Disentangling the Sources of Pro-socially Motivated Effort: A Field Experiment*

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Abstract

This paper presents evidence from a field experiment, which aims to identify the two sources of workers’ pro-social motivation that have been considered in the literature: warm glow altruism and pure altruism. We employ an experimental design that first measures the level of effort exerted by student workers on a data entry task in an environment that elicits purely selfish behavior and we compare it to effort exerted in an environment that also induces warm glow altruism. We then compare the latter to effort exerted in an environment where both types of altruistic preferences are elicited. We find evidence that women increase effort due to warm glow altruism while we do not find any additional impact due to pure altruism. On the other hand, men in our sample are not responsive to any of the treatments.

JEL Codes: C93, D64, J16, J32
Keywords: Pro-social behavior, field experiment, effort, charitable donations, workers’ motivation

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1 Introduction

What motivates workers on their job? For certain type of workers, besides extrinsic rewards, an important drive is a concern towards the social cause pursued by the organization they work for, or a sense of altruism towards the welfare of a third party that is the recipient of the good or service being produced in their workplace. Such workers are willing to make labor donations, by providing on-the-job effort beyond what is contractually required of them. There is mounting empirical evidence that this type of labor donations are important in organizations engaging in the provision of education, health care, child-care, and social services as well as in charities and NGOs that advance all sorts of social missions.¹

A recent burgeoning theoretical literature in economics recognizes the important role of workers’ pro-social motivations and examines their implications for the design of incentive contracts, the selection of workers, the provision of effort and organizational design, see for instance, Besley and Ghatak (2005), Delfgaauw and Dur (2007, 2008), Dixit (2002), Francois (2000, 2007), Glazer (2004), Murdock (2002).² Typically, two alternative views of altruism have been considered (a) Warm glow altruism: the worker derives direct nonpecuniary benefits from the act of contributing to a cause she cares about³ and (b) Pure altruism: the worker is concerned about the actual impact of her actions on the well-being of others. These two conceptualizations of altruism have been introduced in economics in the context of charitable giving and the private provision of public goods, see Andreoni (1989, 1990). In the context of the labor relationship the two key implications of these approaches are that (1) An altruistic worker will provide more effort, and, (2) An altruistic worker requires less monetary compensation, see for instance Besley and Ghatak (2005).

In addition, papers that have considered workers to be pure altruists, see for instance Francois (2000, 2007), have shown that this way of modelling pro-social preferences has implications for organizational design, as organizations without residual claimants may have an advantage in eliciting workers’ altruistically motivated contributions to the organizations’ output. On the contrary, this advantage does not arise with workers that display warm glow altruism. Therefore, this distinction has important policy implications, for instance, regarding the debate over the privatization of public services delivery. The two approaches have also different implications for corporations

¹Most notable is the recent evidence in the paper by Gregg et al. (2009) who study the incidence of donated labor in the U.K., measured by unpaid overtime, and find that it is more likely to occur in the not-for-profit sector than in the for-profit sector. There is also an extensive literature in public administration that highlights the role of workers’ public service motivation for public sector performance. Perry et al. (2009) provide a survey of this literature.
²See Francois and Vlassopoulos (2008) for an overview of this literature.
³There may be various psychological underpinnings for this, including self-respect or pride (Benabou and Tirole 2006, Ellingsen and Johannesson 2008), and social image or audience effects (Andreoni and Bernheim 2009).
that pursue social ends via corporate social responsibility (CSR) policies. In particular, the exact nature of workers’ pro-social motivation matters for the design of the CSR policy (e.g. should the fraction of the firm’s profits that is donated to the social cause be linked to workers’ productivity or not).

While these two approaches have proved to be useful in deriving theoretical insights as to the implications of workers’ pro-social preferences, no attempt to quantify and discriminate the importance of the two using non-experimental data has been made, in part because appropriate field data that would allow for sound econometric analysis are difficult to come by. In this paper, we report findings from a controlled field experiment which is a first, to our knowledge, attempt to disentangle and quantify the two sources of workers’ intrinsic motivation.

We hired university students through email announcements to perform a short-term computer data entry job. Using a short term job that involves no teamwork, rather than implementing our treatments in the context of an ongoing employment relationship, has the important advantage of removing career concern considerations, repeated game strategies and peer effects that would represent a confounding factor for the interpretation of the results and the underlying motives we are trying to uncover.4 Another important aspect of our design is that we observe subjects providing real effort in a natural work environment, thus heeding Levitt and List (2007) who argue that pro-social behavior observed in the lab may not translate into behavior in the field. A related point is made by Della Vigna (2009) in a recent review of the literature on economics and psychology, who points out that “the research on social preferences displays more imbalance between laboratory and field” compared to research on other topics and calls for “more papers linking the findings in the laboratory [...] to the evidence in the field” (pg 341). Similar type of labor market field experiments using student workers have been recently used to evaluate how various behavioral considerations, such as, reciprocity and peer effects operate in labor markets (Falk and Ichino, 2006; Gneezy and List, 2006; Hennig-Schmidt et al., 2010).

In our experiment, student workers were employed on two separate occasions (one hour each) and for each session received £10 plus a performance bonus based on their performance. On the second occasion, we randomized students into three different groups. For the first group the second occasion was identical to the first one. This baseline condition acts as our control, as it accounts for any change in productivity due to experience, learning and so on. For the two other groups, we implemented two treatments aimed at eliciting, respectively, warm glow effort and effort that is

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4Field experiments carried out over long time horizons are more suitable to study the role of social preferences among workers and the effect of incentive schemes on them, see Bandiera et al. (2005).
induced by both types of altruistic preferences. More specifically, in treatment A, we adapted the methodology developed by Crumpler and Grossman (2008), which aimed at isolating and measuring warm-glow giving in a laboratory setting, using a dictator game where the recipient was a charity. In that paper, subjects were given a monetary endowment and were asked how much of that they would want to allocate to a charity when the contribution of the subject crowded out the contribution of the experimenter such that the charity always received a fixed amount. They found that subjects donated on average 20% of their endowment, which provides evidence of the strength of the warm glow motivation for charitable giving.

In our setting, we are interested in measuring the strength of the warm glow motivation for making labor donations, so in this treatment we told subjects that besides their personal compensation, which remained the same as in the first occasion, their effort could contribute to a charity of their choice, but their contribution would perfectly crowd out our contribution so that the total amount the charity received was fixed at £15. Given the nature of the donation any additional effort that the students might provide in this treatment, relative to the baseline treatment, can be solely attributed to warm glow motivation. In treatment B, we told subjects that besides their personal compensation, which remained the same as in the first occasion, their effort could contribute to a charity of their choice with no crowding out taking place, so that the total donation that the charity received depended on their effort. In this treatment, both sources of pro-social behavior are elicited. Therefore, any additional effort that we observe in this treatment relative to treatment A can be attributed solely to pure altruism.

We find that for women effort is positively affected by an environment that induces warm glow altruism, while there is no additional impact due to pure altruism. In particular, in the treatment condition eliciting warm glow altruism, women increase their productivity between the two sessions by an additional 10% compared to women in the control group. On the other hand, for male subjects, we find no statistically significant differences in productivity changes between the control and any of the treatment groups. This unresponsiveness suggests that pro-social preferences are less relevant for men than for female workers in our sample. Our results are consistent with those obtained in studies that have experimentally examined differences in social preferences across genders.⁵

The rest of the paper is organized as follows: the next section presents the experimental design. Section 3 presents the results of the study and section 4 offers some concluding remarks.

2 Experimental Design

2.1 Recruitment and Task

The experiment was conducted with undergraduate students recruited through email announcements at the University of Southampton in the fall term of 2008. The job ad was asking for students interested in assisting with data entry for a research project in economics. The announcement stated that no prior experience was needed other than basic typing and some familiarity with Microsoft Excel and that interested students should be able to work for a period of 2 hours on two separate occasions over a four-week period. The email also indicated that compensation would include a £10 fixed-fee for each session plus a performance bonus. Interested students were asked to respond indicating their availability, and selection among respondents was based on this information. In total we recruited 71 students of diverse academic backgrounds - Computer Science, Biology, Social Sciences and Engineering - excluding Economics. It is worth noting that students were unaware ex-ante that they were participating in an experiment.\(^6\)

The task consisted of typing data contained in input-output tables that the student received in a booklet into an Excel Worksheet.\(^7\) Each table consisted of 48 randomly generated 3-digit numbers (2 decimals) that always added up to 100. Each table in the booklet and the worksheet is identified by a date (e.g. Jan. 1953) and students had to enter each table frame in the corresponding worksheet. For each table, students were told not to enter the last column and row, as these were automatically calculated by Excel, but were asked to check that the numerical values calculated by Excel for the last column and row corresponded to the ones on the booklet and that the value in the bottom right cell equalled 100. The worksheet also contained a counter which tracked the number of completed tables, the student’s compensation and the donation amount when applicable.\(^8\) This particular data entry task was chosen such that performance is perfectly measurable (number of table entries), and did not allow for cooperation or teamwork, as each participant worked separately without knowing what other participants were doing or even how many other participants were involved. This has the advantage of removing possible confounding factors related to peer pressure. The task was performed in a standard university office on a desktop computer.

We employed 3 research assistants to give instructions and supervise student workers (each

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\(^6\) According to the taxonomy in Harrison and List (2004), the fact that in our setting subjects undertake a task in a naturally occurring environment without knowing that they participate in an experiment classifies our experiment as a natural field experiment.

\(^7\) The Appendix contains the Instructions sheet given to subjects.

\(^8\) A screen-shot of the worksheet used for data entry is provided in the Appendix.
student was supervised by the same assistant on both occasions). The research assistants after greeting the student and introducing the task left the office so that during working time the student was not monitored. After one hour, the assistant came back and counted the number of entries. At the end of the second occasion, payments were arranged and the student was asked to fill out a short questionnaire. For each session, students received the pre-announced fixed wage of £10, plus a performance bonus of 10p per table. Their total compensation was on average £13 per session.

2.2 Treatments

Each one of the treatments that was part of our design involved the students performing the task in two separate occasions, 60 minutes on each session. The two sessions were approximately 2 weeks apart. Employing this design allows us to control for individual differences in typing ability that might be present. We observe no attrition between sessions in our sample as all of the students who were recruited turned up in both sessions. On the first occasion, all students were paid on the basis described above, so that compensation depended on the amount of work performed. There was no mention in the first occasion that a charitable donation might be introduced later. On the second occasion students were randomized into three treatments. Some underwent the first treatment, which we call the Baseline treatment and serves as our control. In this condition students were paid on the exact same basis as in the first session. The difference in output between sessions 1 and 2 produced by those involved in this treatment serves as the benchmark against which we compare performance in the other treatments.

In Treatment A (TA), students were offered the same personal compensation as in the Baseline Treatment. Moreover, students were told that due to the funding of the project, in addition to their personal compensation we were going to make a lump-sum donation to a charity of the student’s choice (£15). It was explained to them that part of the lump-sum donation will be made on their behalf based on their performance: for each table the charity received 30p on their behalf, while the rest would be supplemented by us so that the charity received a total of £15.

Finally, in Treatment B (TB), students were offered the same piece rate as in the Baseline

\[9\] We checked whether the distribution of observable characteristics is the same across treatments using a non-parametric contingency table Pearson chi-square test. There are no significant differences across treatments in gender (p-value: 0.639), citizenship (p-value: 0.997), year of birth (p-value: 0.665), course of study (p-value: 0.525), and, year of study (p-value: 0.430).

\[10\] We also checked whether the randomly selected treatment groups differ significantly in their abilities as measured by the first period performance through a pairwise comparison using a Mann-Whitney (p-values>0.67), a Kolmogorov-Smirnov (p-values>0.85) test and a t-test (p-values>0.45).

\[10\] The list of charities used in the experiment is provided in the Appendix.
Treatment and, in addition, were told that a donation will be made to their preferred charity on their behalf based on their performance: for each table they typed the charity would receive 30p on their behalf. To ensure that each subject in Treatments A and B valued the cause to which the donation is directed we allowed participants to choose the donation recipient not only among a list of charities with diverse missions, but also by indicating an alternative charity. The option of not making any contribution was also present, in which case the money would remain in the research fund, but nobody exercised it. Compared to the Baseline treatment, the job in Treatments A and B is characterized by a pro-social dimension, represented by the charitable donation. Notice that in both treatments it is the student’s choice that determines whether a donation is made at all as well as to which charitable cause the donation is contributing to. Summary statistics about the donations made in the course of the experiment are reported in Table 1 (see the Appendix).

Comparison of effort obtained across the three treatments allows us to assess the relative strength of the two alternative sources of pro-social motivation in the workplace. In particular, comparing the changes in effort between Treatment A and the Baseline, allows us to detect any effort due to warm glow altruism, while comparing the changes in effort between Treatment B and Treatment A, allows us to detect any effort due to pure altruism. In the next section we present the results of the study.

3 Results

Table 2, in the Appendix, provides descriptive statistics of productivity, measured by the total number of completed tables, by treatment and gender for both sessions. In addition, the average and percentage change in productivity between the two sessions is reported for each treatment. Figure 1 displays the kernel density estimates of the distribution of productivity changes for each treatment. The first thing to notice is that in all treatments it appears that there is an increase in average productivity between the first and the second session. Despite a relatively simple task some learning is taking place: in the second session students are more familiar with the environment and the requirements of the job. This underlines the importance of having a baseline treatment to control for all factors affecting productivity changes between the two sessions other than non-pecuniary compensation. Moreover, subjects in the treatment groups appear to raise productivity by more (16%) than those in the baseline (13%).

\[\text{11 Three subjects indicated an unlisted charity of choice.}\]

\[\text{12 To ensure the credibility of the donation, subjects were also asked to indicate whether they wanted to receive a thank you email from the charity. Slightly more than half of the subjects opted to receive one.}\]
3.1 Nonparametric Analysis

We assess formally whether the distribution of productivity changes is significantly different across treatments by performing a Mann-Whitney (M-W) test and a Kolmogorov-Smirnov (K-S) test. In our setting the a priori alternative hypothesis is that in treatments involving charitable donations productivity ought to be weakly greater than in the baseline condition. Therefore, we report one-sided p-values for the tests. The results of the tests indicate a statistically significant difference between control and Treatment A (M-W p-value=0.067, K-S p-value=0.029; one-tailed tests), and between control and Treatment B (M-W p-value=0.086, K-S p-value=0.089; one-tailed tests), while the difference between Treatment A and B is insignificant (M-W p-value=0.484, K-S p-value=0.841; one-tailed tests). Given this last result, we also perform the tests when pooling the two treatments and confirm that there is a significant difference between treatments and control (M-W p-value=0.052, K-S p-value=0.028; one-tailed tests).

The data in Table 2 also suggest that there may be gender differences in the treatment effect.\textsuperscript{13} This is also evident when one inspects the distribution of productivity changes for each gender separately (Figures 2 and 3). In particular, women appear to be more responsive to the treatment conditions, as they raise productivity by 22% in treatment A and 19% in treatment B as compared to an increase of 12% in the baseline condition. We tested whether the distributions differ significantly across genders. For the control group this is not the case (M-W p-value = 0.985, K-S p-value = 0.997; two-tailed tests). This confirms that there is no gender-specific element in the task in itself. On the other hand, the distributions for the treatment groups are significantly different across gender (M-W p-value = 0.011, K-S p-value = 0.079; two-tailed tests), indicating a differential response to treatment.\textsuperscript{14} Performing the same nonparametric tests for the female subsample, we find that the distribution of productivity changes is significantly different between treatments and the baseline at the $p < 0.05$ level, while we cannot reject the null hypothesis that the distribution of productivity changes is the same between treatments A and B. For men, we cannot reject the null of identical distributions in any of the tests. Note that for the control group the average values for the level of productivity and its change across sessions are almost identical between men and women. This suggests that the differential response between genders is not due to different learning

\textsuperscript{13}Our sample is quite balanced along the gender dimension (33 men and 38 women), despite the fact that we did not design the study to test for gender differences. No differences have emerged with regards to other dimensions for which there is enough variation in the data, e.g., previous work experience, occupational expectations (for profit vs non-profit sector), course of study (natural sciences and engineering vs social sciences and education), donation to charity in the last 12 months, volunteering activity in the last 12 months.

\textsuperscript{14}In light of the previous result that the two treatments are not significantly different, we pooled treatments A and B to improve the power of the test.
across genders, but rather due to the treatments.

To summarize, the nonparametric tests indicate that for women the distribution of productivity changes displays a significant shift to the right for both treatments compared to the control group, while there is no difference between treatments. This suggests that warm glow is motivating female subjects to work harder, while we find no evidence of pure altruism having any impact on productivity. For men we do not find evidence of a significant effect. To quantify the strength of warm glow for women we estimate the shift in the distributions between the two treatments combined and the control group nonparametrically by using the Hodges-Lehmann median difference. The median difference is 0.104, implying a 10.4% additional increase in productivity for females, and is significant at the 5% level.

3.2 Regression Analysis

In table 3 we report regression results. As can be seen in Figures 4 and 5 the data are characterized by the presence of several outliers. OLS estimates are very sensitive to these outliers, in particular given the small sample size. For this reason, besides the standard OLS estimates, we report the results from two estimation techniques that are less sensitive to outliers: a median (or least-absolute-deviations) and a robust (iteratively reweighted least squares\textsuperscript{15}) regression. The following equation is estimated

\begin{equation}
    y_i = \beta_0 + \beta_1 T_A + \beta_2 T_B + \varepsilon_i,
\end{equation}

where $y_i$ is the percentage change in productivity between the first and the second sessions for subject $i$, $T_A$ is a dummy equal to 1 if the subject has received treatment A, while $T_B$ is a dummy equal to 1 if the subject is in Treatment B. Thus, $\beta_1$ measures the increase in productivity due to warm glow altruism, while $(\beta_2 - \beta_1)$ measures the increase in productivity due to pure altruism.

Consistently with the nonparametric tests,\textsuperscript{16} for the sample as a whole the coefficients of the dummy variables $T_A$ and $T_B$ are significant (at 10% level), when we estimate them using estimation techniques that are less sensitive to outliers. Moreover, a test of equality of the two coefficients, reported at the bottom of table 2, indicates that they are not different. The point estimates suggest productivity increases by 7-8% compared to the control group due to warm glow altruism, while

\textsuperscript{15}In particular, we use the STATA implementation, rreg, which uses Huber weights at the beginning of the computation and biweights successively, see Hamilton (1991).

\textsuperscript{16}Notice that for the regression analysis we report, as it is standard practice, the significance level for two-sided t-tests.
no additional impact on productivity due to pure altruism is detected.

We next investigate the gender dimension. We ran a fully interacted version of (1) with female dummies and test whether the female coefficients are zero. The $F$–test rejects the null at the 10% level ($p$–value=0.089), so we proceed to perform the analysis disaggregated by gender. These results, reported in the rest of the columns of table 3, confirm the picture already drawn by the nonparametric tests: in the case of women, productivity is increasing by around 10% due to warm glow altruism, while for men the coefficients of $TA$ and $TB$ are much smaller, sometimes even negative, and insignificant. Note that the magnitude of these estimates is in line with the nonparametric results.

### 3.3 Discussion

In this subsection we highlight some features of our experiment that are important for the interpretation of our findings. In particular, our design – a short-term job, where each worker provided effort without being observed by other participants – shuts down alternative factors which could cause workers to increase productivity in response to the treatments, such as the expectation of future labor market rewards (career concerns) or peer pressure.\textsuperscript{17} Also, reciprocity (gift exchange) toward the employer induced by the personal compensation can be ruled out for several reasons. First, on average these students were making the standard undergraduate RA hourly wage and therefore it is unlikely that their compensation would be perceived as very generous. Second, the use of piece rate compensation means that any additional effort is remunerated and this reduces the possibility that workers use effort as a way to reciprocate toward the employer. Finally, and more importantly, as personal compensation is the same across control and treatment groups what we measure when comparing productivity across them is effort induced by either type of altruism, over and above effort induced by feelings of reciprocity toward the employer, if any.\textsuperscript{18}

One might argue that another motivation that may be responsible for the students’ response to the treatments is a form of indirect reciprocity towards the employer. This feeling could be driven by the fact that the employer has acted pro-socially by offering charitable donations as part of the compensation package. However, if such an effect is present, it is of second order compared to the direct effect of the donation appealing to the worker’s altruistic motivation toward the charity itself.

\textsuperscript{17}Note that workers in our experiment may be motivated by a concern for appearing altruistic to their employers, i.e., the experimenters. Such audience concerns can be interpreted as psychological foundations of warm glow (Andreoni and Bernheim, 2009; Ellingsen and Johannesson, 2008).  

\textsuperscript{18}In addition, no study so far has reported evidence of gender differences in worker reciprocity, to the best of our knowledge.
To see this, note that a worker who is not altruistic would not derive any additional utility from the donation made by the employer and therefore would not have any reason to reciprocate by increasing effort. Thus, the presence of any such type of indirect reciprocity is conditional on the worker being altruistically motivated toward the charity. This implies that its effect on worker’s effort provision is of second order compared to the direct effect of the worker’s own altruistic motivation, which this study aims to identify. Also, as explained above, with a piece rate compensation scheme in place, working harder is a very blunt instrument to reciprocate toward the employer.

4 Concluding Remarks

Experimental methods have enhanced our understanding of how various behavioral notions, such as fairness, trust, reciprocity, loss-aversion and peer effects operate in labor markets (Falk and Gaechter, 2008). Recently there has been an increased interest in understanding the motivating factors behind workers’ pro-social behavior in workplace settings. This paper contributes to this literature by performing a first, to our knowledge, field experiment which attempts to disentangle the two alternative sources of workers’ pro-social motivation. Our results underline the importance of warm glow motivation in the workplace, as it accounts for an increase in effort provision that is both statistically and economically significant. On the other hand, we do not find any evidence of purely altruistic motivation.

We find gender differences in pro-social motivation. In particular, in our sample, pro-social behavior is displayed by women, but not by men. This finding is consistent with the literature on gender differences in social preferences. In particular, Eckel and Grossman (1998) report results from dictator experiments in conditions of anonymity that indicate that women are more generous than men: women donate on average about twice what men donate. Andreoni and Vesterlund (2001) also study gender differences in a dictator game where the price of giving varies and find more nuanced results: women are more generous when giving is expensive, and as giving becomes cheaper men are more altruistic. Mellström and Johannesson (2008) carry out a field experiment to examine whether offering blood donors a monetary compensation might crowd out their intrinsic motivation for giving and find this to be the case for women but not for men.

The finding of a gender difference in pro-social behavior in a workplace setting may have important implications for women’s economic outcomes. If women are more likely to enter occupations and sectors with characteristics that engender pro-social behavior, e.g. health, education and social care, and require less monetary compensation, then gender differences in pro-social motivation
would help explain the observed occupational segregation by gender, that accounts for a substantial portion of the overall gender earnings gap (Gunderson, 1989). Given the relatively small sample used in this paper, before general conclusions can be drawn the robustness of the gender difference should be confirmed by further studies.

An important related issue is that of accounting for the sorting of workers that takes place in real labor market settings. The importance of sorting when measuring social preferences experimentally has been demonstrated by Lazear et al. (2006). Accounting for self-selection will not only lead to the detection of the treatment effect for those workers who choose to sort into care-related jobs, but also the identification of the characteristics that determine selection into sectors that engender pro-social behavior. These issues are the subject of ongoing research.

References


## APPENDIX

### TABLES, FIGURES AND INSTRUCTIONS

Table 1: Summary - Donations to Charities

<table>
<thead>
<tr>
<th>Name of Charity</th>
<th>Times selected</th>
<th>Total amount donated (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amnesty International</td>
<td>6</td>
<td>66.3</td>
</tr>
<tr>
<td>British Red Cross</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Cancer Research UK</td>
<td>19</td>
<td>244.3</td>
</tr>
<tr>
<td>Greenpeace UK</td>
<td>2</td>
<td>23.7</td>
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<tr>
<td>Help the Aged</td>
<td>1</td>
<td>9.6</td>
</tr>
<tr>
<td>MSF (Doctors Without Borders)</td>
<td>5</td>
<td>72.7</td>
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<tr>
<td>NSPCC</td>
<td>7</td>
<td>91.6</td>
</tr>
<tr>
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<td>36.3</td>
</tr>
<tr>
<td>RSPCA</td>
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<td>69</td>
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<td>Other unlisted charity</td>
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<td><strong>Total</strong></td>
<td><strong>52</strong></td>
<td><strong>667.8</strong></td>
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<th>Treatment B</th>
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<td>Women</td>
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<td>(5.58)</td>
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<td>(0.20)</td>
<td>(0.19)</td>
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<td>Number of Observations</td>
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<td>11</td>
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Summary Statistics for the three Treatments for all workers and men and women separately. Means (Standard Deviations)
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<th></th>
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<td>Median</td>
<td>Robust</td>
<td>OLS</td>
<td>Median</td>
<td>Robust</td>
</tr>
<tr>
<td>$TA$</td>
<td>.031</td>
<td>.078**</td>
<td>.076*</td>
<td>-.029</td>
<td>.027</td>
<td>.021</td>
<td>.098*</td>
<td>.139**</td>
<td>.113**</td>
</tr>
<tr>
<td></td>
<td>(.045)</td>
<td>(.039)</td>
<td>(.039)</td>
<td>(.068)</td>
<td>(.092)</td>
<td>(.064)</td>
<td>(.057)</td>
<td>(.060)</td>
<td>(.047)</td>
</tr>
<tr>
<td>$TB$</td>
<td>.032</td>
<td>.072*</td>
<td>.071*</td>
<td>-.023</td>
<td>-.034</td>
<td>.015</td>
<td>.073</td>
<td>.105*</td>
<td>.107**</td>
</tr>
<tr>
<td></td>
<td>(.045)</td>
<td>(.038)</td>
<td>(.039)</td>
<td>(.071)</td>
<td>(.096)</td>
<td>(.067)</td>
<td>(.054)</td>
<td>(.057)</td>
<td>(.045)</td>
</tr>
<tr>
<td>$Constant$</td>
<td>.125***</td>
<td>.088***</td>
<td>.091***</td>
<td>.130**</td>
<td>.111</td>
<td>.093*</td>
<td>.122***</td>
<td>.088**</td>
<td>.092**</td>
</tr>
<tr>
<td></td>
<td>(.034)</td>
<td>(.029)</td>
<td>(.030)</td>
<td>(.054)</td>
<td>(.073)</td>
<td>(.051)</td>
<td>(.041)</td>
<td>(.043)</td>
<td>(.034)</td>
</tr>
<tr>
<td>$H_0$: $TA = TB$</td>
<td>0.96</td>
<td>0.85</td>
<td>0.89</td>
<td>0.92</td>
<td>0.48</td>
<td>0.92</td>
<td>0.63</td>
<td>0.55</td>
<td>0.89</td>
</tr>
<tr>
<td>$N$</td>
<td>71</td>
<td>33</td>
<td>38</td>
<td>33</td>
<td>38</td>
<td>38</td>
<td>33</td>
<td>38</td>
<td>38</td>
</tr>
</tbody>
</table>

Standard errors in parentheses. For the test we report two-sided $p$-values.

*** [**] (*) denote significance at 1, [5], (10) % level.
Figure 3

Productivity Distribution by Treatment - Women

- Density
- % Change in Productivity
- Control
- Treatment A
- Treatment B
Figure 4

Productivity Distribution

% Change in number of tables completed

Control Treatment A Treatment B

% Change in Productivity

Figure 5

Productivity Distribution by Sex

% Change in number of tables completed

Males Females

% Change in Productivity

Control Tr A Tr B Control Tr A Tr B

19
Instructions First Round

Please read carefully the following instructions, detailing how the job should be performed and the structure of your compensation. If after reading the instructions you have any questions, please ask the Assistant.

1. Job description

The task consists of entering the numerical tables contained in the booklet that you were given into the Excel file that is currently open on the screen in front of you.

Each table in the booklet is identified by a date (e.g. Jan 1953) and the data should be entered in the table frame in the Excel worksheet with the same date. After you enter all the numerical values for the table on one page, move to the next page and to the next Excel Worksheet. To make identifying activated Worksheets easier, once you start entering numbers in a table the corresponding Worksheet Tab will turn red.

For each table, you should NOT enter the last column and row, as these are automatically calculated by Excel. Once you finish entering the data for a given table, you should check that the numerical values calculated by Excel for the last column and row correspond to the ones on the booklet. If that is not the case, it means that you made a mistake in entering the data and you should recheck the table and correct the mistakes. Also notice that the value in the cell on the crossing between the last column and row should always equal “100”.

Your work will last for 60 minutes. After that time, the Assistant will come back and check your work.

If you would like to stop at anytime before the end of the work period or you need to contact the Assistant, please dial the indicated contact number.

2. Compensation

For this session you will be paid £10, plus 10p for each table you enter. For example, if in the following 60 minutes you enter 10 tables, you will earn £11 (£10+10*10p), if you enter 20 tables you will earn £12 (£10+20*10p) and so on.

Your compensation will be calculated at the end of the second session, at which time a transfer to your bank account will be arranged.
Instructions Second Round, Treatment A

Job description

The task is the same as in the previous session.

Your work will last for 60 minutes. After that time, the Assistant will come back, check your work and arrange your compensation.

If you would like to stop at anytime before the end of the work period or you need to contact the Assistant, please dial the indicated contact number.

Compensation

For this session you will be paid £10, plus 10p for each table you enter. For example, if in the following 60 minutes you enter 10 tables, you will earn £11 (£10+10*10p), if you enter 20 tables you will earn £12 (£10+20*10p) and so on.

Your compensation will be calculated at the end of the session, added to what you earned in the first session and a transfer to your bank account will be arranged.

Due to the funding of the project, in addition to your personal compensation, by filling out the attached donation form, you can designate a charity of your choice that will receive a donation of £15. Of this £15, for each table you complete 30p will be donated on your behalf, while the rest will be supplemented by us, so that the charity receives £15 regardless. For instance, if you enter 10 tables then 10*30p=£3 will be donated on your behalf and we will contribute £15-£3=£12, so that the charity receives a total of £15. Notice that your personal compensation is completely unaffected by the donation and that the charity will receive neither more nor less than £15.
Instructions Second Round, Treatment B

Job description

The task is the same as in the previous session.

Your work will last for 60 minutes. After that time, the Assistant will come back, check your work and arrange your compensation.

If you would like to stop at anytime before the end of the work period or you need to contact the Assistant, please dial the indicated contact number.

Compensation

For this session you will be paid £10, plus 10p for each table you enter. For example, if in the following 60 minutes you enter 10 tables, you will earn £11 (£10+10*10p), if you enter 20 tables you will earn £12 (£10+20*10p) and so on.

Your compensation will be calculated at the end of the session, added to what you earned in the first session and a transfer to your bank account will be arranged.

Due to the funding of the project, in addition to your personal compensation, by filling out the attached donation form, you can designate a charity of your choice that will receive on your behalf a donation of 30p for each table you complete. For instance, if you complete 10 tables, the charity you chose will receive 10*30p=£3. Notice that your personal compensation is completely unaffected by the donation.
**DONATION FORM**

Please choose the charity you wish to contribute by putting an X to the box next to your choice.

<table>
<thead>
<tr>
<th>NAME</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amnesty International</td>
<td>Campaigns to uphold human rights across the world.</td>
</tr>
<tr>
<td>British Red Cross</td>
<td>Offers emergency response, health and social care, first aid and refugee services.</td>
</tr>
<tr>
<td>Cancer Research UK</td>
<td>Works toward improving our understanding of cancer and develop better ways to prevent, diagnose and treat the disease.</td>
</tr>
<tr>
<td>Greenpeace UK</td>
<td>Defends the natural world and promotes peace by investigating, exposing and confronting environmental abuse, and championing environmentally responsible solutions.</td>
</tr>
<tr>
<td>Help the Aged</td>
<td>Committed to addressing the issues that matter to older people; Provides healthcare, gives older people a voice and responds to emergencies in the developing world.</td>
</tr>
<tr>
<td>MSF (Medecins Sans Frontieres\Doctors Without Borders)</td>
<td>Committed to providing medical aid wherever it is needed, regardless of race, religion, politics or gender</td>
</tr>
<tr>
<td>NSPCC (National Society for the Prevention of Cruelty to Children)</td>
<td>Specialises in child protection and the prevention of cruelty to children</td>
</tr>
<tr>
<td>Oxfam GB</td>
<td>A development, relief, and campaigning organisation that works with others to find lasting solutions to poverty and suffering around the world</td>
</tr>
<tr>
<td>RSPCA (Royal Society for the Prevention of Cruelty to Animals)</td>
<td>Works to reduce the harmful impact of human activities on animals through education, campaigning and the application of ethics, science and law</td>
</tr>
<tr>
<td>Other (Please specify)</td>
<td></td>
</tr>
<tr>
<td>I do not wish to contribute</td>
<td></td>
</tr>
</tbody>
</table>

Do you want to receive a thank you email from the charity?  

Yes [ ]  No [ ]

Name:

Signature:
### Jan-1953

<table>
<thead>
<tr>
<th></th>
<th>Primary</th>
<th>Secondary</th>
<th>Tertiary</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
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<td>0</td>
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<td>0</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>Leather</td>
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<td>0</td>
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</tr>
<tr>
<td>Other</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**CHECK THAT:**

1. The numerical values in the last column correspond to the ones in the booklet.

2. The numerical values in the last row correspond to the ones in the booklet.

3. The value of the red cell equals 100.