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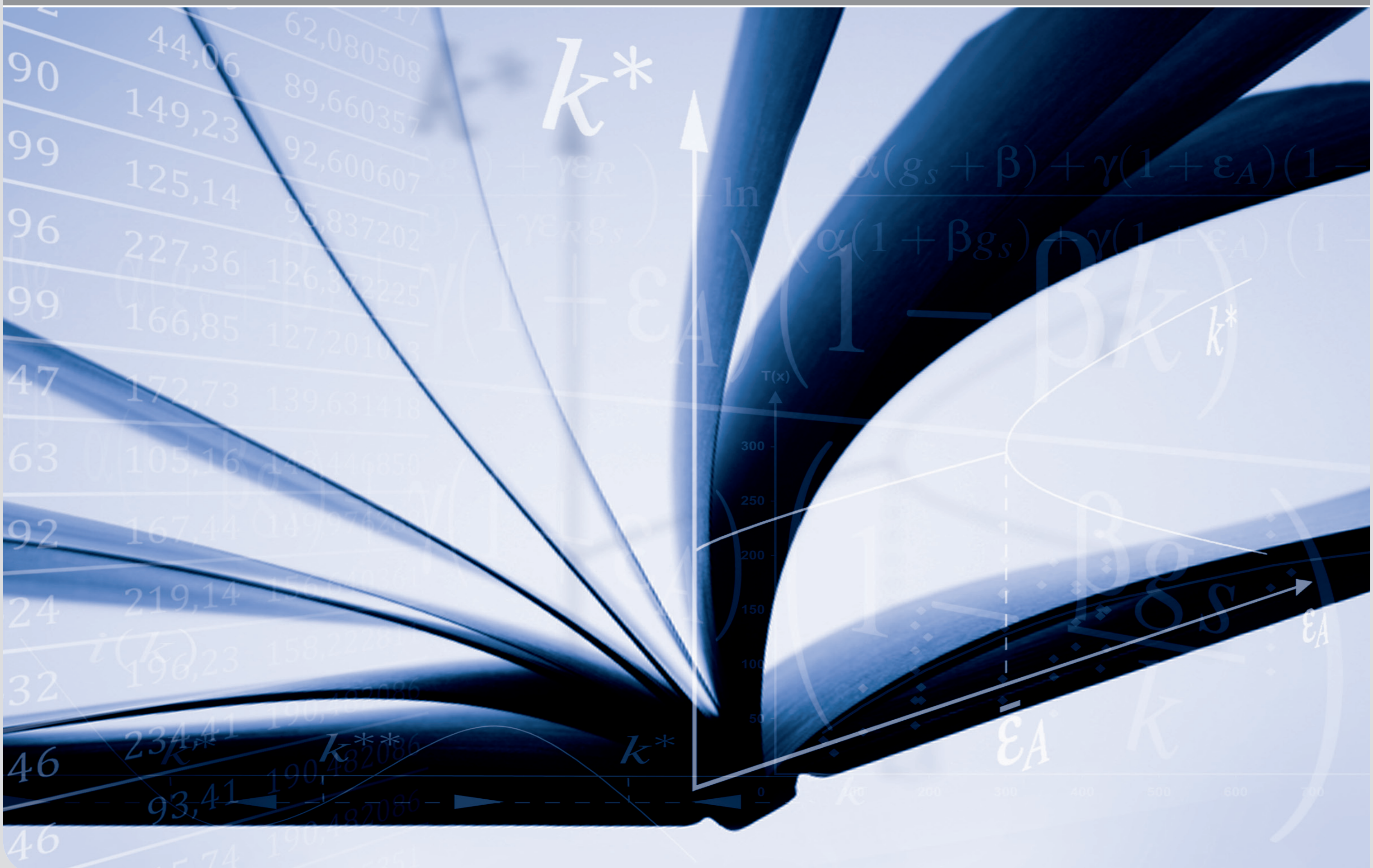
by Sebastian Kube, Michel André Maréchal and Clemens Puppe

No. 25 | APRIL 2011

WORKING PAPER SERIES IN ECONOMICS



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Impressum

Karlsruher Institut für Technologie (KIT)
Fakultät für Wirtschaftswissenschaften
Institut für Wirtschaftspolitik und Wirtschaftsforschung (IWW)
Institut für Wirtschaftstheorie und Statistik (ETS)

Schlossbezirk 12
76131 Karlsruhe

KIT – Universität des Landes Baden-Württemberg und
nationales Forschungszentrum in der Helmholtz-Gemeinschaft

Working Paper Series in Economics
No. 25, April 2011

ISSN 2190-9806

econpapers.wiwi.kit.edu

The Currency of Reciprocity – Gift-Exchange in the Workplace *

Sebastian Kube, Michel André Maréchal and Clemens Puppe

August, 2011

Abstract

What determines reciprocity in employment relations? We conducted a controlled field experiment to measure the extent to which monetary and non-monetary gifts affect workers' performance. We find that non-monetary gifts have a much stronger impact than monetary gifts of equivalent value. We also observe that when workers are offered the choice, they prefer receiving money but reciprocate as if they received a non-monetary gift. This result is consistent with the common saying, "it's the thought that counts". We underline this point by showing that also monetary gifts can effectively trigger reciprocity if the employer invests more time and effort into the gift's presentation.

JEL classification: C93, J30.
Keywords: field experiment, reciprocity, gift-exchange, non-monetary, in-kind.

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* Kube: University of Bonn, Department of Economics, Adenauerallee 24-42, 53113 Bonn, Germany, email: kube(at)uni-bonn.de. Maréchal: University of Zurich, Department of Economics, Laboratory for Social and Neural Systems Research, Bluemlisalpstrasse 10, CH-8006 Zurich, Switzerland, email: michel.marechal(at)econ.uzh.ch. Puppe: Karlsruhe Institute of Technology, Department of Economics and Business Engineering, 76128 Karlsruhe, Germany, email: clemens.puppe(at)kit.edu. We thank Veronica Block, Carsten Dietz, Monika Emanuel, Ella Hohenäcker, Simone Schneider, Lisa Strass and Philipp Stroehle for providing excellent research assistance, and Johannes Kaiser for programming the computer application. We are grateful to Joel Sobel, several anonymous referees, Dan Ariely, Alain Cohn, Stefano DellaVigna, Robert Dur, Florian Ederer, Tore Ellingsen, Florian Englmaier, Armin Falk, Ernst Fehr, Uri Gneezy, Lorenz Goette, Sally Gschwend, Karla Hoff, Heidi Maréchal, Susanne Neckermann, Rupert Sausgruber, Alexander Sebald, Uri Simonsohn as well as the audiences at IMEBE Alicante, IZA Bonn, Erasmus University Rotterdam, UC San Diego, UC Santa Cruz, UC Santa Barbara and UC Los Angeles, UC Berkeley, Wharton, University of St. Gallen, University of Heidelberg, and University of Zurich for very helpful comments.

> "The psychological impact of providing tangible or intangible gifts to employees is likely to depend not only on the magnitude of the gifts but also on the gifts being seen as (...) costly to the donor in terms of time or effort."
>
> James N. Baron and David M. Kreps (1999, p. 109)

1 Introduction

How can firms motivate their employees to provide effort above the minimal level? This question is of great importance for both theorists and practitioners. Assuming that workers strictly pursue what is in their material self-interest, a large theoretical literature explores how explicit and implicit contracts can be designed so that the workers' interests are aligned with the firm's objectives (see MacLeod (2007), Prendergast (1999) or Gibbons (1998)). A different strand of literature, based on sociological and psychological insights, questions the assumption of pure self-interest, underlining the importance of reciprocity[1] in the presence of incomplete contracts (see Fehr, Goette and Zehnder (2009)). According to this view firms might achieve higher profits by treating their workforce kindly (e.g. paying fair wages) because workers reciprocate positively to "gifts" and return favors by exerting higher effort (Akerlof (1982)). The empirical evidence on gift-exchange is

[1]By reciprocity, we refer to the behavioral phenomenon of people responding towards (un)kind treatment likewise, even in the absence of reputational concerns. Economic theories formalize reciprocal behavior by incorporating the distribution of outcomes, the perceived kindness of intentions, or simply emotional states as arguments into the individual utility function (see Charness and Rabin (2002), Falk and Fischbacher (2006), Rabin (1993), Dufwenberg and Kirchsteiger (2004), or Cox, Friedman and Gjerstad (2007)).

mixed. While the results from laboratory experiments are broadly conclusive and suggest that fixed wages positively influence effort (e.g. Fehr, Kirchsteiger and Riedl (1993), Hannan, Kagel and Moser (2002), or Charness (2004)), recent field experiments provide only weak or moderate support for positive reciprocity (e.g. Gneezy and List (2006), Kube, Maréchal and Puppe (2010) or Cohn, Fehr and Goette (2009)). However, both types of approaches have focused on monetary gifts and paid little attention to the nature of gifts.[2]

This paper fills this gap and analyzes how strongly workers reciprocate non-monetary and monetary gifts with higher productivity. For this purpose, we conducted a controlled field experiment in a naturally occurring work environment. We recruited workers to catalog the books from a library for a limited time, excluding any possibility of re-employment. The job was announced with an hourly wage of €12 - the amount actually paid out in our benchmark treatment. In our cash treatment, the workers received a monetary gift in the form of a 20 percent wage increase. In the bottle treatment, we gave workers a thermos bottle of equivalent monetary value.[3] The results show that the nature of gifts crucially determines the prevalence and strength of reciprocal behavior. The cash gift had no significant impact on workers' productivity. The bottle, however, resulted on average in a 25 percent higher work performance outweighing the percentage increase in workers' compensation. We replicated the results from our bottle treatment with a control

[2]See Falk (2007) and Maréchal and Thöni (2010) for field experiments on non-monetary gift-exchange in other contexts.

[3]The gift came as a surprise for the workers and was not tied to performance. See Jeffrey (2009) and Eriksson and Villeval (2010) for laboratory studies analyzing performance contingent non-monetary incentives. See also Kosfeld and Neckermann (2011) for a field experiment studying the effects of symbolic awards.

treatment where we explicitly mentioned the bottle's market price. Biased beliefs about the gift's market price thus cannot account for the differences between the cash and the bottle treatments.

We further show that preferences in favor of the non-monetary gift do not drive our results. Almost all workers preferred the money in an additional treatment where they could choose between receiving cash or the bottle. Strikingly, average work productivity was as high as if workers received the bottle and thus significantly higher than when they only received the money (without having the choice). The latter results are consistent with the common saying that it is the thought - i.e. the time and effort invested into the gift - that counts (see Baron and Kreps (1999), Robben and Verhallen (1994), or Webley, Lea and Portalska (1983)). Workers did not choose the bottle, but the employer still incurred the time and effort for choosing, buying, and wrapping the gift. To provide a more direct test whether time and effort matter, we conducted a final treatment. In this treatment the employer gave the workers money in the form of an origami (i.e. the money was artistically folded and wrapped). The origami was identical to the cash gift, except that the employer had invested more time and effort into the gift. The results show that workers reciprocated the origami by producing 30 percent more output relative to the baseline.

The remainder of this paper is organized as follows: We outline the experimental design in Section 2 and present the empirical results in Section 3. Finally we discuss how our results relate to the theoretical literature on gift-exchange and conclude the paper in Section 4.

2 Experimental Design

The libraries of two economic chairs at a German University had to be cataloged. We used this opportunity to run a field experiment and recruited workers from all over the campus with posters. The announcement read that it was a one-time job opportunity for half a day (three hours), and that pay would amount to €12 per hour. We emphasized the one-shot nature of this job offer in order to rule out reputational concerns, which are inherent in ongoing relations. The hourly wage of €12 served as a common reference point. A large number of candidates applied during the announcement phase. A research assistant randomly picked subjects from the list of applicants. They were invited with an email and asked to confirm the starting date, reminding them that the job would pay €12 per hour.

Upon arriving on the working day, workers were separated from each other and placed in different rooms in front of a computer (with internet browser) and a table with a random selection of books. Their task was to enter the books' author(s), title, publisher, year, and ISBN number into an electronic data base. The computer application recorded the time of each log, allowing us to reconstruct the number of characters each person entered over time, without having to monitor work performance explicitly.[4] A research assistant explained the task, strictly following a protocol.[5] The workers were allowed to take a break whenever necessary. This data entry task is well suited for our experiment and is frequently used in field experiments because it allows for a

[4]See Figure 7 in the Appendix for a screen shot of the computer application

[5]Within each wave of experiments, all workers interacted with the same female research assistant, preventing potential confounding experimenter effects. The research assistants neither knew the purpose of the study nor the reason for the treatment variations.

precise measurement of output and quality.[6] Moreover, the task is relatively simple and can be done in isolation, allowing for more control than usually available in other field settings.

Before workers actually started performing their task, the different treatments were announced: we reminded the workers of their hourly wage and informed them about any additional payments or benefits. The latter additional payments and benefits were the only difference between the treatments. Altogether, we conducted six treatments.

In our benchmark treatment **Baseline**, the workers received €12 per hour in cash at the end of the working day, without any additional benefits. In treatment **Money**, total wages were unexpectedly raised by roughly 20 percent by paying an additional fixed amount of €7. In treatment **Bottle**, instead of the pay raise, workers received a thermos bottle worth €7, which was wrapped in a transparent gift paper (see left photo in Figure 1). While the bottle was handed over to the workers immediately with the announcement, the €7 cash gift was given together with the regular wage at the end of the employment. In order to account for this potential timing confound, we ran an additional control treatment **MoneyUpfront**, where the €7 cash gift was paid out immediately after the announcement. Paying €7 at the end together with the hourly wage seems more natural, but MoneyUpfront more closely resembles treatment Bottle with respect to the timing of the gift. However, we found no significant performance differences between Money and MoneyUpfront (Wilcoxon rank sum test, p=0.756, 2-

[6]See Gneezy and List (2006), Kube, Maréchal and Puppe (2010), Kosfeld and Neckermann (2011) and Hennig-Schmidt, Rockenbach and Sadrieh (2010) for some recent examples.

sided). We therefore pooled them in the following analysis and refer to them together as treatment **Money**.

Figure 1: Gifts In-Kind: Bottle and Origami

Notes: The first photo on the left depicts how the bottle was presented. In treatment PriceTag the €7 price tag was left visible at the bottom of the bottle. The other two photos contain the €7 origami in and outside of the envelope.

In order to control for workers' perceptions about the actual price of the bottle, we ran treatment **PriceTag**. PriceTag was analogous to Bottle, except that we explicitly mentioned the bottle's market price and marked it with a corresponding price tag. A comparison of the treatments PriceTag and Bottle allowed us to assess the robustness of our results with regard to the uncertainty of the actual price of the gift.

In treatment **Choice**, workers could choose between receiving €7 in cash or the bottle. We presented the bottle in exactly the same way as in PriceTag, ensuring that every worker knew that the two options were equivalent in monetary terms. Treatment Choice served two purposes. First, it allowed us to elicit revealed preferences for receiving cash or the bottle. This will illustrate whether a preference in favor of one of the different gifts drives treatment differences between Money and Bottle. Second, it allows to test the importance of correctly guessing the recipients' preferences (see Prendergast and Stole (2001)). By providing the alternative of €7 in cash, the employer sends a weaker signal about his knowledge of the recipient's tastes.

Finally, we used treatment **Origami** to test whether the time and effort invested in the provision of gifts matters. Workers received an origami-shirt, folded out of a five euro bill, and a two euro coin glued together on a plain postcard. The gift card was also wrapped in a transparent envelope (see the second and third photo from the left in Figure 1). Treatment Origami mirrored treatment Money, except that the employer invested more time and effort in the cash gift.

All types of gifts (€7 in form of cash, bottle, or origami) were announced in the same way: "We have a further small gift to thank you: You will also receive [type of gift(s)]." Table 6 in the Appendix provides an overview of the different treatments with a translation of their announcements.

We conducted two waves of experiments, one in May 2007 and the other in July and August 2010. The experiments took place over a 12, respectively 15, day period, with up to 6 workers per day. The first wave included treatments Baseline, Money, Bottle, and PriceTag. The second wave included MoneyUpfront, Choice, Origami, and an additional Baseline treatment. We conducted a second Baseline treatment in order to control for temporal productivity differences between the two waves. We found no significant productivity differences between the two benchmark treatments (rank sum test, p=0.373, two-sided) and therefore pooled the data in the analysis. All parametric regression models contain a dummy variable controlling for the wave.

The treatments were randomized over time slots and weekdays to avoid treatment effects from being confounded by general productivity shocks occurring at different times of the day or weekdays. The allocation of workers to the various treatment groups was randomized as well. We further took great care to avoid any treatment contamination through social interaction and requested workers to arrive sequentially at different times (three workers each in the morning and in the afternoon) and seated them in separate rooms. Moreover, we did not tell them that we had employed other workers. The invited workers were randomly selected from the pool of applicants, which consisted of about 300 applicants in the first and 110 in the second wave. None of the workers from the second wave had participated in the first wave. Roughly eleven percent of the invited workers failed to show up at the scheduled time. We had a total of 35 workers in the Baseline (17 in Baseline I and 18 in Baseline II), 34 in Money (16 in Money and 18 in MoneyUpfront), 15 in Bottle, 15 in PriceTag, 18 in Origami, and 22 in Choice.

After 3 hours elapsed, all workers completed a short employee questionnaire and received their total wages. In order to observe them in a natural environment, the workers were not told that they were participating in an experiment.

3 Results

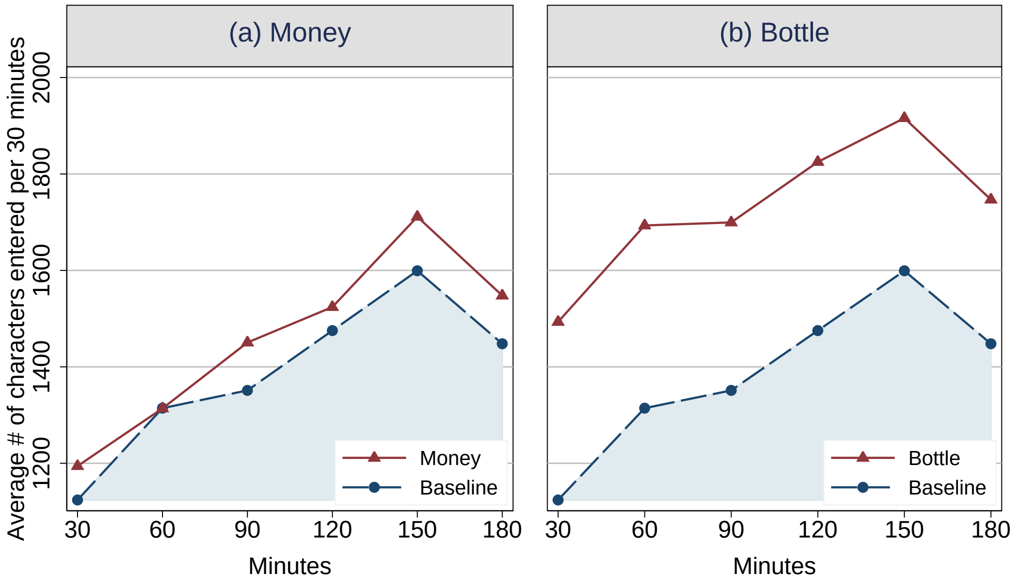
The number of characters entered measures workers' productivity precisely and is considered as our main outcome variable for the subsequent analysis.[7] Figure 2 depicts the development of output over time for treatments Money and Bottle in comparison with treatment Baseline. Consistent with previous field experiments involving monetary gifts, a plain wage increase of roughly 20 percent had only a moderate impact on productivity: Compared to the benchmark treatment, the average number of characters entered was approximately 5 percent higher in treatment Money. As indicated in Table 1 below, this difference does not reach statistical significance (Wilcoxon rank sum test: p= 0.670). Result 1 summarizes this behavioral regularity:

Result 1: *The unexpected 20 percent fixed pay-raise in treatment Money increased workers' productivity by 5 percent on average. This effect, however, does not reach statistical significance.*

The results from treatment Bottle, on the other hand, paint a different picture. Workers entered on average roughly 25 percent more characters than in Baseline. Moreover, as illustrated in Figure 2 Panel (b), this treatment effect remained large over the entire duration of the experiment. The gift implied an increase in workers' compensation by only 20 percent. The elasticity of output with respect to compensation amounts to remarkable 1.23. Table 1 shows that the gift-exchange effect is also significant from a statistical point of view. Using Wilcoxon rank sum tests, the hypotheses of identical productivity between treatments Bottle and Baseline (as well as between Bottle and Money) are rejected ($p < 0.01$, respectively $p < 0.05$). The main findings are summarized in our second result:

[7] We focus on output quantity first and postpone the analysis of the quality dimension of work performance to the end of this section.

Figure 2: Money versus Bottle



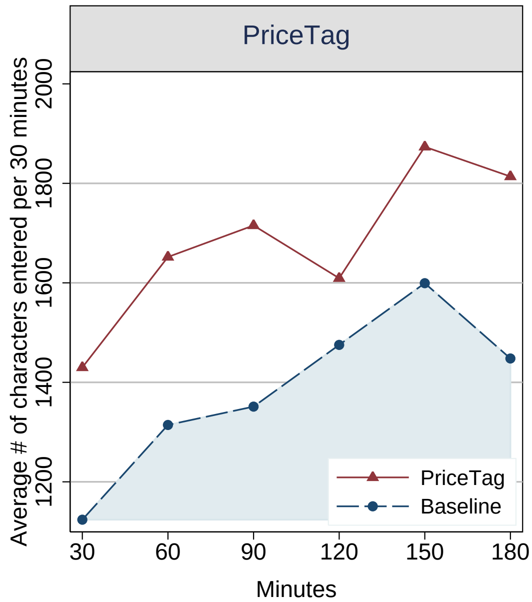
Notes: This figure depicts the average number of characters entered per 30 minutes' time interval for treatment Money (a), Bottle (b) as well as work performance in the benchmark treatment Baseline.

Result 2: *In contrast to the pay raise, a gift in-kind of equivalent monetary value resulted in a statistically significant 25 percent productivity gain. This effect was larger than the relative increase in labor compensation.*

Understanding the Currency of Reciprocity

Given that there was no price tag on the bottle, most workers probably were unaware of its exact market value. Workers might have systematically overestimated the market value, which could potentially explain the larger treatment effect in Bottle relative to Money. Treatment PriceTag allows us to test whether the uncertainty with respect to the gift's market price drives the effect. Given that we communicated the gift's price, output should have been lower in treatment PriceTag than in Bottle if workers reciprocated only on the basis of monetary considerations and if they overestimated the gift's price. The performance pattern in Figure 3 reveals, however, that treatment PriceTag closely replicated the results from treatment Bottle. Workers were slightly less productive in PriceTag than in Bottle - measured output was 2.7 percent lower. However, this difference does not reach statistical significance (Wilcoxon rank sum test: p=0.663).

Figure 3: PriceTag



Notes: This figure depicts the average number of characters entered per 30 minutes' time interval for treatment PriceTag and the Baseline.

Similar to Bottle, treatment PriceTag resulted in a 21 percent higher output compared to the benchmark treatment (p=0.005). These productivity gains were still slightly larger than the relative increase in compensation of the workers. We summarize the results as follows:

Result 3: *We replicated Result 2 with treatment PriceTag. Workers produced almost an equal output in treatments PriceTag and Bottle. In comparison with Baseline, treatment PriceTag resulted in a 21 percent increase in productivity. The uncertainty concerning the exact market price of the gift in-kind thus failed to account for the treatment effects.*

A second important question is whether the workers preferred receiving the bottle rather than its cash equivalent. In treatment Choice, we offered workers the choice between receiving an additional €7 in cash or in form of the bottle. The bottle was presented in the same way as in treatment PriceTag - i.e. all workers knew that the bottle was worth €7. Panel (a) of Figure 4 shows that the vast majority of workers - 18 out of the 22 workers - opted for €7 in cash.

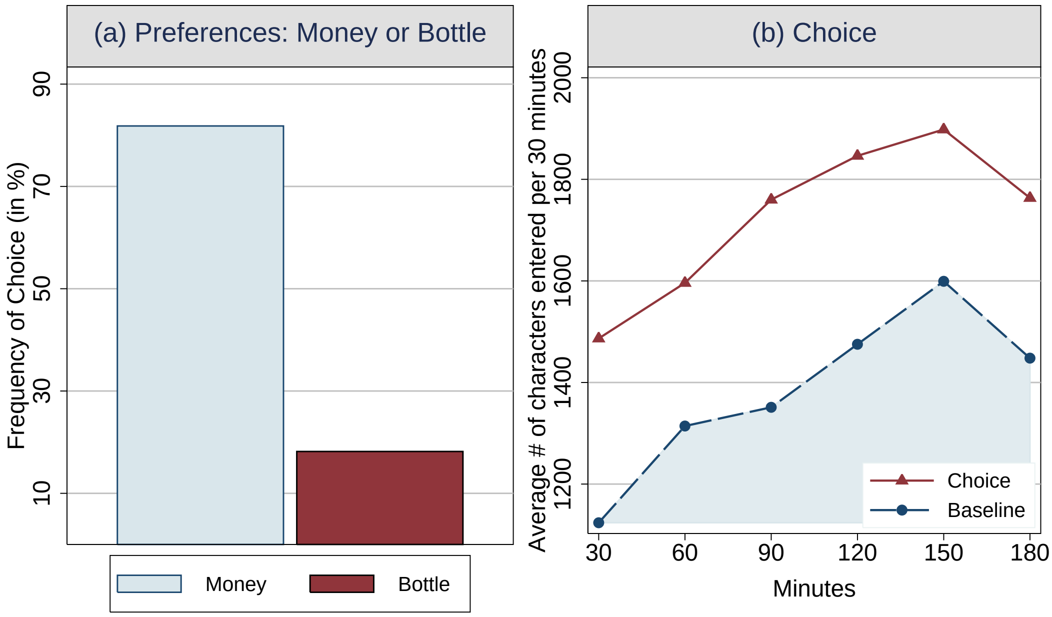
We are able to reject the hypothesis that workers were drawn from a population in which preferences for cash and the bottle are equiprobable (binomial test, two sided p=0.004).[8] We thus conclude:

Result 4: *When workers were given the choice between receiving a cash gift of €7 or a bottle of equivalent value, more than 80 percent chose the cash gift. The gift in-kind thus is unlikely to correspond to its recipient's preferences.*

Panel (b) of Figure 4 shows how work performance developed over time

[8]An earlier version of this paper included additional results from an experiment where subjects in an unrelated lab experiment could actually choose between receiving €7 or the bottle in addition to their other earnings. The results were very similar: 159 out of 172 subjects (92.4 percent) opted for €7 in cash rather than the thermos of equivalent value (binomial test, two sided $p < 0.0001$).

Figure 4: Choice



Notes: The graph in Panel (a) compares the frequency of choice of the bottle (worth €7) and the €7 in cash. Panel (b) depicts the average number of characters entered per 30 minutes' time interval for treatment Choice and work performance in the Baseline.

in treatments Choice and Baseline.[9] Output was about 25 percent larger in treatment Choice than in Baseline (Wilcoxon rank sum test: p=0.006, see Table 1). This treatment effect is of almost identical magnitude as in treatment Bottle. Moreover, performance was around 18 percent higher than in treatment Money (p=0.038, see Table 1). This result seems surprising, given that almost all workers chose the same gift as in treatment Money. We summarize our results:

[9] We pooled the four workers who took the bottle with the other 18 workers. The treatment effect thus measures the effect of receiving the choice between an additional €7 and the bottle. If we were to condition on the workers' actual choice, we would face potential selection effects. However, the results are robust if we exclude the four workers who chose the bottle from the analysis.

Result 5: *Despite the fact that almost all workers opted for €7 in cash, workers' output was substantially higher in treatment Choice than in Baseline and Money.*

Simply offering the bottle was enough to trigger reciprocal reactions - even if the workers did not choose the bottle. Together, Results 5 and 1 are consistent with the common saying "it's the thought that counts". One possible explanation for these results is that the time and effort the donor invests into a gifts - and not the gift per se - matters. If this explanation indeed drives the results, we should be able to trigger reciprocal responses with money too, provided we invest more time and effort into the cash gift. This is what we did in treatment Origami.

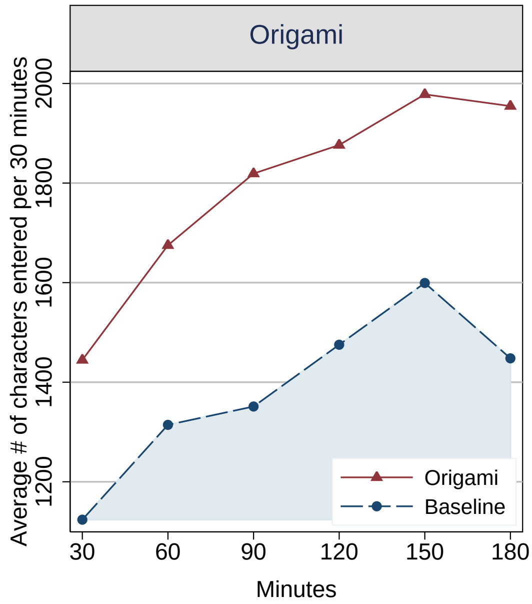
Table 1: Average Treatment Effects: # Characters Entered

	Baseline	**Money**	**Bottle**	**PriceTag**	**Choice**
Money	+5.2%				
Bottle	+24.8% ***	+18.7% **			
PriceTag	+21.4% ***	+15.5% **	-2.7%		
Choice	+24.5% ***	+18.4% **	-0.2%	+2.5%	
Origami	+29.3% ***	+23.0% **	+3.6%	+6.5%	+3.8%

Notes: This table reports average treatment effects (in percentage) for all treatment comparisons (i.e. treatments indicated in the first column are compared with those in the first row). The outcome variable is the number of characters entered as a performance measure. Significance levels from a non-parametric (two-sided) Wilcoxon rank sum test for the null hypothesis of equal output between treatments are denoted as follows: * p<0.1, ** p<0.05, *** p<0.01.

As depicted in Figure 5, treatment Origami had a similar treatment effect as the bottle. Output was almost 30 percent higher in Origami than in Baseline, which is significant from a statistical point of view (p=0.001 see

Figure 5: Origami



Notes: This figure depicts the average number of characters entered per 30 minutes' time interval for treatment Origami as well as work performance in the Baseline.

Table 1). This treatment effect was even slightly larger than the effect of the bottle, but the difference does not reach statistical significance (p=0.539). In contrast, productivity was 23 percent higher than in treatment Money (p=0.012). We summarize these observations in the following result:

Result 6: *The origami - i.e. an artistically folded and wrapped cash gift - resulted in a statistically and economically significant productivity gain.*

Robustness Checks

The cumulative distribution functions in Figure 6 in the appendix show that one or two single workers did not drive our results; instead the treatment effects reflect broad behavioral phenomena. In comparison with treatment Baseline, the performance distributions in treatments Bottle, PriceTag, Choice, and Origami were clearly shifted towards higher output levels. However, the cumulative distribution function from treatment Money was closely intertwined with that from Baseline. For example, the share of workers entering 10'000 characters or less was around 40 percent in treatment Origami. In contrast this fraction amounted to 80 percent in treatment Baseline. Pairwise Kolmogorov-Smirnov tests suggest that the distributions from all gift-treatments were significantly different from the Baseline ($p < 0.05$), except for treatment Money (p=0.741). Moreover, the distribution functions for Bottle, PriceTag, Choice, and Origami were all significantly different from Money ($p < 0.05$).

The previous analysis focused on non-parametric unconditional treatment comparisons. We complemented these results with a regression analysis which allowed us to control for various potential performance influences.[10] For this purpose, we constructed a panel data set by slicing the data into six 30 minute intervals. The benchmark model had the following specification:

$$Y_{it} = \alpha + \beta_1 G_i + \beta_2 T_{it} + \gamma X_i + \rho_i + \theta_i + \delta_i + \omega_i + \epsilon_{it}, \tag{1}$$

where Y_{it} represents the number of characters entered by worker i in time interval t. G_i is a vector consisting of dummy variables indicating each of the different gift treatments. Treatment Baseline was omitted from the model and served as the reference category. T_{it} takes values from zero to five, indicating the six time intervals. X_i is a vector containing controls for the

[10]See Table 3 for summary statistics of our control variables.

workers' age and gender. The wave fixed effect (ρ_i) controls for general performance differences between the two waves of experiments. Furthermore, we included weekday (δ_i) and room (ω_i) fixed effects as well as a dummy variable for sessions conducted in the afternoon (θ_i). We estimated our model using Ordinary Least Squares (OLS). Standard errors were corrected for clustering, accounting for individual dependency of the error term ϵ_{it} over time.

The results from the benchmark model are displayed in column (1) of Table 2. Consistent with the non-parametric analysis, the coefficient for Money is small and statistically insignificant. In contrast, all other gift treatments have large positive and significant coefficient estimates. Furthermore the Wald tests reported at the bottom of Table 2 suggest that the coefficients for Bottle, PriceTag, Choice, and Origami are significantly different from Money. The results also suggest the presence of a significant learning effect as indicated by the positive time trend. We explored how the treatment effects evolved over time by interacting all treatment dummies with the time trend in the extended model in column (2) of Table 2. The results remain robust and none of the interaction effects is significant, suggesting that treatment effects remained stable over time (see also Figures 2 to 5).

In contrast to the quantity of output, *quality* is more difficult to observe for the employer. An important question is therefore whether the observed productivity gains primarily stemmed from workers producing more low quality output. In order to test for quality differences, we measured output quality by the ratio of correctly entered books to the total number of books entered.[11] With a quality ratio of 81.4 percent, quality was low-

[11]See Hennig-Schmidt, Rockenbach and Sadrieh (2010) and Kube, Maréchal and Puppe

est in the benchmark treatment. Apart from the higher quantity of output, workers also provided better quality output in all gift treatments, including treatment Money. In comparison with the Baseline, the increase in quality was highest in treatment Origami (90.6 percent quality ratio) and lowest in treatment Bottle (83.4 percent quality ratio). Except for treatment Bottle, all quality differences with respect to the Baseline are statistically significant ($p < 0.05$, see Table 7 in the appendix).

Furthermore, we used the number of characters from correct entries as the dependent measure in columns (3) and (4) of Table 2. This is a composite measure of work performance, taking both the quantity and the quality dimension of effort into account. All results remain qualitatively unchanged if we use this alternative performance measure. Interestingly, the Time and Origami interaction term is positive and significant on a 10 percent level, suggesting that the effect of the Origami even tended to increase over time.

Finally, evidence from social psychology suggests that positive affect can influence motivation and helping behavior (e.g. Isen and Reeve (2005) or Isen and Levin (1972)). Mood effects generally tend to be rather short lived (see Isen, Clark and Schwartz (1976)). Nevertheless, we tested to what extend differences in positive affect drive our treatment effects. For this purpose we included a non-verbal pictorial assessment of positive affect (Self Assessment Manikin - see Bradley and Lang (1994)) in the employee questionnaire at the end of the experiments of the second wave. We find no significant differences in positive affect between the Baseline, Money Upfront, Origami and Choice

(2010) for a similar approach. Two research assistants searched for spelling mistakes in the titles (using an automatic spell check program) and ISBN numbers of the books.

(Kruskal-Wallis test: p=0.490), suggesting that our results are not driven by differences in affect.

4 Discussion and Conclusion

The results from our field experiment highlight a sharp contrast between non-monetary and purely monetary gifts. In this section we discuss how our results relate to existing theories of gift-exchange and non-monetary gift giving and conclude the paper with potential avenues for future research. The literature has generally explained gift-exchange with outcome and intention-based theories of social preferences (see Cooper and Kagel (forthcoming) for a survey). These models, however, do not explicitly distinguish between monetary and non-monetary gifts. An outcome-based model of inequality aversion could explain our results if we assume that workers take the effort and time the employer has invested in the gift into account. These costs would increase outcome inequalities between workers and the employer by reducing the employer's rent.[12] A rigorous formulation of this idea, would necessitate the transformation of all goods exchanged in monetary equivalents. Not only must the recipient be able to quantify the effort and time of providing the gifts, he must also form beliefs about the surplus he creates by exerting effort. Moreover, the effort in our case was directed towards the recipient with positive intentions. It seems plausible that meaningless effort would result in no or weaker reciprocal reactions. However, models of inequality aversion

[12] This argument implicitly assumes that workers are narrow bracketing, i.e. they ignore the firm's additional sources of income and focus on the rents from bilateral exchange (see Card, DellaVigna and Malmendier (forthcoming)).

do not distinguish between the meaningfulness of effort.[13]

The widespread phenomenon of non-monetary gift giving has frequently puzzled economist because gifts in-kind seem less efficient than money. Waldfogel's (1993) study for example, suggests that holiday gift-giving "destroys between 10 percent and a third of the value of gifts (p. 1328)". Several theories explicitly addressed non-monetary gift giving. A first class of models proposes that gifts in-kind can be of higher subjective value to the recipient than an equivalent cash gift. Search costs as assumed in Kaplan and Ruffle's (2009) model, for example, could imply that the bottle is a product that the workers always wanted to have but have not yet had the opportunity to buy.[14] The results from treatment choice are inconsistent with such an explanation. Almost all workers preferred the money rather than the bottle.

Prendergast and Stole (2001) developed a model showing that gifts in-kind allow donors to signal how well they know the recipient's taste or how intimate their relationship is. "An individual who can show that he understands the preferences of his partner is likely to be a more desirable partner than one who has no idea what his partner wants or believes in (Prendergast and Stole 2001, p. 1795)." Two aspects of our results suggest that signaling intimacy does not explain the observed differences between monetary and non-monetary gifts. First, our choice experiment suggests that the bottle did not correspond to the workers' tastes. Second, by offering the choice between money and a bottle, the employer plausibly signals less knowledge about the

[13]For example inequality aversion would also predict that the employer could induce higher effort by burning his money in front of the employee; or by spending time and effort to buy and wrap an obviously unfriendly gift.

[14]See Thaler (1999) for an alternative argument based on self-control issues.

recipients' tastes. Nevertheless we observe that workers reciprocated to an equal extent as in treatment Bottle, where they had no choice.

Several scholars have argued that people can use gifts to signal their willingness to cooperate in future relationships (see Camerer (1988), Carmichael and MacLeod (1997), Bolle (2001) and Sozou and Seymour (2005)). According to these models, gifts should be costly to the donor and have little value for the recipient. The lower use value ensures that people will not enter into exchange relationships simply to collect valuable gifts. We find that gifts are reciprocated independently of whether the gift is of lower (as in treatment Bottle) or higher use value (as in Choice or Origami where the workers receive money) for the recipient. Furthermore, these models seem to be less relevant for our context, where gifts were offered only after the relationship was established and there was no possibility for future employment.

Lea, M. and Webley (1987) suggested that one reason for the unacceptability of money as a gift is that it puts an exact monetary value on a relationship. Money could thus potentially reframe a social exchange relationship into a market or commercial relationship. The lab experiments conducted by Heyman and Ariely (2004) provide evidence that is supportive of this argument. In contrast, our results from treatment PriceTag, Choice and Origami do not corroborate this explanation. The observed treatment effect is equal to that in treatment Bottle, despite salient information about the gift's price.

Finally, a recent model from Ellingsen and Johannesson (forthcoming) proposes that non-monetary gifts can signal the donors' degree of altruism. The underlying assumption is that in contrast to self-interested donors, altruists find it less burdensome to spend time and effort for other persons.

Altruistic donors therefore have a comparative advantage in providing non-monetary gifts. Assuming that workers are willing to provide more effort for an altruistic employer (e.g. see Ellingsen and Johannesson (2008)) our results might be explained by such a model. However, an explicit test of Ellingsen and Johannesson (forthcoming) would require heterogeneity among employers or direct evidence concerning the workers' beliefs about the employer's type.[15]

Summing up, our results underline the importance of non-monetary aspects in employment relations (see also Rhoades and Eisenberger (2002) or Cropanzano and Mitchell (2005)) and suggest that reciprocity has its own currency which probably cannot be measured in terms of monetary value alone. Gift-exchange is a more complex phenomenon than previously assumed in the literature. While our study provides suggestive evidence that the investment of time and effort is crucial for successful gift-exchange, more theoretical and empirical research is needed to fully understand the exact mechanism of reciprocity. Several aspects and questions are worth further investigations. Employees might reciprocate gifts in other dimensions than productivity, such as absenteeism, retention, or loyalty in general. Do workers still work more if gifts came from someone who did not directly benefit from the extra effort? Moreover, employment is often characterized by long-term relations, which could result in different dynamic effects than those we find in a one-shot relationship. In a dynamic context, workers might become used to receiving gifts on a regular basis and respond less (see also Gneezy

[15] An earlier version of this paper included survey evidence suggesting that the bottle is more likely to be considered as a kind action than a pure cash gift. More detailed results are available from the authors upon request.

and List (2006)). Habituation, however, might be inhibited if the timing of giving gifts appears more random and therefore unpredictable. These issues promise to be interesting topics for future research.

Table 2: Regression Results

	(1)	(2)	(3)	(4)
	Entries		**Correct Entries**	
Money	40.350	9.284	123.419	74.576
	(85.335)	(84.984)	(83.760)	(80.880)
Bottle	369.563***	407.991***	363.303***	416.061***
	(108.830)	(107.783)	(117.977)	(117.061)
PriceTag	345.454***	354.163***	411.180***	421.438***
	(111.003)	(118.220)	(108.651)	(109.536)
Choice	263.261**	279.188**	335.597***	306.344***
	(121.061)	(112.802)	(112.297)	(107.023)
Origami	316.467***	250.958**	436.924***	347.748***
	(117.926)	(111.468)	(111.883)	(108.959)
Time	77.654***	74.264***	63.877***	55.347***
	(4.824)	(8.274)	(4.847)	(8.331)
2nd Wave	73.341	73.341	-15.400	-15.400
	(127.354)	(127.746)	(117.552)	(117.914)
Time*Money		12.426		19.537
		(12.477)		(12.666)
Time*Bottle		-15.371		-21.103
		(12.026)		(13.537)
Time*PriceTag		-3.484		-4.103
		(18.826)		(14.812)
Time*Choice		-6.371		11.701
		(16.668)		(14.981)
Time*Origami		26.204		35.671*
		(16.267)		(19.053)
Constant	1812.104***	1820.578***	1481.451***	1502.776***
	(300.568)	(300.916)	(298.939)	(301.266)
Wald tests:				
Bottle=Money	0.003		0.038	
Pricetag=Money	0.014		0.010	
Choice=Money	0.076		0.083	
Origami=Money	0.031		0.012	
Age and Gender?	YES	YES	YES	YES
Weekday FE?	YES	YES	YES	YES
Afternoon FE?	YES	YES	YES	YES
Room FE?	YES	YES	YES	YES
Observations		834		
# Workers		139		

Notes: This table reports OLS coefficient estimates (standard errors adjusted for clustering are reported in parentheses). Significance levels are denoted as follows: * p<0.1, ** p<0.05, *** p<0.01.

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A Appendix

Table 3: Summary Statistics

Variable	Mean	Std. Dev.
Age	23.187	2.802
Male	0.446	0.499
Room 1	0.295	0.458
Room 2	0.180	0.385
Room 3	0.165	0.373
Room 4	0.158	0.366
Room 5	0.201	0.403
Afternoon	0.511	0.502
Monday	0.201	0.403
Tuesday	0.194	0.397
Wednesday	0.230	0.422
Thursday	0.187	0.391
Friday	0.187	0.391
Obs.	139	

Table 4: Data Overview: Number of Characters (Books) Entered and Quality

Treat.	**ID** #	**Total Chars.**	**Time Books**	**Quality ratio**	**Treat.**	**ID** #	**Total Chars.**	**Time Books**	**Quality ratio**
Base-	1	4570	44	0.500	**Money**	36	4470	50	0.840
line I	2	5122	55	0.564		37	6010	71	0.915
	3	5327	42	0.881		38	6426	60	0.850
	4	6862	75	0.547		39	7763	77	0.935
	5	7177	76	0.934		40	7801	77	0.857
	6	7208	78	0.885		41	7804	80	0.913
	7	7217	75	0.880		42	7823	82	0.671
	8	7581	66	0.894		43	7883	87	0.908
	9	8157	57	0.842		44	7959	84	0.845
	10	8607	93	0.753		45	8084	76	0.882
	11	8646	105	0.857		46	8180	91	0.813
	12	8688	97	0.907		47	9464	100	0.950
	13	8919	95	0.800		48	9707	96	0.927
	14	9443	99	0.960		49	10774	94	0.723
	15	9651	106	0.887		50	11150	112	0.866
	16	10224	112	0.946		51	14098	148	0.811
	17	12320	136	0.699					
	Avg.	*7983.5*	*83.0*	*0.808*		*Avg.*	*8462.3*	*86.6*	*0.857*
Base	18	4552	63	0.825	**Money**	52	4611	51	0.765
line II	19	6575	69	0.652	**Upfront**	53	4941	41	0.854
	20	6741	68	0.926		54	5840	66	0.833
	21	7114	63	0.794		55	6686	53	0.906
	22	7247	67	0.791		56	6816	76	0.934
	23	7348	88	0.841		57	7266	74	0.811
	24	7847	69	0.899		58	7690	85	0.835
	25	7936	69	0.899		59	7761	86	0.849
	26	8277	74	0.770		60	8254	76	0.961
	27	8658	95	0.853		61	8397	73	0.959
	28	9396	84	0.952		62	10126	88	0.932
	29	9422	81	0.815		63	10218	117	0.940
	30	9464	86	0.802		64	10289	91	0.989
	31	10365	108	0.611		65	10928	115	0.913
	32	10392	90	0.889		66	11082	102	0.922
	33	10865	120	0.825		67	12345	112	0.938
	34	10964	109	0.817		68	12965	111	0.559
	35	12034	101	0.812		69	15603	134	0.933
	Avg.	*8622.1*	*83.6*	*0.821*		*Avg.*	*8989.9*	*86.2*	*0.880*

Table 5: Data Overview (ctd.)

Treat.	**ID** #	**Total Chars.**	**Time Books**	**Quality ratio**	**Treat.**	**ID** #	**Total Chars.**	**Time Books**	**Quality ratio**
Bottle	70	6979	61	0.721	**PriceTag**	107	7503	77	0.909
	71	8671	82	0.683		108	7836	82	0.939
	72	8756	74	0.919		109	8332	86	0.884
	73	9018	92	0.783		110	8701	93	0.957
	74	9027	90	0.744		111	8804	103	0.854
	75	9492	93	0.903		112	9066	79	0.873
	76	9581	98	0.857		113	9449	99	0.889
	77	9796	106	0.868		114	9729	91	0.703
	78	10922	108	0.778		115	10164	104	0.663
	79	10939	112	0.866		116	10846	92	0.957
	80	11123	119	0.731		117	11517	116	0.836
	81	11936	126	0.865		118	11972	109	0.844
	82	12102	103	0.951		119	12059	137	0.949
	83	13254	120	0.933		120	12436	115	0.896
	84	14011	102	0.902		121	12994	136	0.904
	Avg.	*10373.8*	*99.1*	*0.834*		*Avg.*	*10093.9*	*101.3*	*0.871*
Choice	85	5546	49	0.857	**Origami**	122	4466	56	0.964
	86	6481	58	0.862		123	7219	74	0.946
	87	7525	78	0.962		124	7385	81	0.778
	88	7747	81	0.802		125	8854	98	0.918
	89	8063	72	0.806		126	9131	74	0.892
	90	8293	96	0.958		127	9439	94	0.862
	91	8305	91	0.835		128	9550	85	0.871
	92	9186	84	0.833		129	10623	96	0.917
	93	9426	76	0.934		130	11062	96	0.906
	94	9640	104	0.837		131	11119	99	0.889
	95	9677	93	0.925		132	11568	103	0.961
	96	10215	93	0.699		133	11610	118	0.890
	97	10682	87	0.862		134	11928	101	0.891
	98	10735	108	0.870		135	12389	114	0.904
	99	10970	102	0.912		136	13158	149	0.953
	100	11279	124	0.935		137	13725	153	0.895
	101	11317	120	0.917		138	14717	130	0.962
	102	12620	139	0.964		139	15520	147	0.905
	103	13869	115	0.870					
	104	14197	129	0.907					
	105	15482	137	0.825					
	106	16459	143	0.944					
	Avg.	*10350.6*	*99.0*	*0.878*		*Avg.*	*10747.9*	*103.8*	*0.906*

Table 6: Treatments

Treatment	**Gift**	**Announcement**	**Wave**
Money [a]	€7 in cash	"We have a further small gift to thank you:	I & II
		You will also receive €7 "	I & II
Bottle	thermos bottle (worth: €7)	"We have a further small gift to thank you:	I
		You will also receive this thermos bottle"	I & II
PriceTag	thermos bottle	"We have a further small gift to thank you:	I
	with price tag	You will also receive this thermos bottle worth €7 "	I & II
Choice	€7 in cash or thermos bottle	"We have a further small gift to thank you:	II
	with price tag	You will also receive €7.	I & II
		You can choose whether you want to receive the €7 in cash	I & II
		or in form of this thermos bottle worth €7"	I & II
Origami	€7 in form of an origami	"We have a further small gift to thank you:	II
		You will also receive €7 "	I & II
Baseline	none	none	I & II

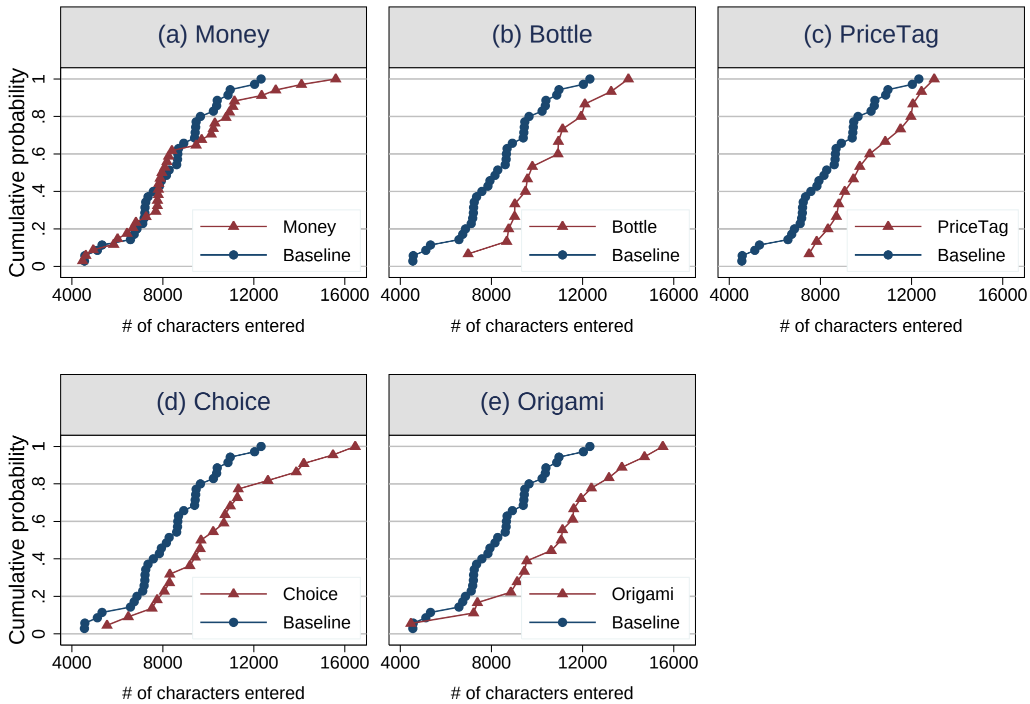
[a] Treatment Money (i.e. €7 where distributed at the end of the employment) and MoneyUpfront (i.e. €7 where distributed at the beginning together with the announcement) are pooled, because there were no significant performance differences between the two treatments.

Table 7: Average Treatment Effects: Quality Ratio

	Baseline	**Money**	**Bottle**	**PriceTag**	**Choice**
Money	+6.7% **				
Bottle	+2.4%	-4.0%			
PriceTag	+6.9% **	+0.2%	+4.4%		
Choice	+7.8% **	+1.1%	+5.3%	+0.9%	
Origami	+11.2% ***	+4.3%	+8.6% **	+4.0%	+3.2%

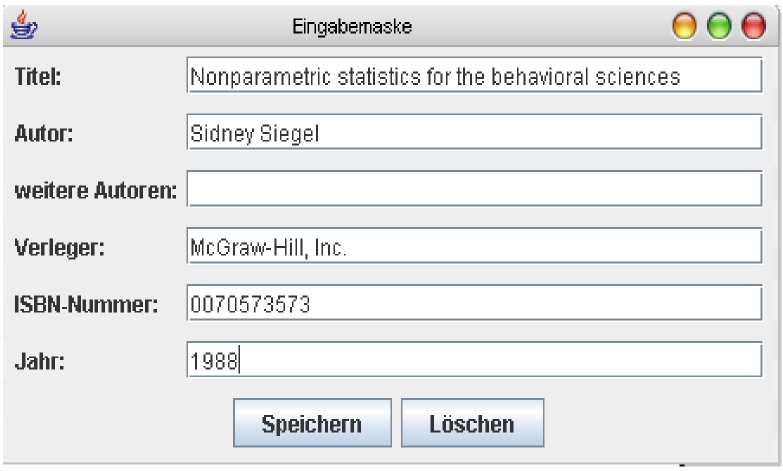
Notes: This table reports average treatment effects (in percentage) for all treatment comparisons (i.e. treatments indicated in the first column are compared with those in the first row). The outcome variable is the quality ratio. Significance levels from a non-parametric (two-sided) Wilcoxon rank sum test for the null hypothesis of equal quality between treatments are denoted as follows: * p<0.1, ** p<0.05, *** p<0.01.

Figure 6: Cumulative Distribution Functions



Notes: This figure depicts the cumulative distribution functions of the total number of characters entered for treatments (a) Money, (b) Bottle, (c) PriceTag, (d) Choice, and (e) Origami in comparison with the Baseline treatment.

Figure 7: Screenshot: Computer Application



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