

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 mostly care about whether the principal shares their 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 identity aspects in labor market settings.

Key words: Corporate Social Responsibility; experiment; labor market; principal agent; identity; motivated agents

JEL Classification: C91, D91, J01, M14, M52

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[†]nextpractice-Institut für Komplexität und Wandel gGmbH, HoerneckeStr. 25-31, 28217 Bremen, Germany

[‡]University of Jena, Carl-Zeiss-Str. 3, 07743 Jena, Germany

1 Introduction

Understanding the mechanisms to effectively motivate workers 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 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, 2017, Delfgaauw and Dur 2007, 2008, Francois 2000, 2007, Prendergast 2007): *ceteris paribus* higher effort results when the missions of the worker and the principal match.³ 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.

The effect of missions has also been investigated experimentally, with two different approaches being employed.⁴ Koppel and Regner (2014) as well as Carpenter and Gong (2016) find a positive effect of matching mission preferences by contrasting situations in which the principal has chosen the agents preferred mission (a mission preference match) with situations in which the principal's mission choice does not match the agent's preference. However, a by and large positive effect has also been found when agents' effort translates into donations to a mission of their choice (i.e., their preferred mission) in comparison to benefiting an alternative mission (e.g. Fehrler and Kosfeld 2014, Gerhards 2015, Cassar 2018). In these comparisons a mission preference match is either ruled out by exogenously setting the alternative mission or is unknown to the agent. Given this evidence, the mission clearly seems to matter to the agent, although it remains unclear what drives the effect of matching mission preferences. In our experiment, we aim to find out what agents care about: just the mission (whether the supported mission is the one they prefer) or the fact that mission preferences of agent and principal match? The latter would mean that a mission preference match motivates agents over and above their inherent mission motivation.

For this purpose, 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 amount spent on a particular pro-social

¹Such alternatives include concerns for status (Moldovanu et al. 2007, Besley and Ghatak 2008), awards/prizes (Kosfeld and Neckermann 2011, Hammermann and Mohnen 2014), communication (Brandts and Cooper 2007) and goal setting (Gómez-Miñambres 2012).

²See Kitzmueller and Shimshack (2012) for a recent literature review on CSR. Auld et al. (2008) distinguish between old CSR like corporate philanthropy, usually unrelated to the firm's core business areas, and new CSR whose focus is to internalize the negative externalities caused by a firm.

³See Ashforth and Mael (1989) or Haslam and Ellemers (2005) for related approaches in organizational psychology.

⁴Another 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 2014, Charness et al. 2016). 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.

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, her effort benefits, per definition, the ‘right’ mission, that is, the one they prefer. While if the mission is set by the principal, the agent’s work either supports the right mission or not, which reflects a mission preference match or mismatch. This design allows us to disentangle the components of the mission effect and estimate their relative importance.⁵

We find significantly higher effort when mission preferences match in comparison to when agents’ work supports the right mission. Effort when agents’ work benefits the right mission is not higher than effort when mission preferences do not match. It seems that the full potential of ‘motivation by mission’ is realized when firms not only support the workers’ preferred mission but also share this preference.

What is the real world relevance of our distinction between a mission match and matching mission preferences? Off-the-shelf CSR solutions exist. They allow companies to invest in CSR in ‘just the mission’ style. 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 (partially) match the donations. Such programs make it easy for any company (i.e., also one without explicit own mission) 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. This way the firm is likely to attract like-minded workers who are motivated by the shared mission, while workers who do not identify with the firm’s mission may quit and look for a better mission match elsewhere.

2 Experiment

2.1 Design

In the experiment, a 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. A firm proposes a wage, $w \in \{0, 5, 10, \dots, 50\}$, 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; 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 $c(e) = \frac{1}{2} \cdot e^2$ represents increasing costs of effort.

⁵Note that our experiment is not designed to answer whether, as proposed by Besley and Ghatak (2005), firms offer lower wages when mission preferences match. Such a substitution between wage and mission finds empirical support in Cassar (2018).

A pro-social mission is introduced by donating a certain share of the firm’s profit, $\beta \in \{0, 0.1\}$, to a third receiving party. Instead of having a third inactive player in the laboratory, the share of the firm’s profit is donated to a charity of a participant’s choice (Amnesty International, Greenpeace, Caritas, Doctors without Borders, and Unicef). Firms simultaneously choose a wage and β , that is, if they support a pro-social mission or not. Subsequently, workers are informed about the offered wage and decide on their effort for both values of β , that is, in the strategy method (Selten 1967). Screenshots of the decision interfaces are in Appendix A.

With the introduction of a pro-social mission the payoffs are:

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

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.

This design allows us to compare effort choices in three settings: the firm’s charity choice does not match the worker’s preference (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: a mission match (the agent’s preferred mission benefits in contrast to a non-preferred mission selected by the firm) and a mission preference match (knowing that the firm has the same mission preference, beyond the effect of a mission match). 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 mission preferences do not match, while it is smaller than effort when a match of mission preferences occurred.

Hypothesis 1 *Average worker effort is higher when firms support a mission ($\beta = 0.1$) in comparison to no mission support ($\beta = 0$).*

Hypothesis 2 *When firms support a mission, workers have the highest tendency to exert effort, if mission preferences match.*

Hypothesis 3 *When firms support a mission, workers have the lowest tendency to exert effort, if mission preferences do not match.*

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.

2.2 Participants and Procedures

For the experiment 108 participants were recruited among students from various disciplines at the local university using the ORSEE software (Greiner 2015). The experiment was programmed and conducted using z-Tree (Fischbacher 2007). After entering the computer laboratory participants received written instructions. Participants' questions concerning the experiment were answered privately. They 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. 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. In the event of an actual loss, subjects were required to perform clerical tasks for the lab in order to cover their 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.

3 Results

Before experiment instructions were handed out participants were 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. After learning about the actual game played, we asked participants to which charity they would donate in the experiment. Following the approach of Koppel and Regner (2014), we use workers' choices made before they read the instructions and firms' choices afterwards in order to determine a match.⁶ 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 27.08 with a standard deviation of 11.22 (minimum 0, median 25, maximum 50); 27.1 in *just the mission* and 27.06 in *mission preference*. Average wages by round range from 23.07 to 28.84 with no indication of a time trend. Firms decided 371 times to support a mission (50.7%).

Figure 1 shows the distribution of effort choices for $\beta = 0$ and for $\beta = 0.1$ in the treatments *mission preference* (when mission preferences mismatch and when they match) 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 a pair-wise comparison of workers' effort. Considering first round choices only, average effort for $\beta = 0.1$ is significantly higher than for $\beta = 0$ (3.08 vs. 2.87; signed rank test: $p < 0.01$). This finding is in line with the results of related studies and

⁶Participants might strategically adjust their second choice of a charity, if they anticipate they might play as a firm and if they believe a different choice could impress workers. In contrast, the initial choice of participants should be 'innocent' and be regarded as their true preference. Overall, 24 participants changed their choice, among them 15 workers.

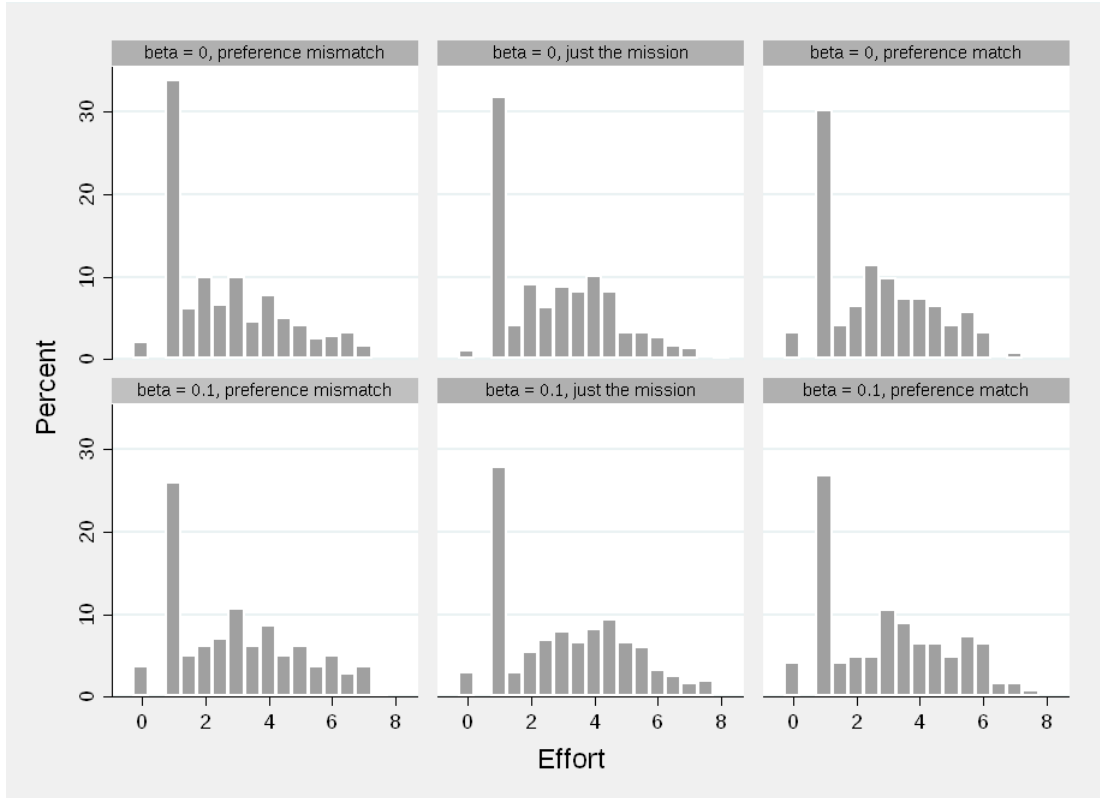


Figure 1: Distribution of effort when mission preferences mismatch ($N = 243$), when the worker selected the charity ($N = 366$) and when a match occurred ($N = 123$): top row for $\beta = 0$, bottom row for $\beta = 0.1$

supports our hypothesis 1. Considering all observations, 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).

Result 1 *When firms choose to support a mission, average worker effort is higher.*

Further tests of effort differences across treatments require a regression analysis in order to take wages offered to workers into account. 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 mixed effects regressions with random terms associated with sessions and workers and robust standard errors.⁷ Having already shown the generally positive effect of supporting a mission, we now focus on the relative importance of the mission components. Therefore, we run separate regression specifications for $\beta = 0$ and $\beta = 0.1$, see columns I and II in table 1. Exerted effort is the dependent variable. 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 selected for donation are also included.

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

⁷Using random-effects panel regressions with standard errors clustered at the session level does not lead to qualitatively different results.

Table 1: Determinants of exerted effort

	all periods				period 1			
	I: $\beta = 0$		II: $\beta = 0.1$		III: $\beta = 0$		IV: $\beta = 0.1$	
Wage	0.085***	(0.01)	0.095***	(0.01)	0.023	(0.03)	0.011	(0.03)
Match	-0.022	(0.2)	0.28***	(0.09)	1.94*	(1.0)	1.49*	(0.8)
No match	-0.12	(0.2)	0.066	(0.2)	-0.77	(1.3)	-0.52	(1.6)
Wage \times Match	-0.00017	(0.007)	-0.0078***	(0.003)	-0.074**	(0.04)	-0.070**	(0.03)
Wage \times No match	0.0016	(0.008)	-0.0018	(0.009)	0.041	(0.06)	0.040	(0.07)
Charity dummies	yes		yes		yes		yes	
Period	-0.016	(0.01)	-0.011	(0.01)				
Constant	0.63***	(0.2)	0.49**	(0.2)	2.08***	(0.8)	2.55***	(0.6)
Observations	732		732		54		54	

Notes: Mixed effects models grouped by sessions and workers; robust standard errors in parentheses; significance levels are: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

a match and the wage is negative (significant at the 1%-level). The overall effect is positive (significant at the 1%-level). A one standard deviation increase of the wage results in an effort increase of 1.06 and a decrease of 0.09 via the interaction (a 31% reduction of the mission main effect). The negative interaction between the match dummy and the wage indicates that the positive effect of matching mission preferences is limited. If workers are already motivated by a high wage, a mission effect on motivation is less pronounced. Figure 4 in Appendix B illustrates the relationship between wage and match graphically. It shows that the effect of matching mission preferences on effort is only positive (at 5% significance) up to a wage level of about 25 (the distribution's median).

Neither the coefficient of the no match dummy nor its interaction term with the wage are statistically significant. When firms do not support a mission ($\beta = 0$), we find no correlation between effort and the match, respectively, no match dummy and also not between effort and the wage interaction terms. Finally, the round of the experiment is not correlated with the effort decision.

In order to check the robustness of our results, we now consider observations from round 1 only. This allows a between-subjects treatment comparison, while it might be argued that for later rounds potentially spillovers might occur across the within-subjects treatments.⁸ Naturally, this greatly reduces the number of observations and statistical significance can hardly be expected. Columns III and IV in Table 1 present the respective regression results. Effort for $\beta = 0.1$ (and also for $\beta = 0$) is positively correlated with the match dummy, albeit only at the 10% significance level, and it is negatively correlated

⁸As discussed by Charness et al. (2012), within-subjects designs may have a tendency to generate unwanted carry-over effects from one scenario subjects face to another, especially if subjects are made explicitly aware of the environment change. Note, however, that our study focuses on whether a mission match takes place or not. Whether a match or mismatch occurs is not pre-programmed. A match of mission preferences may happen or not depending on the charity choice of the workers and firms. Hence, we are confident that the variation of our settings is not foreseeable to subjects and, thus, does not result in an experimenter demand effect. Of course, this cannot be completely ruled out, though.

with the interaction term between wage and the match dummy (5%-level). The correlation between effort and the match dummy surpasses the 5% significance level, if more than seven rounds are considered, see Table 2 in Appendix B.

Result 2 *Given mission support, workers tend to exert more effort, if mission preferences match.*

Result 3 *Given mission support, workers tend to exert similar effort, if mission preferences do not match.*

A brief look at the relationship between firms' choices and their profits rounds off our results section (see Appendix B, Table 3, for the regression output). While we do not find significant main effects of the wage offered or the support of a mission, their interaction effect is highly positively correlated with profit. Supporting a mission does not appear to increase effort/profit per se. A decent wage seems to be a pre-condition for a positive effect of the mission.

4 Discussion

How do effort choices compare to related experiments? Our estimate of the combined effect (mismatched vs. matched) is small in comparison to the 72% productivity increase reported by Carpenter and Gong (2016). This is not surprising considering the different setups and the strong mission dichotomy in Carpenter and Gong (2016), a stark contrast to the set of charities used in our study. The effort distributions across treatments, see our Figure 2 and Carpenter and Gong (2016)'s Figure 3, 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 (2016)). However, in our study even when mission preferences match, the rate of exerting only minimum effort is around 25%, while in Carpenter and Gong (2016) 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.

The effect of our just the mission treatment when firms support a mission is not significant. Results from other studies with repeated play are mixed (Fehrler and Kosfeld (2014) and study 3 of Gerhards (2015) find no effect, Cassar (2018) finds a positive one), while there is favorable evidence of a mission effect in one-shot settings (studies 1 and 2 of Gerhards 2015, Kajackaite and Sliwka 2017). It could be that workers anticipate, over time, that firms may support a mission for strategic reasons (in order to increase effort/profit).

Note that our design sets up a conservative test of the mission effect in at least two dimensions. 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. Moreover, 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 becomes stronger (the coefficient increases slightly and the negative interaction with wage is not significant anymore).

5 Conclusions

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 agents are motivated to exert higher effort when their mission preference matches the principal's. Results from a series of experimental studies 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 that effort is highest when principal and agent have a common mission preference. Effort levels when agents' work benefits their preferred mission and when mission preferences do not match are not significantly different from each other. These results indicate that the fact that the principal shares the agent's mission seems to drive the matching mission preferences effect and not the mission match itself.

Evidence that matching mission preferences matter beyond just working for the right mission is consistent with the theoretical literature on the economics of identity (Akerlof and Kranton 2000, 2005) or more generally social identity theory (Tajfel 1970, Tajfel and Turner 1979). 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. Our findings of agents caring about sharing a mission with the principal stress the importance of identity aspects in labor market settings.

The closest real world equivalent to our 'just the mission' set up are off-the-shelf CSR programs. They allow firms to support a mission of the worker's liking, without the need of having/defining a mission of their own. Our results suggest that these programs 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. Examples of such a corporate approach might be the outdoor clothing company Patagonia (www.patagonia.com) or ice cream producer Ben & Jerry's (www.benjerry.com). Both acknowledge explicitly their responsibility in reducing negative (social and environmental) externalities caused by their activities and describe the actual steps they take: for instance, the commitment to use organic cotton, to recycle all products and to pay 1% of sales to the preservation/restoration of the natural environment; or a fairtrade-certified supply chain and values-led sourcing. Of course, what constitutes the 'right' mission is always in the eye of the beholder. The concept of a 'B Corp' (www.bcorporation.net) might be an approach to institutionalize what a pro-social company mission

is. Certified B Corps voluntarily comply to a set of standards for social/environmental performance, transparency and accountability. Since real life workers could sort into such firms, if they identify with the mission, and sort out to find a better fit if they dislike it, the positive mission effect may even be more pronounced. Testing this remains for future research, see Jeworrek and Mertins (2019) and Ravid et al. (2019) for studies that explore this direction.

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Appendix

A. Screenshots

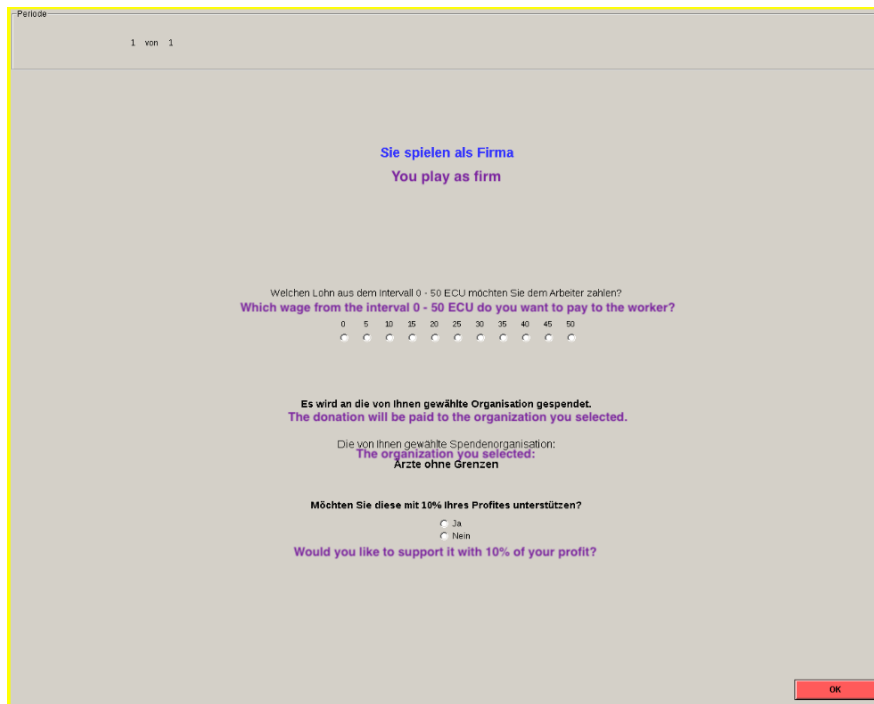


Figure 2: Screenshot of the firm's decision interface for the wage and mission choice

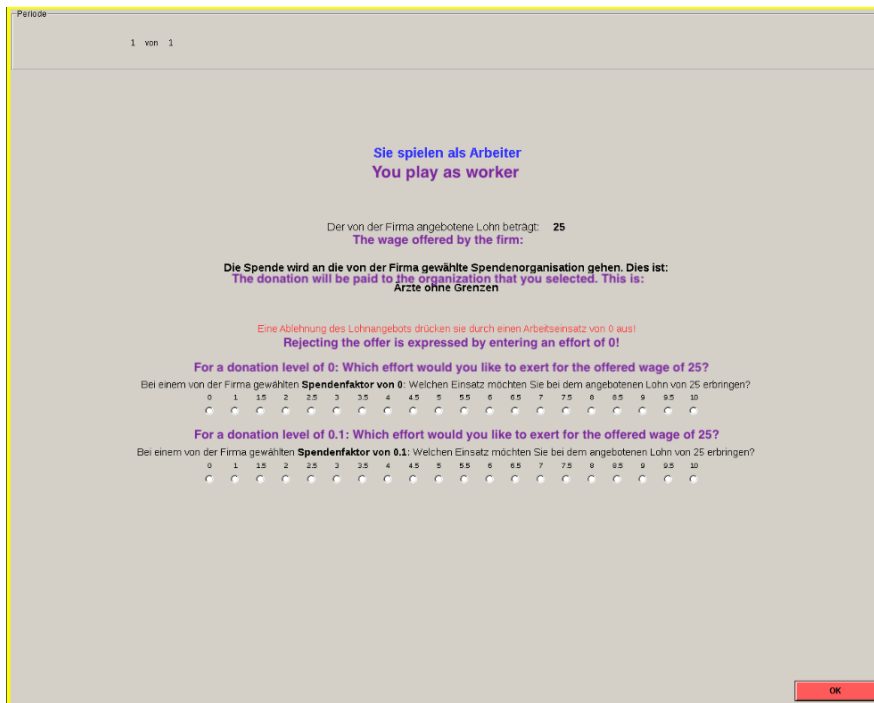


Figure 3: Screenshot of the worker's decision interface for the effort choice (the donation goes to the charity choice of the firm, in this case, Doctors without Borders)

B. Further analyses

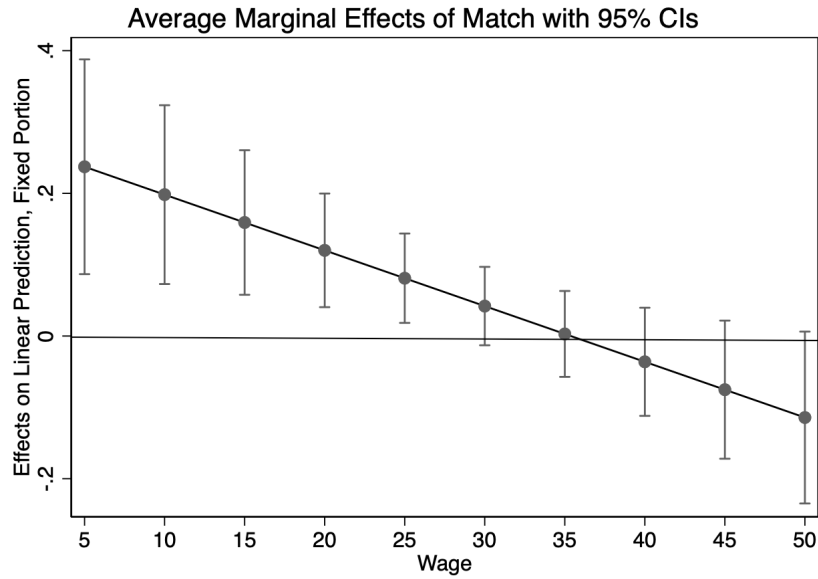


Figure 4: Average marginal effects of Match across wage

Table 2: Determinants of exerted effort (periods 1-8)

	beta = 0		beta = 0.1	
Wage	0.089***	(0.02)	0.098***	(0.02)
Match	0.076	(0.3)	0.44**	(0.2)
No match	0.063	(0.2)	0.19	(0.2)
Wage \times Match	-0.00041	(0.01)	-0.0095	(0.008)
Wage \times No match	-0.0054	(0.009)	-0.0050	(0.01)
Charity dummies	yes		yes	
Observations	432		432	

Notes: Mixed effects models grouped by sessions and workers; robust standard errors in parentheses; significance levels are: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 3: Determinants of profit

Lohn	-0.19	(0.1)
Mission support (β)	-3.39	(13.8)
Mission support (β) \times Lohn	1.75***	(0.6)
Match	1.84	(1.3)
No match	-0.035	(0.9)
Mission support (β) \times Match	-13.5	(20.1)
Mission support (β) \times No match	-14.8	(16.0)
Charity dummies		yes
Period	-0.043	(0.08)
Constant	4.14***	(1.0)
Observations		732

Notes: Mixed effects models grouped by sessions and workers; robust standard errors in parentheses; significance levels are: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.