{Cash}^*))$.²⁰

1. $\frac{\partial(\Delta q^*)}{\partial R} > 0$ holds when $(b - w)(\alpha + \alpha_{RE})R^{\beta - 1} > \frac{\lambda\eta}{q_0} > (b - w)\alpha R^{\beta - 1}$, i.e., $\overline{R}_{Cash} < R < \overline{R}_{RE}$;

2.
$$\frac{\partial(\Delta q^*)}{\partial R} > 0$$
 holds when $(b - w)\alpha R^{\beta - 1} > \frac{\lambda \eta}{q_0}$, i.e., $R < \overline{R}_{Cash}$;

3. The sign of $\frac{\partial(\Delta q^*)}{\partial R}$ cannot be determined when $(b-w)(\alpha + \alpha_{RE})R^{\beta-1} < \frac{\lambda \eta}{q_0}$, i.e., $R > \overline{R_{RE}}$.²¹

Case 2: c'''(x) > 0, i.e., $g'(c'(q_{RE}^*)) < g'(c'(q_{Cash}^*))$. In this case, $\frac{\partial(\Delta q^*)}{\partial R} > 0$ holds when $(b-w)\alpha R^{\beta-1} < \frac{\lambda\eta}{q_0}$, i.e., $R > \overline{R}_{Cash}$. The sign of $\frac{\partial(\Delta q^*)}{\partial R}$ cannot be determined otherwise.

These cases suggest that the impact of gift type on the optimal output is contingent on the amount of the gift. Such contingency, as demonstrated above, ultimately depends on the curvature of c'(x) and the comparisons of the actual gift amount R to \overline{R}_{Cash} and \overline{R}_{RE} .

G.4 Prediction for Participation

Next, we show how Propositions 1 and 2 as well as the interaction effect of gift type and size manifest themselves in the decision to participate, z.

$$z = \begin{cases} 1, \text{ if } z^* > 0\\ 0, \text{ if } z^* \le 0 \end{cases}$$
(A7)

where the latent variable z^* is the sum of the optimal output q^* (see equation (5)) and an error term ϵ (i.e., $z^* \equiv q^* + \epsilon$);

 ϵ follows a logistic distribution $F(\epsilon) = \frac{e^{\epsilon}}{1+e^{\epsilon}}$. The likelihood of participating can be specified as follows.

$$P(z = 1) = P(z^* > 0)$$

= $P(\epsilon > -q^*)$
= $F(q^*)$
= $\frac{e^{q^*}}{1 + e^{q^*}}$ (A8)

²⁰Recall g(x) is the inverse function of c'(x) and g'(x) > 0. Therefore, g''(x) > 0 if and only if c'''(x) < 0.

²¹In this case, since $(b-w)\alpha R^{\beta-1} - \frac{\lambda\eta}{q_0} < (b-w)(\alpha + \alpha_{RE})R^{\beta-1} - \frac{\lambda\eta}{q_0} < 0$, we have $|(b-w)(\alpha + \alpha_{RE})R^{\beta-1} - \frac{\lambda\eta}{q_0} < 0$, we have $|(b-w)(\alpha + \alpha_{RE})R^{\beta-1} - \frac{\lambda\eta}{q_0}| < |(b-w)\alpha R^{\beta-1} - \frac{\lambda\eta}{q_0}|$. Recall $g'(c'(q_{RE}^*)) > g'(c'(q_{Cash}^*)) > 0$. The sign of $\frac{\partial(\Delta q^*)}{\partial R}$ is thus undetermined.

Since P(z = 1) is an increasing function of q^* , Propositions 1 and 2 as well as the possible interaction effect between the gift type and size should all apply to the likelihood of participating.

G.5 Predictions for Experiment 2

Equation (5) indicates that, conditional on R, q^* is an increasing function of w which is kinked at w_r . In other words, an increase in the piece rate w leads to an increase in q^* for any given R. Therefore, we expect that the overall output in Experiment 2 is higher than that in Experiment 1.

Equation (6) indicates that \overline{R} —the value of R where $q^*(R)$ reaches its peak—is also affected by w. When $w < w_r$ as in Experiment 1, Equation (6) shows that $\overline{R}(w) = \left[\frac{(b-w)(\alpha+\mathbf{1}_{\mathbf{RE}}\cdot\alpha_{RE})q_0}{\lambda\eta}\right]^{\frac{1}{1-\beta}}$; when $w' \ge w_r$ as in Experiment 2, Equation (6) shows that $\overline{R}(w') = \left[\frac{(b-w')(\alpha+\mathbf{1}_{\mathbf{RE}}\cdot\alpha_{RE})q_0}{\eta}\right]^{\frac{1}{1-\beta}}$, leading to $\frac{\overline{R}(w')}{\overline{R}(w)} = \left[\frac{\lambda(b-w')}{b-w}\right]^{\frac{1}{1-\beta}}$. Rearranging this ratio yields two possible cases: a) $\overline{R}(w') > \overline{R}(w)$ if $w_r \le w' < \overline{w}$, or b) $\overline{R}(w') < \overline{R}(w)$ if $w' > \overline{w}$ where $\overline{w} \equiv (1-\frac{1}{\lambda})b + \frac{1}{\lambda}w$.

For a new piece rate w' of our choice that just exceeds w_r (see footnote 15), we believe that case a) is more likely to occur than case b). Figure A5 provides an illustration on case a) for our prediction on how w' = 4 may affect $q^*(R)$, relative to w = 1, in Experiment 2. It shows that conditional on the gift type, a moderate increase in w not only shifts the curve of $q^*(R)$ up for all R but also moves \overline{R} up to the right. In other words, the hump-shaped curve expands upward with its peak moving toward the upper-right corner. As a result, the surprise gifts (R = 5 or 20) should be more likely to fall in the upward sloping range of $q^*(R)$ under w' = 4, suggesting that the impact of gift on workers' performance is less susceptible to reference dependence. We, therefore, predict that different from Result 2 in Experiment 1, the inverse U-shape in the overall performance with respect to monetary incentives is unlikely to occur in Experiment 2.

Lastly, other predictions (e.g., the effect of gift type and its interaction with gift size) should otherwise remain for Experiment 2 since they apply generally for an unconstrained w.



Figure A5: Piece Rate Increase Conditional on Gift Type

H Additional Results in Experiment 2

	(1)	(2)
SC-w4	2.298	1.716
	(3.357)	(3.358)
LC-w4	2.776	0.633
	(3.379)	(3.475)
SRE-w4	3.889	3.331
	(3.412)	(3.430)
LRE-w4	11.528***	9.849***
	(3.206)	(3.369)
Copies in phase one	. ,	0.505**
		(0.212)
Female		-1.813
		(2.109)
Night		2.697
		(4.051)
Observations	202	202
Pseudo \mathbb{R}^2	0.012	0.018
Across-treatment comp	parison $(p \text{ value of t})$	two-sided Wald test)
SC-w4 vs. SRE-w4	0.635	0.629
LC-w4 vs. LRE-w4	0.009	0.006
SC-w4 vs. LC-w4	0.885	0.747
SRE-w4 vs. LRE-w4	0.023	0.055

Table A3: Overall Output—Unconditional Survey Entries in Experiment 2 (Tobit)

Notes: The analysis includes the five treatments in Experiment 2 with the higher piece rate but is otherwise the same as the analysis in Table 2. The dependent variable is the unconditional number of survey entries. Marginal effects are reported. Standard errors are reported in parentheses. *p < 0.1, **p < 0.05, ***p < 0.01.

	A. Participation (Probit)		B. Conditiona (OLS	al Entries
	(1)	(2)	(3)	(4)
SC-w4	0.073	0.054	1.705	1.878
	(0.089)	(0.091)	(3.285)	(3.331)
LC-w4	0.051	-0.023	2.789	2.622
	(0.091)	(0.103)	(3.312)	(3.491)
SRE-w4	0.044	0.030	5.175	5.279
	(0.092)	(0.094)	(3.341)	(3.388)
LRE-w4	0.231^{***}	0.194^{**}	8.617^{***}	8.523**
	(0.070)	(0.078)	(3.152)	(3.283)
Copies in phase one		0.016^{**}		0.173
		(0.007)		(0.204)
Female		-0.084		0.935
		(0.065)		(2.047)
Night		0.146		-3.251
		(0.114)		(4.291)
Constant			18.640^{***}	17.382^{***}
			(2.408)	(6.186)
Observations	202	202	144	144
\mathbb{R}^2	0.033	0.071	0.037	0.026
Across-treatment comp	arison $(p \text{ value } q)$	of two-sided Wa	ald test)	
SC-w4 vs. SRE-w4	0.753	0.794	0.283	0.295
LC-w4 vs. LRE-w4	0.038	0.025	0.058	0.057
SC-w4 vs. LC-w4	0.810	0.430	0.734	0.821
SRE-w4 vs. LRE-w4	0.033	0.079	0.266	0.303

Table A4: Participation and Conditional Survey Entries in Experiment 2

Notes: The dependent variable of the Probit model in Columns 1-2 is the likelihood of participating in the additional task. Marginal effects are reported. The dependent variable of the OLS model in Columns 3-4 is the *conditional* number of survey entries. Pseudo R² is reported in Columns 1-2 and adjusted R² in Columns 3-4. Standard errors are in parentheses. *p < 0.1, **p < 0.05, ***p < 0.01.

	(1)	(2)
SC-w4	-0.005	-0.006
	(0.007)	(0.007)
LC-w4	-0.003	-0.006
	(0.007)	(0.007)
SRE-w4	-0.0001	-0.001
	(0.007)	(0.007)
LRE-w4	0.011	0.008
	(0.007)	(0.007)
Copies in phase one		0.001
		(0.0004)
Female		0.003
		(0.004)
Night		0.008
		(0.009)
Constant	0.925^{***}	0.903***
	(0.005)	(0.013)
Observations	144	144
Adjusted \mathbb{R}^2	0.021	0.024
Across-treatment comp	parison $(p \text{ value of })$	two-sided Wald test)
SC-w4 vs. SRE-w4	0.479	0.492
LC-w4 vs. LRE-w4	0.044	0.033
SC-w4 vs. LC-w4	0.728	0.969
SRE-w4 vs. LRE-w4	0.105	0.174
Notes: The dependent	variable is the accu	racy rate by
\cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot	• 1 11.1. 1	

Table A5: Work Quality—Accuracy Rate in Experiment 2 (OLS)

Notes: The dependent variable is the accuracy rate by individual participants in the additional task. Standard errors are in parentheses. *p < 0.1, *p < 0.05, ***p < 0.01.

		_		rippreelation	1 articipate
(1)	(2)	(3)	(4)	(5)	(6)
0.192^{**}	0.307***	0.134	0.215**	0.287***	0.144
(0.091)	(0.100)	(0.094) 0.189^{*}	(0.089)	(0.107)	(0.090) 0.249^{***}
		(0.095)	0.025**	-0.012	(0.092) 0.028^{***}
			$(0.010) \\ 0.032$	(0.012) -0.118	$(0.009) \\ 0.061$
			(0.088) 0.423	(0.105) -0.455	(0.086) 0.536^*
0.000***	0.000***	0 600***	(0.288)	(0.343)	(0.280)
$(0.063)^{-0.064}$	(0.268^{+++}) (0.074)	(0.032^{++}) (0.068)	-0.329 (0.380)	(0.453)	-0.590 (0.378)
81 0.041	81	81	81 0.104	81	81 0.172
	$\begin{array}{c} (1) \\ 0.192^{**} \\ (0.091) \end{array}$ $\begin{array}{c} 0.683^{***} \\ (0.064) \\ 81 \\ 0.041 \end{array}$	$\begin{array}{c cccc} (1) & (2) \\ \hline 0.192^{**} & 0.307^{***} \\ (0.091) & (0.106) \\ \hline \end{array} \\ \hline \\ 0.683^{***} & 0.268^{***} \\ \hline (0.064) & (0.074) \\ \hline \\ 81 & 81 \\ 0.041 & 0.085 \\ \hline \end{array}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$

Table A6: Mediation Test of Appreciation Perception on Participation in Experiment 2

Notes: We focus on LC-w4 and LRE-w4 for the Sobel-Goodman mediation test. The dependent variable is whether one participates in the additional task. The main independent variable is Large RE-w4 with Large Cash-w4 in the omitted category. The mediator is whether the participant perceives the gift as the employer's appreciation. The analysis in Columns 1-3 does not consist of any covariates. These covariates are added in Columns 4-6. We find that the Sobel coefficient is 0.058 (p = 0.102) or 0.071 (p = 0.057), and the proportion of the total effect mediated through perception is 30.1% or 33.2% without or with the covariates. These results are similar to those in Experiment 1. Standard errors are in parentheses. *p < 0.1, **p < 0.05, ***p < 0.01.