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What drives motivated agents? The "right" mission or sharing it with the principal

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by

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What drives motivated agents? The ‘right’ mission or sharing it with the principal*

Hannes Koppel[†] Tobias Regner[‡]

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Abstract

Motivated agents are characterized by increasing their effort if their work generates not only a monetary return for them but also a benefit for a mission they support. While their motivation may stem from working for their preferred (i.e., the ‘right’) mission, it may also be the principal’s choice of the right mission (i.e., a mission preference match) that motivates them. We investigate experimentally to what extent these two motivations are driving the effect of a mission on agent effort. We find that agents care not only about the mission as such but also whether the principal shares this mission. Our analysis estimates the additional effect of a mission preference match to be as big as the effect of just working for the right mission. It seems that the full potential of ‘motivation by mission’ is realized only when principals share as well as support the agents’ mission, stressing the importance of the economics of identity in labor market settings.

Key words: Corporate Social Responsibility, experiment, labor market, incentives, principal agent, identity, mission, motivated agents

JEL Classification: C91, D03, J01, M14, M52

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1 Introduction

Understanding the mechanisms to effectively motivate worker effort is an important challenge for organizational and management science. Besides monetary incentives, predominantly studied in the economics literature, recent contributions investigated the effects of non-pecuniary incentives, also present in many real world encounters, on worker motivation.¹ Consider, for instance, a situation in which the worker's effort translates into – besides the firm's profit – the support of a particular pro-social mission. Such a link between the worker's job and a mission naturally occurs in the public, health, education, or social care sector, but can also be induced by firms' investments in Corporate Social Responsibility (CSR) activities.²

Theoretically, workers have been modeled to care about the mission of their jobs (e.g. Besley and Ghatak 2005, 2013, Delfgaauw and Dur 2007, 2008, Francois 2000, 2007, Prendergast 2007), resulting in *ceteris paribus* higher effort when working for the 'right' mission. Empirical evidence of high worker motivation when strong missions are present (e.g., Turban and Greening 1997, Greening and Turban 2000, Serra et al. 2010, Gregg et al. 2011, Nyborg and Zhang 2011) supports this relationship. While workers may be motivated by the '*right*' (i.e., their preferred) mission, their motivation may also stem from the *firm's choice* of the right mission (i.e., mission preference match). To what extent are these two motivations driving the effect of a mission on worker effort? This is the concern of the paper.

Recently, both motivations have been investigated experimentally, with two different approaches being employed.³ A by and large positive effect of motivating agents by just the 'right' mission has been found when effort translates into donations to a mission of their choice (i.e., the right mission) in comparison to benefitting an alternative mission (e.g. Fehrler and Kosfeld 2014, Gerhards 2013, Cassar 2014). However, in these comparisons a mission preference match is ruled out by either exogenously setting the alternative mission or matching principals and agents with different mission preferences *ex-ante*. Yet, it has also been found that effort is substantially higher in situations in which firms have chosen the worker's preferred mission (i.e., a mission preference match) than an alternative mission (Carpenter and Gong forthcoming, Koppel and Regner 2014). Given this evidence, the principal's mission clearly seems to matter to the agent. However, it remains unclear whether matching mission preferences motivate workers in addition to the motivation of working for the right mission.

Thus, we have set up a laboratory principal agent experiment in which the agent's effort determines not only the principal's profit but, indirectly, also the total amount spent on a particular pro-social mission (a charity). This mission is, depending on treatment, either set by the principal or by the agent. If it is set by the agent she works, per definition, for the right mission. While if the mission is set by

¹Such alternatives include concerns for status (Moldovanu et al. 2007, Besley and Ghatak 2008), awards (Kosfeld and Neckermann 2011), and communication (Brandts and Cooper 2007).

²For general discussions of CSR, see, e.g., Baron (2007, 2008, 2009), Auld et al. (2008), Bénabou and Tirole (2010), or Kitzmueller and Shimshack (2012).

³Another stream of the experimental literature on non-monetary incentives looks at the effect of pro-social incentives in comparison to own monetary incentives (Imas 2014, Tonin and Vlassopoulos forthcoming, Charness et al. 2014). These studies use real effort designs that generate either donations to a charity (in case of the mission condition) or a monetary payoff for the subject.

the principal, the agent works for a principal either supporting the right mission or not, which reflects a mission preference match or no match. This design allows us to disentangle the components of the mission effect and estimate their relative importance.

We find significantly higher effort when mission preferences match in comparison to when agents work for the right mission (a substantial effect of matching mission preferences). While effort when agents work for the right mission is higher than effort when mission preferences do not match, the difference is not statistically significant (a marginal just the mission effect). Both effects are estimated to be of similar size. It seems that the full potential of ‘motivation by mission’ is realized only when firms share as well as support the workers’ mission.

What is the real world relevance of our distinction between just the mission and matching mission preferences? Off-the-shelf CSR solutions exist. For instance, in the UK “Give As You Earn” schemes are used by over 3,000 companies and 400,000 employees generating nearly GBP 80M. (CAF 2015) Employees of participating companies can donate part of their income to over 160,000 registered UK charities in a tax-efficient way. Companies can (part) match the donations. Such programs make it easy for companies to support the individual missions of their employees. Our results suggest that they may well increase workers’ motivation, yet their scope appears limited. A more promising path for firms to gain from ‘motivation by mission’ is to have a well-defined mission and live up to it (assuming firms attract like-minded workers via the market).

The paper is organized as follows. In the next section we discuss the related literature. Section 3 describes design and procedures of the experiment. In section 4 we present results and section 5 concludes.

2 Related Literature

Theoretically agents have been modeled to care about the mission of their jobs (e.g. Besley and Ghatak 2005, 2013, Delfgaauw and Dur 2007, 2008, Francois 2000, 2007, Prendergast 2007). Besley and Ghatak (2005), for instance, propose that agents are motivated to exert higher effort when their mission preference matches the principal’s. In most of the experimental studies analyzing the effect of supporting a mission while working, the agents’ effort translates into contributions to a mission of their choice.

In a recent paper, Tonin and Vlassopoulos (forthcoming) use a real effort task to compare the effectiveness of pro-social incentives (i.e. donations to preferred charity) to individual financial ones and find that charity incentives increase productivity, however, only for low-productivity subjects. Moreover, they find that effort does not differ between lump-sum and performance related donations (see also Tonin and Vlassopoulos 2010). Also using a real effort task, Imas (2014) analyzes subjects’ motivation to exert physical effort when the piece rate payment for this is either private or donated to the subjects’ preferred charity. He finds that subjects provide larger effort under charity incentives than under individual monetary ones when the piece rate for effort is low, but the reverse effect when the stakes are high. Moreover, additionally analyzing the extensive margin, Charness et al. (2014) show that relatively more participants are deciding to stay for extra work when the piece rate payment for this is donated to their

preferred charity.

Another stream of the literature employs a standard principal agent design – not replacing the principal by the experimenter – without a real effort task. Using a unique subject pool of NGO employees, Gerhards (2013) lets principals offer a piece rate contract where agents afterwards choose an effort level, which in addition to their monetary payoff translates into a donation to either a self chosen aid project of the NGO or a regional cultural project. She finds that agents provide higher effort, if donations go to the self chosen aid project instead of the cultural project. In a second experiment this effect is replicated with a standard student subject pool. However, a third experiment finds no effect in a repeated setting with perfect stranger matching. Similarly, Fehrler and Kosfeld (2014) analyze the effect of working for the preferred charity with a student subject pool, but compare it to working for a random student. They find no differences in effort choices between subjects. Yet, when agents can choose between contracts that include a donation to the preferred charity or a random student, about one third prefer the charity when it is individually costly and provide higher effort.

So far the studies have mainly focussed on the effects of working for just the right mission. This seems as if firms can differentiate the mission between workers or as if workers have already selected into a job supporting their preferred mission. In most real world examples, however, the principal (i.e., firm) is actively choosing the supported missions and agents know this choice before they apply for a job. Therefore, in reality the principal's mission choice might be important. In Cassar (2014) principals choose their preferred mission and offer contracts which consist of a piece rate and, depending on effort and in addition to the resulting monetary payoff, a donation to the preferred charity of either the agent or the principal. She finds that effort is higher when a contract is offered with the agent's preferred charity as the donation recipient. The recruitment process for the experiment, however, took care of selecting subjects who care about different charities, such that a mission preference match never occurs.⁴ Consequently, a comparison between working for the right mission and working for a principal that has chosen the right mission is not possible. But, the possibility of a mission preference match is necessary to understand the relative importance of working for the right mission or a principal that has chosen the right mission.

In this respect, Carpenter and Gong (forthcoming) specifically analyze matching mission preferences. Before the actual experiment they survey potential participants for their political preferences regarding the two major party candidates in the upcoming 2012 US presidential election (Obama vs. Romney). They create either mission matches or mismatches by randomly assigning subjects to stuff campaign letters for either of the two candidates and estimate that matched workers produce 72% more than mismatched workers. Although the chosen political missions are realistic and natural, they might be perceived as diametrically opposed. Hence, working for the preferred party's campaign supports a positive mission while working for the other supports a negative mission. A perceived negative mission is probably perceived as worse than no mission. It is questionable that someone supporting one party would be willing to work for the other party's campaign. The effect of matching mission preferences on worker effort is also

⁴This recruitment process was necessary to answer the main question of the study, i.e., whether principals lower monetary incentives when agents can be motivated by working for their preferred mission.

analyzed by Koppel and Regner (2014). In their study, the principal decides on the supported charity which leads to either a mission preference match or mismatch. As a result, agents provide significantly higher effort when their charity preference matches the preference of the principal. Note, however, that the agent only works for his preferred mission if it matches the mission of the principal. As a consequence, their estimate of a 10% effort increase in case of a match is the joint effect of working for the right mission and working for a principal that has chosen the right mission.

In sum, working for the preferred mission and working for a principal that has chosen the right mission seem to be effective in motivating agents. Their relative importance is so far, however, unclear. Our laboratory experiment is set up to address this as it allows us to distinguish between the two motivations.

3 Experiment

3.1 Design

In the experiment, a two player bilateral gift exchange game variant, each firm, i.e., the principal, interacts with one worker, i.e., the agent, at a time. In each period, a firm is paired in a perfect stranger fashion with a different worker to rule out any reputation effects within a pair.⁵ A firm proposes a wage, w , after which its matched worker selects an effort level, $e \in \{0, 0.5, 1, \dots, 10\}$. Choosing an effort level $e = 0$ connotes a rejection of the offer, and both firm and worker earn nothing. Otherwise, the chosen effort e results in the firm's profit described by:

$$\pi_p = 10 \cdot e - w.$$

Since effort is costly, a worker's payoff is described by:

$$\pi_a = w - c(e),$$

where $c(e) = \frac{1}{2}e^2$ represents increasing costs of effort.

A pro-social mission is introduced by donating a certain share β of the firm's profit to a third receiving party. Donating a share of the firm's profit avoids potential efficiency gains through choosing higher effort levels.⁶ Instead of having a third inactive player in the laboratory, the share of the firm's profit is donated to charity. All participants are asked to state the charity they would donate to before and after information on the actual game.⁷ This produces a clean preference for a charity (first question)

⁵We used a rotation matching known as turnpike protocol, first introduced by Cooper et al. (1996), to ensure that participants cannot affect the decisions of future participants they will be paired with through their choices in the current match.

⁶An alternative design, used by Cassar (2014), Fehrler and Kosfeld (2014), Gerhards (2013), Tonin and Vlassopoulos (2010, forthcoming), would be that effort translates, in addition to monetary payoffs, into a donation to charity. Cassar (2014), for example, implements the donation by $\pi_c = 20 \cdot e$, while the monetary payoff for the worker is characterized by $\pi_a = pe - \frac{1}{2}e^2$, where p is the offered piece rate. Therefore, workers' monetary payoff is independent of the donation. If workers increase their effort by one point over the optimal choice of $e^* = p$, associated costs, including the additional piece rate payoff, are 0.5 points, while additional 20 points are donated to the charity, which is in fact efficiency enhancing.

⁷Before knowing about the game, participants were asked to which charity they would like to donate € 10. We offered Amnesty International, Greenpeace, Caritas, Doctors without Borders, and Unicef. They could also state that they do

and a possible strategic choice after participants know the rules of the game (second question). Firms have to simultaneously choose a wage, $w \in \{0, 5, 10, \dots, 50\}$, and, $\beta \in \{0, 0.1\}$, that is, if they support a pro-social mission or not.⁸ Subsequently, workers decide on their effort for both values of β , that is, in the strategy method (Selten 1967). With the introduction of a pro-social mission the payoffs in the three person gift exchange game are:

- Firm: $\pi_p = (1 - \beta)(10 \cdot e - w)$
- Worker: $\pi_a = w - c(e)$
- Recipient: $\pi_r = \beta(10 \cdot e - w)$.

We employ a within-subjects design that consists of two treatments. In the *just the mission* treatment the workers' preferred charity serves as the possible donation recipient. Therefore, workers know that if the firm decides to support the pro-social mission the donation goes to 'their' charity, but they do not know whether the firm has the same mission preference. The *mission preference* treatment implements the firm's preferred charity as the possible donation recipient. Workers are informed about the firm's charity choice and, hence, they know whether the firm has the same mission preference or not. Thus, this treatment either produces a mission match or mismatch.

Therefore, *just the mission* resembles the simple effect of working for a preferred mission, while *mission preference* adds the possibility of matching mission preferences. This design allows us to compare the effort choices in three settings: the firm's charity choice does not match the worker's (no match), the worker's charity choice is implemented (just the mission), a match of mission preferences occurs (match). Hence, the design reveals two effects: working for a preferred mission (in contrast to working for a non-preferred mission selected by the firm) and a mission preference match on top of the effect of working for a preferred mission. We expect that effort levels when the firm supports a mission ($\beta = 0.1$) are generally higher than effort levels when the firm does not support a mission ($\beta = 0$). Given $\beta = 0.1$, we hypothesize that average effort in *just the mission* is higher than effort when there is no match, while it is smaller than effort when a match occurred.

In half of the sessions *just the mission* is played in the first round, *mission preference* in the second round, *just the mission* is played in the third round, and so forth, while in the other half *mission preference* is played first, etc. No feedback is provided after a round. At the end of the experiment two rounds were randomly selected for payment.

not care about which charity they donate to as a sixth option. After knowing about the game, they were asked to which charity they want to donate money in the experiment. It was announced that if the sixth option is chosen, a random draw at the end of the experiment would determine one of the five charities.

⁸Given our design choice that a share of the principals' profit is donated to charity, we wanted to limit that participants not interested in donating money to charity spoil our results. In the recruitment process, we could have taken care of not inviting subjects that do not want to donate to charity. Yet, we also think that it is important to have those participants in our sample, such that our results are not driven by a restricted sample generally willing to make donations. Therefore, letting participants choose whether they support a mission or not is our compromise to increase the validity of our results.

3.2 Participants and Procedures

For the experiment 108 participants were recruited among students from various disciplines at the local university using the ORSEE software (Greiner 2004). The experiment was programmed and conducted with the software z-Tree (Fischbacher 2007). After entering the computer laboratory participants received written instructions which described both roles. They were informed about their role when the actual experiment started, hence, all information is common knowledge. Participants' questions concerning the experiment were answered privately. Once all questions have been answered participants had to answer a few control questions. The experiment only started when all participants had answered all control questions correctly. In each session participants were subdivided into two equally large groups, workers and firms. Participants knew that they were not matched with a participant twice in the course of the game. In three sessions 28 participants played for 14 rounds. In one session the number of participants showing up did not reach 28. In order to maintain the integrity of the matching protocol, we had to reduce the number of participants to 24 and the rounds played to 12. Participants were informed about the reduction of rounds.

Sessions lasted on average 90 minutes, including reading instructions, answering control questions and payment. Average earnings were € 14.56 with minimum € -6.5 and maximum € 37.1, including € 2.5 show-up fee. The instructions explicitly informed participants about the possibility to make losses. Donations were made online directly after participants received their payment. In order to make donations credible, we asked in each session two participants to monitor the transactions after the experiment.

4 Results

We begin with an overview of the descriptive statistics in our experiment and proceed with a regression analysis to test the relative importance of the components of the mission effect.

4.1 Descriptive analysis

Participants were first asked about the charity they generally prefer: 14.81% picked Amnesty International, 15.74% Greenpeace, 2.78% Caritas, 54.63% Doctors without Borders and 12.04% Unicef. Their second choice, after they had read the instructions but before it was decided whether they would play as firm or worker, was used to determine to which charity a participant would donate. While the first choice was 'innocent' and should be seen as a participant's true charity preference, the second choice implied some scope for a strategic adjustment of the charity selection in order to potentially impress workers. Hence, to determine a match, we used workers' choices made before they read the instructions and firms' choices afterwards. Overall, a match occurred 123 times in the 366 meetings between a firm and a worker in *mission preference*.

On average, firms offered a wage of 27.1 (standard deviation: 11.09) in *just the mission* and 27.06 (11.36) in *mission preference* (26.73 when a match occurred and 27.21 when no match occurred, Wilcoxon

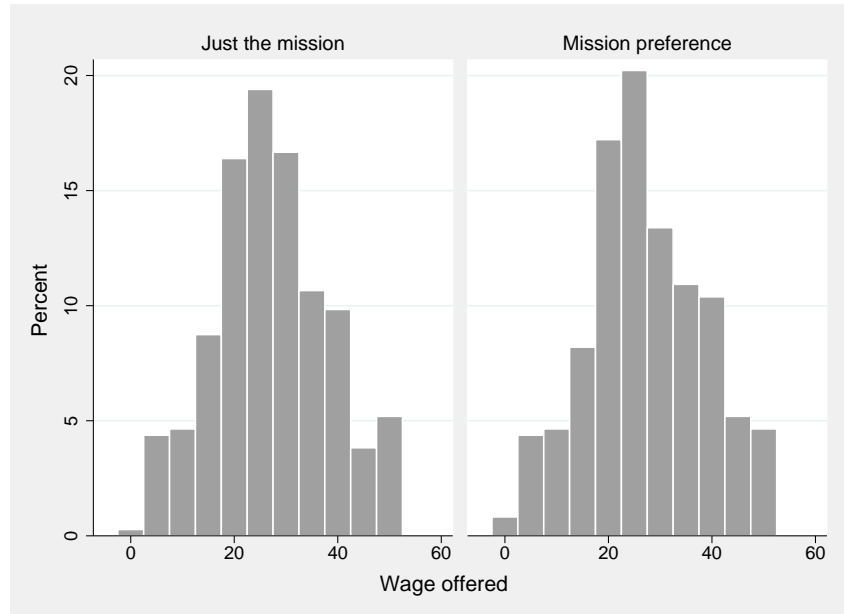


Figure 1: Histograms of the wage offered by treatment (*just the mission* vs. *mission preference*)

ranksum test: $p = .71$), see figure 1 for histograms. Average wages by round range from 23.07 to 28.84. They are not significantly different from each other and there is no indication of a time trend. Overall, firms decided 371 times to support a mission (50.7%). Roundly averages of the $\beta = 0.1$ choice vary from 40.7% to 59.3%. There is a slight decrease of mission support over time. Firms support a mission more often when the worker chooses the charity (*just the mission*: 55.7%; *mission preference*: 45.6%).

Figure 2 shows the distribution of effort choices for $\beta = 0$ and for $\beta = 0.1$ in the treatments *mission preference* (when there was no match and when a match occurred) and *just the mission*, that is, when a mission match was not possible since the worker's charity choice was implemented. For every wage offer each worker made an effort choice assuming no mission support by the firm ($\beta = 0$) as well as support of the mission ($\beta = 0.1$). This data structure allows us a pair-wise comparison of workers' effort choices when $\beta = 0$ and $\beta = 0.1$. Overall, average effort when the firm decided to support a mission (3.06) is 13% higher in comparison to when the firm did not support (2.71), a significant difference (signed rank test: $p < 0.01$). Comparing $\beta = 0$ and $\beta = 0.1$ effort choices separately for when no match occurred, for just the mission and for matching mission preferences results always in significant differences (signed rank tests: $p < 0.01$). Of course, these tests are based on repeated observations from each subject. When we narrow the analysis to the first decisions subjects make in *just the mission* and *mission preference* significantly higher effort for $\beta = 0.1$ persists (signed rank tests: $p < 0.02$). Further tests of effort differences across treatments require a regression analysis in order to take wages offered to workers into account.

4.2 Regression analysis

We set up a panel data structure that contains effort choices of all 54 workers over the rounds they played. Table 1 reports the results of two mixed effects regressions with random terms associated with

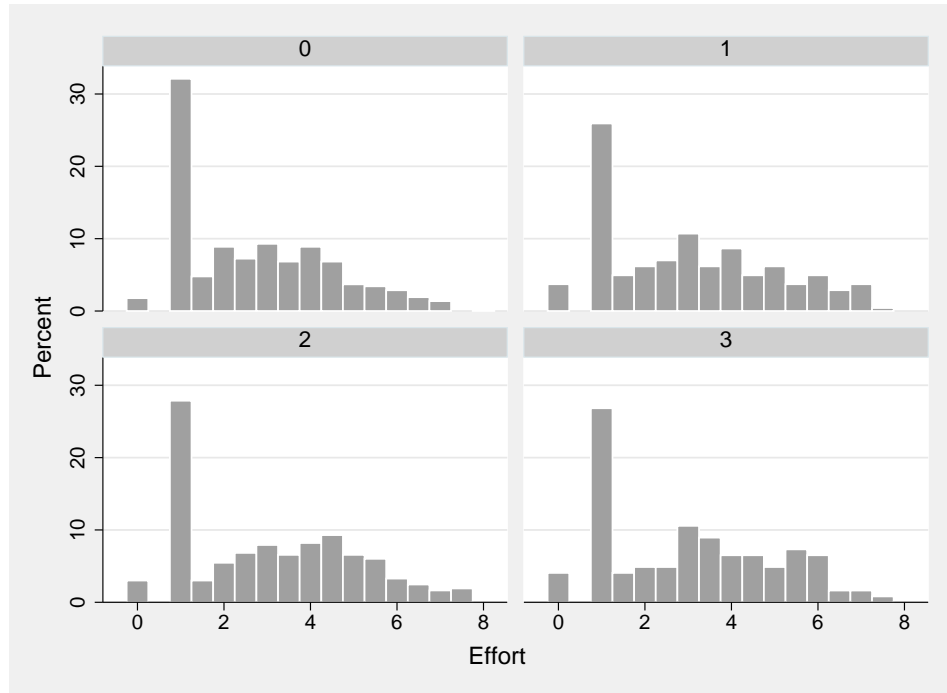


Figure 2: Distribution of effort for $\beta = 0$ ($N = 732$) and for $\beta = 0.1$ when there was no mission match ($N = 243$), when the worker selected the charity ($N = 366$) and when a match occurred ($N = 123$)

sessions and workers and robust standard errors.⁹ In one specification effort at $\beta = 0$ is the dependent variable, in the other effort at $\beta = 0.1$. Explanatory variables are the wage offered and dummy variables for a mission match and when no match occurred. Observations from *just the mission* are treated as the baseline. A control for the round and dummies for the charities are also included.

Table 1: Determinants of exerted effort

Dependent variable:	$\beta = 0$		$\beta = 0.1$	
Effort	coeff.	st.e.	coeff.	st.e.
Wage	.0855 ***	.0119	.0932 ***	.0112
Match	-.0272	.0543	.0837 ***	.0254
No match	-.1614 ***	.0621	-.117	.0759
Round	-.0155	.0098	-.0114	.0093
Constant	.63 ***	.1508	.5718 ***	.1954
Charity dummies	yes		yes	
N	732		732	
Log restricted-likelihood	-1,029.932		-1,033.52	

significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

In line with previous experimental evidence we find a significant positive correlation between the

⁹Likelihood ratio tests comparing the mixed effects specifications to respective linear regression models support their use.

chosen effort level of the worker and the wage offered. When firms support a mission ($\beta = 0.1$), the coefficient of the match dummy is positive and significant at the 1%-level. The coefficient of the no match dummy is negative but not at a statistically significant level ($p = 0.12$). When firms do not support a mission ($\beta = 0$), effort is not correlated with the match dummy, but, interestingly, it is negatively correlated with the no match dummy (significant at the 1%-level). Finally, the round of the experiment is not correlated with the effort decision. In further specifications we included interaction terms between wage and the match dummy and between wage and the no match dummy. The coefficients of the interaction terms are positive but not statistically significant. Reported results are robust to using a random-effects specification with standard errors clustered at the session level.

Hence, when firms support a mission we find that workers' effort is substantially higher, if the firm shares the mission preference of the worker. Effort is lower, albeit marginally significant, if mission preferences of firm and worker do not match. The estimated effects of match and mismatch are roughly similar in size. When firms refrain from supporting a mission, we find somewhat opposite results. A shared identity seems to have no effect on effort, while the lack of a shared identity appears to have a negative effect.

How do effort choices compare to related experiments? Our estimate of the combined effect (mismatched vs. matched) is small in comparison to the results reported by Carpenter and Gong (forthcoming) (a 72% productivity increase). This is not surprising considering the strong mission dichotomy in Carpenter and Gong (forthcoming), a stark contrast to the set of charities used in our study. The effort distributions across treatments, see our Figure 2 and Figure 3 in Carpenter and Gong (forthcoming), provide further insight. When mission preferences do not match a substantial fraction of subjects only provides minimum effort (around 25% in our study and 40% in Carpenter and Gong (forthcoming)). However, in our study even when mission preferences match the rate of exerting only minimum effort is around 25%, while in Carpenter and Gong (forthcoming) there is essentially no minimum effort when a match of mission preferences occurs. It seems that in the abstract and anonymous lab setting a substantial amount of subjects are unimpressed by a mission preference match and maximize their own monetary payoff regardless.

Our evidence of a just the mission effect when firms support a mission is relatively weak. Results from other studies with repeated settings are mixed (Fehrler and Kosfeld (2014) and study 3 of Gerhards (2013) find no effect, Cassar (2014) finds a positive one), while there is favorable evidence of the just the mission effect in one-shot settings (studies 1 and 2 of Gerhards 2013). Indeed, if we limit our observations to the first four periods (i.e., two choices each in *just the mission* and *mission preference*), we find a negative correlation of the no match dummy (significant at the 5%-level). However, over the entire duration of the experiment the just the mission effect fades.

5 Discussion

The relationship between agents' mission and their willingness to exert effort for a principal has received quite some attention recently. Theoretical work (e.g., Besley and Ghatak 2005) proposes that in such

settings agents are motivated to exert higher effort when their mission preference matches the principal's. Results from a series of experimental studies (see section 2) indicate that missions indeed matter to the agent. However, the scope of the mission effect is still unclear: are agents motivated by the right (i.e., their preferred) mission or is their motivation due to the firm's choice of the right mission?

Our experiment is designed to disentangle the components of the mission effect and estimate their relative importance. We find significantly higher effort when agents work for the right mission in comparison to when mission preferences do not match. This is in line with previous studies that employ a just the mission set up and find a positive effect of the mission (Cassar 2014, Fehrler and Kosfeld 2014, Gerhards 2013, Tonin and Vlassopoulos forthcoming). However, we also find an additional substantial increase of effort when principal and agent have a common charity preference. Hence, only part of the total mission effect can be attributed to the mission itself as matching mission preferences matter on top. In fact, our analysis estimates the additional effect of a mission preference match to be as big as the just the mission effect. These results suggest that off-the-shelf CSR programs considering just the mission effect only target part of the potential efficiency gains from improved matching of motivated agents. The full scope of 'motivation by mission' is reached when firms truly stand by their mission and when their engagement for the mission's values matches their workers' mission preferences.

Evidence that matching mission preferences matter in addition to just working for the right mission is consistent with the theoretical literature on the economics of identity (e.g. Akerlof and Kranton 2000). A preferred mission may well be perceived as part of the identity and thereby, if shared, leading to positive reactions towards the principal. Identity has been shown to influence individual decision making in various settings (e.g. Chen and Li 2009). Our findings of agents caring about sharing a mission with the principal stress the importance of the economics of identity in labor market settings.

Note that our design sets up a conservative test of the mission effects in at least three dimensions. First, as mentioned before (see footnote 6), in Cassar (2014), Fehrler and Kosfeld (2014), Gerhards (2013) the donation to charity is linked to performance (similar to a piece rate) and in addition to subjects' monetary payoffs. Therefore, increasing effort may lead to efficiency gains as long as the additional monetary payoff plus the extra donation is greater than the cost of the additional effort. It might be argued that higher effort is not due to the positive effect of a mission but instead caused by the efficiency increase when donating to a charity. In our design, CSR investment means a redistribution from the principal to a charity and no efficiency gains can be achieved. Thus, our just the mission results validate previous findings of a positive just the mission effect that could be attributed to an increase in efficiency. Second, in real life, firms supporting a particular mission most likely employ more than just one worker. In such scenarios, workers may not only prefer the same mission as the firm but they may additionally enjoy having common missions themselves. As a result, the sense of shared identity within the firm, and in turn the mission effect, is boosted further, if matching mission preferences extend beyond the dual firm-worker relationship to multi-worker environments. Hence, our experimental design estimates the bare minimum of a matching mission preferences effect. Finally, our results report estimates of the mission effect for the average worker. However, selfish subjects do not have a tendency to react to a match, anyway. If only subjects are considered who actually reciprocate to mission support, the effect

of a match is presumably bigger.

While our study shed some light on the motivational effect of missions, an unresolved puzzle about motivated agents remains. Do principals use their support of the right mission in order to economize on monetary incentives? This substitution between wage and mission is a feature of the Besley and Ghatak (2005) model and finds empirical support from the experiment by Cassar (2014) in the just the mission set up. We do not find this substitution effect in our data, with wage offers in the just the mission treatment being even slightly higher compared to the treatment where the principals' preferred charity serves as the donation recipient. Given the positive effect of matching mission preferences, principals would, however, be able to offer lower wages in case of a mission preference match. But, in our setting principals do not know if their mission matches the mission of the agent when making a wage offer and deciding whether to support the mission. This uncertainty about the agent's mission when offering a contract is unlikely when thinking about actual staffing. Usually firms get information about workers' mission preferences either in a job application or at the latest during a job interview. In both cases they will have at least some knowledge about the characteristics of the applicant before making a contract offer. It would therefore be interesting to analyze the effect of missions and potential mission preference matches in a labor market context where firms and workers are able to extract some information about the counterpart's mission preferences before negotiating about a contract. This aspect is not within the scope of our paper and could be a promising avenue for future research.

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Instructions

Welcome and thank you for participating! In this experiment you can earn a monetary amount depending on your decisions and the decisions of the other participants.

Therefore, it is very important that you read the instructions carefully.

Please note that these instructions are directed to you only and you are not allowed to exchange any information with the other participants.

Moreover, it is not allowed to talk to other participants during the entire experiment.

Whenever you have a question please raise your hand. We will come to your cabin and answer your question. Please never ask your question(s) aloud. In case you break these rules we will have to end the experiment. Please switch off your mobile phones now.

General procedure

The experiment will take around 75 minutes. Each decision will be explained again briefly on the screen. While you make decisions, the other participants also make decisions which may influence your payoff.

During the experiment you can earn money. Your payoff will be calculated in ECU (Experimental Currency Units) and $1 \text{ ECU} = 0.40 \text{ EURO}$. At the end of today's experiment your earnings will be converted into EURO and you are paid in cash. In addition, you will receive 2.50 Euro as a show-up payment.

Your payoff from the experiment depends on your decisions and the decisions of the other participants. However, only 2 of the 14 rounds will be chosen randomly and you will be paid according to the payoff from these rounds only.

After filling out a questionnaire the experiment will be finished and you will receive your payment.

Overview of the procedure:

- Reading the instructions, answering the control questions
- Decision situations (14 rounds)
- Questionnaire
- Payment and end of the experiment

Details

The experiment consists of 14 rounds. In each round two participants interact: a firm and a worker.

Procedure of one round:

1. The firm selects a wage and a donation level

2. Then, the worker decides, whether to accept the wage offer or not
3. If the worker accepts the offer, he/she selects the effort level

The profit of the firm depends on:

- the effort level
- the wage the firm pays
- the donation level

The income of the worker depends on:

- the received wage
- the cost of the exerted effort

Only over the course of the experiment you will be informed whether you act in the role of the firm or in the role of the worker. The allocation of each role is executed randomly and with equal probabilities. **You will stay in the allocated role for the whole experiment.**

In each round you are randomly and anonymously matched with another participant of the experiment. You have not interacted with this participant before. The firm's chosen wage applies only to the worker assigned to this firm in this round. Likewise, the worker's decisions (accepting or rejecting the offer and choosing an effort level following acceptance) only apply to the firm that was assigned to this worker in this round.

Donation

You will always be notified, which charitable organisation receives the donation in the current round. **This could be the organisation the firm has selected or it could be the organisation the worker picked.** Both possibilities are equally likely in the experiment (that is, each will take place seven times).

Hence, in each round you will know whether the donation goes to the charity of the firm or to the one of the worker. In case the donation goes to the firm's organisation, the worker will be informed about the charitable organisation of the firm. In case the donation goes to the worker's organisation, the firm will be informed about the charitable organisation of the worker.

Income as worker

- If a worker rejects the firm's wage offer, then he/she does not earn anything. A rejection is expressed by entering an effort level of 0.
- If the worker accepts, he/she receives the offered wage. However, the cost of the exerted effort is deducted.
- The effort level can be chosen from a scale of 1 to 10 in steps of 0.5.
- The effort level results in costs for the worker according to the following table (costs = $\frac{1}{2} * (\text{exerted effort})^2$):

Exerted effort	1	1,5	2	2,5	3	3,5	4	4,5	5
Costs (ECU)	0,5	1,125	2	3,125	4,5	6,125	8	10,125	12,5

Exerted effort	5,5	6	6,5	7	7,5	8	8,5	9	9,5	10
Costs (ECU)	15,125	18	21,125	24,5	28,125	32	36,125	40,5	45,125	50

A value of 1 corresponds to very low effort, a value of 2 means a slightly higher effort level and a value of 10 is the maximum effort of a worker.

- **The higher the chosen effort level, the more profit for the firm.**
- The income of the worker is determined as follows:

$$\text{Income of the worker} = \text{Wage} - \text{Cost of the exerted effort}$$

- In the experiment, the firm can donate part of the profit. The firm can donate either 0 or 0.1 times the profit. Workers have to enter their effort for all possible donation levels b that the firm can select. For the firm's profit only the actually chosen donation level matters.

Profit as firm

- Each firm selects a wage that can be between 0 and 50 ECU in steps of 5 ECU. This wage offer will be transmitted to the worker.
- **If a firm's wage offer is rejected, then the firm's profit is zero.**
- If the wage offer is accepted, then the worker's effort level will be multiplied by 10. This corresponds to the revenue of the firm. The wage of the worker will be deducted from the revenue.
- **Moreover, the firm selects the donation level b ,** which is deducted from a firm's profit and given to a charitable organisation. The firm can choose either 0 or 0.1 as the value for b . The worker will be informed about the offered wage and the organisation to which the donation goes. He/she selects the effort level for each possible value of b .

$$\text{Profit of the firm} = (1-b) * (\text{Exerted effort} * 10 - \text{Wage})$$

Notification about the possibility of making a loss

In the experiment, it is possible to make a loss (both as worker and as firm). As worker, for instance, this is the case, if a relatively low wage is paid and the highest possible effort is selected. Therefore, make yourself familiar with the experiment. If your earnings from the experiment are negative, you will have to cover them.

Payoff (2 of 14 rounds)

Your earnings from one round are calculated as presented above. For firms the donated amount, according to the chosen donation level, will be deducted. The received

contributions will be donated online under the supervision of two participants after the experiment.

For your payoff from the experiment only the earnings from two out of the 14 rounds are relevant. These rounds are chosen randomly at the end of the experiment. The according payoff will be paid to you in cash directly after the end of the experiment, that is, after you completed the final questionnaire.