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by

Natalia Montinari
Antonio Nicolò
Regine Oexl

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www.uni-jena.de

Max Planck Institute of Economics
Kahlaische Str. 10
D-07745 Jena
www.econ.mpg.de

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Mediocrity and Induced Reciprocity

Natalia Montinari
Max Planck Institute of Economics, Jena, Germany, montinari@econ.mpg.de

Antonio Nicolò
University of Padua, Italy, antonio.nicolo@unipd.it

Regine Oexl
University of Innsbruck, Austria, regine.oexl@uibk.ac.at

We report evidence from an experiment where a principal chooses an agent out of two to perform a task for a fixed compensation. The principal's payoff depends on the agent's ex-ante ability and on a non-contractible effort that the agent has to exert once employed. We find that a significant share of principals select the mediocre agent (i.e. the one with the lower ex-ante ability). When the principal is allowed to send a message, mediocre agents exert more effort than agents with higher ability, and principals who choose mediocre agents on average have a larger payoff than principals who select agents with higher ability. This difference in effort overcompensates the difference in ability. Mediocre agents reciprocate more than agents who have ex-ante higher ability when the principals are able to make them feeling indebted.

Key words: reciprocity, communication, incentives, mediocrity **JEL:** C9

"Non ti consiglio però di scegliere persone infamate per la scostumatezza e che fossero screditate presso del popolo; ma ti consiglio di scegliere uomini mediocri, timidi, incerti ne' principj, macchiati di vizi bensì ma con riserva, e tali che facciano eseguire quanto gli si ordina senza ambiguità alcuna. "[1]

Pietro Verri, Precetti di Caligola a Claudio (1786)

"In short, if one is entitled to everything, then one is thankful for nothing".

Emmons and Shelton (2002)

[1] I do not advise to choose individuals infamous for their dissoluteness and discreted by the people, but I advise you to choose mediocre men, of dubious morals, secretly depraved such that they execute what is ordered without any ambiguity.

1. Introduction

In open competitions, it may happen that participants complain because the selection committee has chosen a mediocre candidate and not the one who seems (or actually is) ex-ante more qualified. This may simply be due to the fact that almost every candidate feels to be the most qualified to fill the position. Nevertheless, sometimes this complaint appears justified: when there are objective criteria that suggest a commonly accepted ranking among candidates, and still a candidate who is not the most qualified person is chosen. This paper proposes an answer to the following question: in a job selection, when candidates' ex-ante ability is public information, why should the employer choose a candidate who is not the most qualified?

Our argument is the following: ex-ante ability and ex-post productivity may differ due to the presence of non-contractible effort in performing the required task. If the difference in agents' ex-ante ability can be overcompensated by the higher non-contractible effort exerted ex-post by less qualified agents, then selecting a mediocre (ex-ante less qualified) agent may overall be the most profitable choice for the principal. If such is the case and the principals correctly anticipate this, then we observe mediocre agents being selected for a job.

Why should a mediocre agent exert a higher non-contractible effort than the agent with the highest ability? In this paper, we provide an explanation that is based on *induced reciprocity*. Agents who feel less *entitled* to fill a position may reciprocate more than agents who feel they deserve it, when principals are able to induce such feeling in the mediocre agents. Our idea departs from reciprocity as defined, among the others, in Rabin (1993) and Sobel (2005), as it predicts that agents having different levels of ability will differ in their reciprocal response. To test our conjecture, we conduct a laboratory experiment.

We design a one-shot game among a principal and two agents applying for a position.[2] The principal selects one agent to perform a task for a fixed compensation. Agents' productivity and, consequently, the principal's payoff depend on two components: a non-contractible (ex-post) effort and an ex-ante ability. Ability differs between the two agents and is public information. Our game resembles a gift exchange game,[3] with the difference that in our setting the principal employs

[2] In the following, we refer to the principal as *she* and to each of the two agents as *he*. Moreover, for sake of brevity, the agent with the higher (lower) ability is hereafter referred to as the more (less) qualified agent. We will also indicate the less qualified agent as mediocre.

[3] The gift exchange game was designed to test the fair-wage hypothesis (Akerlof 1982) in laboratory experiments. According to this hypothesis, employers may pay a higher than the incentive compatible wage, anticipating correctly that this 'gift' is reciprocated by the employees. This hypothesis has been confirmed numerous times in laboratory experiments; see Gächter and Thöni (2010), Gneezy (2004), Fehr and Gächter (1998), Fehr et al. (1997), Charness (2004), and Hennig-Schmidt et al. (2010).

one out of the two agents but the compensation is fixed. Once the principal has selected an agent, he chooses a level of costly non-contractible effort. The agent who is not selected receives an unemployment benefit. In the first treatment, we allow the principal to send a one way free-form message to the selected agent (*communication* treatment). In the second treatment, the principal can only select an agent, without having the possibility to communicate with him (*no-communication* treatment). Our main results are based on these first two treatments. However, we run two additional (and more artificial) treatments, to control for the content of communication and the effect of the choice of the principal, respectively. In the third treatment we allow the principal to indicate a desired level of effort to the selected agent with no additional words (*suggestion* treatment). In the last treatment, instead of the principal, a random device picks the agent (*random device* treatment), and there is no communication.

The results are the following: In the *communication* treatment, our conjecture is fully corroborated. Around 30% of principals select the mediocre agents. The mediocre agents, on average, exert an effort more than 50% higher than the effort exerted by the most qualified agents. The higher effort exerted overcompensates the lower ability, and principals who chose mediocre agents on average gain 40% more than principals who hire more qualified agents. In the *no-communication* treatment, the fraction of principals who choose the mediocre agent is not significantly different than in the *communication* treatment. However, the average effort exerted by the two types of agents does not differ significantly. Similarly, effort provision by the two types of agents does not differ in both the *suggestion* and the *random device* treatments.

Summing up, we find evidence of higher effort provision induced by mediocrity but only in the treatment with one-way free-form communication. We find this result interesting for two reasons. First, we believe that the *communication* treatment best describes most of the real world situations in which we observe the choice of a mediocre candidate. Usually, the selection occurs after a job interview; in any case, before the agent performs the tasks, the principals always have an opportunity to tell the agents why they have chosen them. Second, differently to most of the literature where communication serves as a coordination device (e.g. Cooper et al. 1989, 1992) or where it serves to make a promise or any other form of commitment (e.g. Charness and Dufwenberg 2006), in our setting the message of the principal *induces* a higher level of reciprocity in the mediocre agent, without making use of any of the above mechanisms.

The emergence of *mediocrity* in candidate selection is particularly important for all contracts where i) the employer cannot use the wage *level* to motivate the agents, either by linking the wage

to their performance (a typical moral hazard setting) or through a gift exchange; and ii) non-contractible effort is a relevant component of the employees' production function as, for example, in the civil service. Theoretical and experimental research on the 'fair-wage hypothesis' has shown that by paying a 'fair' wage, the problem of moral hazard can be overcome by making use of reciprocity. However, in our setting, the wage is fixed. Hence by linking the gift exchange literature to the selection problem, our experiment is an important extension of the study of reciprocity, providing evidence about environments where the wage level cannot be used to motivate workers. Specifically, our theory predicts that the *choice* of whom is less entitled may be an important way to motivate agents in such settings.[4]

The reasons for mediocre agents being present in organizations has been investigated theoretically by several authors, among others Kräkel (2009), Bramoulle and Goyal (20011), Prendergast and Topel (1996), and Levine et al. (2010). Bramoulle and Goyal examine the economic origins and the consequences of favoritism in groups. Kräkel shows that individuals who have the lowest fall-back positions have the highest incentives to succeed in career contests, hence mediocrity results from a lack of incentives on the part of the best agents. On the other hand, Prendergast and Topel suggest subjective evaluations as leading to favoritism, settings in which performance is not objectively measurable, resulting in mediocrity. Levine et al. (2010) explain the presence of less than competent workers and overemployment by nepotism, with nepotism being defined in the widest sense as a favoring of family members, friends, or any person from whose gratitude one could benefit. The above theories are backed up by empirical evidence. Kramarz and Thesmar (2007) show how poor performance of corporate executives is due to favoritism of schoolmates in French elite schools; Anderson (2011) and Pande (2003) investigate why caste members tend to favor each other in political and economic interactions. Bertrand et al. (2007) comment on favor exchange between corporate executives and politicians, and Durante et al. (2011) show that family connections in academic department faculty are correlated with lower performance in Italian universities.

Compared to the above mentioned studies, our theory has different testable predictions. Nepotism predicts that agents are chosen for characteristics that are uncorrelated with respect to the agents' ability and therefore mediocrity arises on average. We predict that agents are chosen precisely for their mediocrity (as suggested by Verri in the initial quotation) and it is a characteristic of most of the agents who are selected, not only on average. Finally note that, while nepotism and favoritism look at mediocrity as a source of inefficiency in organizations, our analysis provides a

[4] In the conclusion we discuss why choosing mediocre agents may be an optimal strategy even in the long run, when reciprocity concerns vanish.

different perspective. Our experimental evidence identifies situations where it is beneficial for the principal to hire an agent who is ex-ante less entitled to the position. Yet for this to be true one important assumption, reflected in the experimental design, is that the interests of the principal are aligned with those of the organization. This excludes the possibility that the selected agent can provide direct personal benefits to the principal without also benefiting the organization.

Our paper also contributes to the literature studying the effects of hiring overqualified employees, motivating why less qualified workers may be preferred. More precisely, in our paper the most qualified agent cannot be considered overqualified (since there is no mismatch between (his) skills and abilities and the job requirements, as investigated among others by Erdogan et al. (2011)), but *more* qualified than the other. Therefore, while most of the studies on overqualification concentrate on the negative effect of hiring too qualified workers (who are considered to face higher rate for turnover and to perform worse than normally qualified workers due to low morale and potential boredom (Erdogan et al. 2011)), our paper motivates the exclusion of *more* qualified employees by stressing the positive effects associated with the selection of *less* qualified employees (who may be more reciprocal, given they are less entitled to the position).

The rest of the paper is organized as follows. Section 2 describes our experimental design, parameters, and procedures. Section 3 presents our main results, and section 4 concludes.

2. Experimental Design

We design a three-player game with one principal P and two agents, A_i with $i = 1, 2$. The principal is the first mover. She employs one of the two agents offering him a fixed wage w. The selected agent decides whether to accept the offer or not and which level of effort to exert.

Agents' productivity and principal's payoff depend on two components: an exogenous ex-ante ability which is public information θ_i^k, $k = L, H$ with $\theta_i^H > \theta_i^L > 0$, and a costly non-contractible effort to be exerted after the selection, $e_i \in [\underline{e}, \bar{e}]$ with $\bar{e} > \underline{e} > 0$, where $\underline{e}$ is the minimum enforceable level of effort. The principal's monetary payoff is

$$M_P(e_i, \theta_i^k) = (v_0 - w) \cdot (e_i + \theta_i^k) \tag{1}$$

where v_0 represents an exogenously given redemption value. The selected agent's monetary payoff is the difference between the fixed wage w and the incurred effort costs $c(e_i)$:

$$m_i = w - c(e_i) \tag{2}$$

Note that, for payoff maximizing agents, the optimal effort is the minimum enforceable level, i.e., $\underline{e}$. This implies that when wage is fixed, post-contractual opportunistic behavior cannot be overcome. On the contrary, for reciprocal agents exerting an effort higher than $\underline{e}$ is a (fair) response to the fairness of the principal who selected him. If agents reciprocal response is also affected by entitlements (i.e. by the agents relative ability), we should also observe that mediocre agents, being less entitled for the position, once selected exert an effort higher than the effort exerted by the most qualified agents. Consider now the choice of the principal. The only case in which it is convenient to employ the mediocre agent is when the higher effort exerted by this agent overcomes the difference in the ability[5]. If the principal does not expect any reciprocal response by the agents then she will always employ the agent with higher ability to maximize her monetary payoff. The same reasoning holds if the principal expects the *same* reciprocal response by both agents irrespectively from their relative ability (i.e. if she does not expect the entitlement to play a role in agents' reciprocal response).

We run four different treatments. Once the agent is selected, in all treatments he faces the same effort choice and therefore the behavioral predictions for payoff maximizer and reciprocal agents are the same across treatments. In our main treatment, the *communication* treatment, when choosing the agent, the principal can simultaneously send him a free-form message. The selected employee learns being selected and simultaneously reads the message. Then he chooses a level of effort. The content of the message was not restricted, and it was public information that the messages were cheap talk (i.e., non-binding) and costless in the common sense.[6] In our setting, one-way communication neither led to an increase in information nor to an increase in coordination (Brandts and Cooper 2007) nor did it include non-binding announcements about intended decisions (Charness and Dufwenberg 2006). Yet besides such functioning, the messages increase the closeness among participants (Bohnet and Frey 1999, Hoffman et al. 1994, Hoffman et al.) and give to employers the possibility to express their expectations.

In the second treatment (which we call the *no-communication* treatment), the principal selects one agent to be hired, but no communication is allowed. The selected agent learns he has been selected and chooses a level of effort. Beside these two main treatments we run two additional

[5] In our experimental design, the principal knows that the agents' abilities are not correlated with agents' reciprocity concerns because the different abilities are randomly assigned.

[6] The only restriction imposed was that the principal could neither identify herself nor indicate anything that would happen after the experiment had ended (e.g., threaten the other group members, promise a side payment, etc.). All messages were screened before being sent, and all complied with these restrictions. Each principal had three minutes to send the message.

treatments. The third one (which we call *suggestion* treatment) aims disentangling two components which are present in the communication treatment, i.e. the disclosure of expectation (informing the agents of the desired level of effort) and the increased closeness generated by words, for instance revealing the reasons why the agent was chosen. Therefore, in the suggestion treatment, principals are only allowed to indicate a number in their messages, representing the desired effort level. Finally, in order to control for the "I want you" effect, we run a fourth treatment (which we call the *random device* treatment), where the agents are selected by a random device instead of an employer. Once they learn they have been selected by the random device, as in the other treatments, employees choose an effort level which affects the principal's payoff.[7]

2.1. Experimental parameters

We set the redemption value for the principal $v_0 = 120$ ECUs, the ability parameters $\theta^H = 0.05$ and $\theta^L = 0$, and the wage $w = 50$ EUCs. The effort levels are discrete and integer numbers with $\underline{e} = 1$ and $\bar{e} = 10$, the corresponding costs are taken from Fehr et al. (1998). Effort levels and relative costs as depicted in Table 1. The agent who is not selected receives an unemployment benefit of 10 ECUs. If the selected agent does not accept the principal's offer, then the game ends and both he and the principal receive 0 ECUs.[8]

Effort level	1	2	3	4	5	6	7	8	9	10
Cost of effort (in ECUs)	0	1	2	4	6	8	10	12	15	18

Table 1 Effort Levels and Costs of Effort

Note that, given our cost function of effort, only if the principal expects that the mediocre agent will exert an effort at least one level higher than the most qualified agent, then it is beneficial for her to employ the mediocre agent.

2.2. Procedures

The experiment was programmed in z-Tree (Fischbacher 2007) and conducted at the experimental laboratory of the Max Planck Institute of Economics (Jena, Germany). The subjects were undergraduate students from the Friedrich Schiller University Jena. They were recruited via the ORSEE

[7] In all treatments (except for 4 sessions of the *no-communication* treatment) we elicited incentivized beliefs from the principal about the level of effort expected by the selected agent. Similarly, in all treatments (except the *random device*), we elicited incentivized beliefs from the employees about the number of principals they expect will choose the agents with the highest ability. If the guess was exact, the participants received 10 ECUs; if it was in a range of $+/-$ 1 point, they received 5 ECUs, and if it was in a range of $+/-$ 2 points, they received 2 ECUs. Results about the beliefs elicitation are available from the authors upon request.

[8] Consistent with other experiments, in our experiment we give agents the possibility of choosing the strictly dominated action of refusing the principal's proposal. None of our 210 agents played it.

software (Greiner 2004). We conducted 22 sessions, featuring 210 groups with a total of 630 subjects, from November 2011 to July 2012. The sessions lasted about 50 minutes. Average payment was 9.88 euros including the show-up fee.[9]

Treatment	N groups	N participants
Communication	58	174
No-communication	58	174
Suggestion	54	162
Random device	40	120
Total	210	630

Table 2 Participants and Treatments

Upon arriving at the laboratory, participants were randomly allocated to visually isolated computer terminals and given a paper copy of the instructions that were read aloud to ensure common knowledge. Before starting the experiment, subjects had to answer a set of control questions; after the experiment they answered a short unincentivized post-experimental questionnaire. At the beginning of each session, each participant was matched with two other participants to form a group of three[10]. We referred to each group as a firm and to the group members as employer, employee A, and employee B, with employee B being the mediocre agent. Privately, each subject was randomly assigned a role.

3. Results

In this section, we present our results. Taking as main focus the *communication* and the *no-communication* treatments, we first discuss the choice made by the principal and the effort choice of employed agents. Then we consider the profit obtained by the principals and the content of the messages. Finally, taking as focus the *random device* and the *suggestion* treatments we control for the "I want you effect" and the coordinative value of communication, respectively.

[9] Our employees were confronted with a payoff table instead of a payoff function (see also Charness et al. 2004). The experiment was conducted in German. In the Appendix, an English version of the instructions is reproduced. Full instructions and the software are available upon request.

[10] Participants were informed that the experiment consisted of two parts. They first received instructions about part one and then, at the end of part one, they received instructions about the content of the second part. In part one, participants played the one shot game described in section 2. In part two, retaining their role in part one, they played the same game several rounds repeatedly and without feedback about their payoff and other players' strategies, under a perfect stranger protocol. Here we only present result from the first part. Results for the second part are similar to the ones for part one and are available from the authors upon request.

3.1. The choice of the principals

Our first result refers to the choice made by the principals.

Result 1. A significant share of principals employ mediocre agents.

Support for Result 1 can be found in Table 3. Although the majority of principals chose to employ the more qualified agent, in the *communication* treatment 29.31% of the principals chose the mediocre agent, and in the *no-communication* treatment 36.21% of the principals chose the mediocre agent.

	Treatment	
	Communication	*No-communication*
%	29.31	36.21
n	17	21
N	58	58
Binomial probability test	Probability that this is equal to 50%	
p-value	<0.01	0.05

Table 3 Fraction of Mediocre Agents Chosen

The two proportions are not significantly different from each other (two sample test of proportions: $z = 0.79$ $p = 0.43$), hence the possibility to send a message to the selected agent does not seem to significantly affect the principals' choice. By means of a Binomial probability test, we show that the two proportions significantly differ from 50%. Hence we can exclude that principals randomly employ the agents.

3.2. The employed agents' effort

In this section we first concentrate on the average effort exerted by all employed agents irrespective of their ability (Result 2). Then we focus on how the difference in ability impacts on the effort exerted by employed agents both within and between treatments (Result 3).

Result 2. On average, the employed agents exert an effort higher than the minimum enforceable level. Agents in the *communication* treatment on average exert a significantly higher effort than agents in the *no-communication* treatment.

The average effort exerted by the employed agents is summarized in the first row of Table 4. In the *communication* treatment, the employed agents on average exert an effort of 5.29 while in the *no-communication* treatment, the employed agents on average exert an effort of 3.84.

	Treatment			
	Communication	*No-communication*	MW test: z	*p-value*
Average effort employed A	5.29 (2.79)	3.84 (2.92)	2.88	0.01
Average effort by A^H	4.54 (2.67)	3.92 (2.52)	-0.95	0.34
Average effort by A^L	7.12 (2.20)	3.71 (1.87)	-3.83	0.00
MW test ($A^H \leftrightarrow A^L$): z	3.69	0.09		
p-value	<0.01	0.93		

Table 4 Average Effort Exerted by the Employed Agents, Standard Deviation in Parentheses

Two things can be noted by looking at the average effort exerted by the employed agents: first, in each treatment, the employed agents exert on average a significantly higher effort than the minimum enforceable level (i.e. 1), which would be the effort exerted by payoff maximizer agents, (Mann-Whitney tests: *no-communication* treatment, $p < 0.01$, $z = 8.10$, *communication* treatment, $p < 0.01$, $z = 8.24$).[11] Therefore, employed agents exhibit, on average, reciprocal concerns in our modified version of the gift exchange game. Second, the average effort exerted by selected agents in the *communication* treatment is significantly higher than in the *no-communication* treatment, (Mann-Whitney test, $z = 2.88, p < 0.01$). This evidences that one-way communication fosters reciprocity.

Consider now the employed agents' effort choice. While agents' effort choice may be due to different motives, as, for instance, other regarding preferences, the "I want YOU" effect, the impact of communication, etc., all these motives predict the same reciprocal response by both agents irrespective of their ability. The only case in which we should observe agents exerting *different* levels of effort depending on their ability is when reciprocity is *induced* by making salient the agents' entitlement. To test the relevance of this induced reciprocal behavior we consider the difference in the effort exerted by the two types of agents *within* treatment and *across* treatments.

Result 3. In the *communication* treatment, the mediocre agents on average exert a significantly higher effort than the more qualified agents. In the *no-communication* treatment there are no differences in average effort exerted by part of the two types of agents. Mediocre agents on average exert an effort significantly higher in the *communication* than in the *no-communication* treatment. For the more qualified agents the exerted effort is not significantly different across treatments.

Consider first the effort choice by the two types of agents within each treatment. In the *communication* treatment, the more qualified agents on average exert an effort of 4.54 when being

[11] When asking about incentivized beliefs, we find that employers expect, on average, a higher effort than the minimum enforceable effort (Mann-Whitney tests: *no-communication* treatment, expected effort= 3.72, $z = 8.08$, $p < 0.01$; *communication* treatment, expected effort= 5.67, $z = 9.43$, $p < 0.01$.).

employed, while the mediocre agents on average exert a significantly higher effort of 7.12 (Mann-Whitney test, $z = 3.69$, $p < 0.01$). In the *no-communication* treatment the difference in effort is not significant: the more qualified agents exert an average effort of 3.92, while mediocre agents exert an average effort of 3.71, ($z = 0.09$, $p = 0.93$).[12]

Consider now the effort choice by each type of agent across treatments. The mediocre agents exert an effort significantly higher in the *communication* than in the *no-communication* treatment (Mann-Whitney test, $z = -3.83$,$p < 0.00$), while the effort exerted by the most qualified agents does not significantly differ across treatments, (Mann-Whitney test, $z = -0.95$, $p < 0.34$). When comparing treatments, it can be noted that the difference in average effort across treatments evidenced in Result 2 is driven by the effort exerted by mediocre agents.

Table 5 presents the results of Tobit regressions, where the dependent variable is represented by the effort level chosen by the employed agent. As explanatory variables we include the employed agent's ability (through dummy A^L which takes value 1 if the employed agent is mediocre and 0 otherwise), a treatment dummy (*communication*) and the interactions between the employed agent's ability and the treatment dummy). In model (1), being selected if mediocre has a positive and significant impact on effort choice. Similarly, being in the treatment *communication* also significantly increases the effort exerted. In model (2), where the interaction terms between the selected agent's ability and the communication treatment is introduced, being mediocre and being in the *communication* treatment has a positive and significant effect on the effort exerted, while the other explanatory variables are not statistically significant.

We interpret the results shown in Tables 4 and 5 as evidence of the power of one-way communication, which is particularly effective in inducing a higher reciprocal response in mediocre agents. In the *communication* treatment principals can make more explicit that they have selected mediocre agent even if they are ex-ante less qualified and for this reason they expect more gratitude and therefore more effort by them. This points in the direction that the entitlement effect is induced by principals by means of effective communication. Section 3.4 presents an analysis of the communication content.

[12] Eliciting incentivized beliefs we find that, in the *no-communication* treatment, principals selecting mediocre agents expect from them on average a significantly higher effort then principal selecting the most qualified agents (2.95 vs 5.10, Mann-Whitney test, $p < 0.01, z = 3.63$). In the *communication* treatment differences in the effort expected by the principals selecting the most qualified and mediocre agents are not significantly different, (5.70 vs 5.59, Mann-Whitney test, $p < 0.92, z = 0.11$).

Model	(1)	(2)
Dependent variable	Effort	Effort
A^L	1.16**	−0.20
	(0.49)	(0.57)
tr. *communication*	1.58***	0.64
	(0.48)	(0.59)
$A^L \cdot$ tr. *communication*	-	2.91***
		(0.92)
constant	3.42***	3.92***
	0.38	0.41
σ	2.53	2.44
	(0.13)	(0.13)
N	116	116
Log pseudo-likelihood	−269.32***	−265.02***
Pseudo R2	0.02	0.04

Note: *** denotes significance at the 1% level; ** denotes significance at the 5% level; * denotes significance at the 10% level. The Tobit regressions in models 1 and 2 involve 0 left-censored and 3 right-censored observations.

Table 5 Tobit Regression Results for Effort Choices

3.3. The principals' profit

In this section, we focus on the profit obtained by the principals. The difference in effort exerted by employed agents, leads to the following result:

Result 4. In the *communication* treatment, principals who employ a mediocre agent on average obtain a higher profit than principals who employ the more qualified agent. In the *no-communication* treatment, it is not significantly more profitable to employ the more qualified agent rather than the mediocre one.

Support for Result 3 can be found in Figure 1. Figure 1 plots the average profits obtained by the principals depending on the type of agent they chose. Not that we also display the average effort exerted by the respective agents in the dark blue bars. In the *communication* treatment, the average profit of the principals who choose the most qualified agent is 25.18 ECUs. On the contrary, the average profit of the principals who choose the mediocre agents is 35.59 ECUs. The difference is statistically significant (Mann-Whitney test, p=0.01, z=2.55). On average, this means that in the *communication* treatment, the principals who chose a mediocre agent gained 43% more than principal choosing the most qualified agents. In the *no-communication* treatment, on the other hand, this difference is not statistically significant and employing the mediocre agent does not imply a significant lower profit for the principal.[13]

[13] The average profits of the principals that chose the most qualified and the mediocre agents were 22.09 ECUs and 18.57 ECUs, respectively. The difference is not statistically significant (p=0.27, z=1.10).

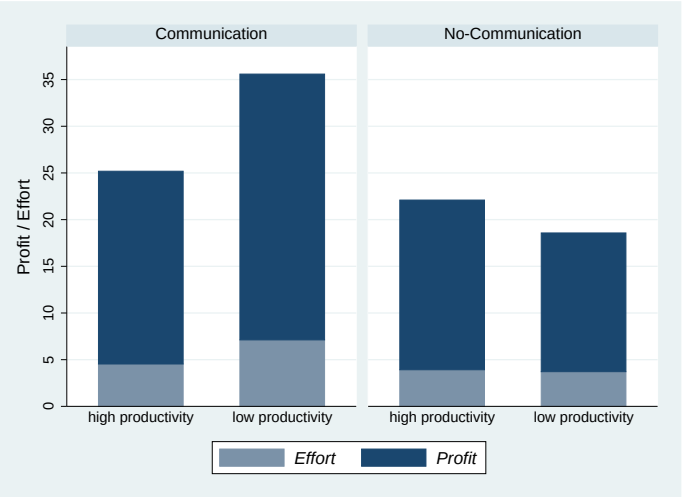

Figure 1 Average Effort Exerted by the Agents and Average Profits of Principals, by Treatment

3.4. The communication content

In this section we analyze the content of the messages. To this extent, following Koukoumelis et al. (2012), Cooper and Kagel (2005), Sutter and Strassmair (2009) we identified a set of categories and classify the messages.[14] Table 6 lists the categories used to classify the messages sent by the 58 principals participating in the *communication* treatment and describes the content of each category. Appendix A contains all the messages sent and the categories to which they were assigned.

Category	Argument	Description
1	Suggestion	Suggest a level/lowest threshold of effort
2	Fairness	Explicit reference to gratefulness/reciprocity/fair behavior.
3	Diff. $A^H - A^L$	Emphasizes difference/ disadvantage of A^L compared to A^H.
4	Morality	Explicit argument that the employer behaves correct/ follows her moral principles.
5	Payoff calc.	Calculation of the resulting outcomes for both employer and employee.
6	Satisfaction	Explicit argument that the suggested choice is the most efficient and that everybody is happy/ satisfied with this.
7	Team Spirit	Statement being part of a team and good working climate.
8	Encouragement	Encouragement/Wish good luck.
9	Empty	No message is sent (empty message).

Table 6 Description of the communication content categories.

For participants in the communication treatment it was public information that sending a message was possible but not compulsory. Out of 58 principals, the 17.24% did not send any message to

[14] First, two researchers independently examined the messages, and each of them identified a set of preliminary categories. Then they agreed upon the final set of categories. Each category identifies one (or more) arguments used by the sender such that each message can be assigned to one or more category. Finally two undergraduate research assistants coded all the messages first separately and then together. If one message contained the argument(s) specified by some category, then that category was assigned the value of 1 (otherwise, it was assigned the value of 0).

Category	Argument	Fr1	Fr2	Fr3	Fr4
1	Suggestion	0.50	0.60	0.50	0.64
2	Fairness	0.41	0.50	0.50	0.50
3	Diff. $A^H - A^L$	0.10	0.13	0.21	0.09
4	Morality	0.07	0.08	0.14	0.06
5	Payoff calc.	0.17	0.21	0.14	0.24
6	Satisfaction	0.48	0.58	0.57	0.59
7	Team spirit	0.19	0.23	0.42	0.36
8	Encouragement	0.09	0.10	0.22	0.06
9	Empty	0.17	-	-	-

Table 7 Relative Frequency of the Arguments Present in the Messages

the selected agent (N=10)[15]. This happened in 17.07% (N=7) of the cases when the most qualified agents were employed compared to 17.65% (N=3) of the cases when the mediocre agents were employed. Table 7 contains the relative frequencies of each argument, or arguments, mentioned in the messages. In the first column, Fr1, we include the empty messages in the computation of the relative frequencies, while we exclude them in the other columns. The third (fourth) column, Fr3 (Fr4), only considers the relative frequency of the messages sent to the agents with lowest (highest) ability who are selected.

A comparison between the third and fourth columns of Table 7 does not reveal differences in the arguments of the messages sent to the two types of agents. The three most frequent arguments in the messages sent to the mediocre agents (column Fr3) refer to fairness and suggestion (both with a relative frequency of 0.50) and satisfaction (relative frequency of 0.50). When looking the messages sent to the most qualified agents (column Fr4), the three most frequent arguments are suggestions (relative frequency of 0.64), satisfaction (relative frequency of 0.59), and fairness (relative frequency of 0.50).

Table 8 contains the results of the Spearman rank correlation coefficients between the different arguments present in the messages. Messages containing suggestions about an effort level are likely to also contain a payoff calculation and to refer to fairness (Spearman corr. coefficients: 0.31, $p< 0.05$), as well as satisfaction of both the principal and the agent (Spearman corr. coefficient: 0.28, $p< 0.05$) but not references to team spirit (Spearman corr. coefficient: -0.29, $p< 0.05$). We also find that messages underlining the difference in ability between the agents are also likely to contain a reference to the morality of the employer (Spearman corr. coefficient: 0.35, $p< 0.05$). Finally, messages containing encouragement also evoke team spirit (Spearman corr. coefficient: 0.48, $p< 0.05$) and satisfaction (Spearman corr. coefficient: 0.20, $p< 0.05$).

[15] We only have one message which is completely unrelated, see the Appendix. We classified it as Empty message.

Argument	Suggestion	Fairness	Diff. $A^H - A^L$	Morality	Payoff calc.	Satis-faction	Team Spirit	Encouragement
Suggestion	1.00	.	.	.	.	.	.	.
Fairness	0.31*	1.00	.	.	.	.	.	.
Diff $A^H - A^L$	0.07	0.06	1.00	.	.	.	.	.
Morality	0.10	0.05	0.35*	1.00	.	.	.	.
Payoff calc.	0.31*	-0.01	0.01	0.06	1.00	.	.	.
Satisfaction	0.28*	-0.11	-0.10	0.01	0.10	1.00	.	.
Team Spirit	-0.29*	-0.14	0.02	0.04	-0.22*	0.15	1.00	.
Encouragement	-0.10	0.01	0.10	-0.08	-0.14	0.20*	0.48*	1.00

Note: Spearman's rank correlation coefficients, * denotes significance at 5% level.

Table 8 Spearman-rank correlation coefficients between the arguments present in the messages.

Our results show that in the *communication* treatment, mediocre agents exert significantly more effort than more qualified agents. Looking at the argument(s) used in the messages received by the employed agents, we find that messages containing also a suggestion about an effort level are more effective when they are sent to mediocre agents rather than to agents with higher ability. While there is no significant difference in the effort level suggested to the two types of agents (which is equal to 6.88 for the most qualified agents and to 7.23 for the mediocre ones, Mann-Whitney test, z=−1.419, p=0.1559), we find that mediocre agents exert an average effort of 7.22 while the more qualified agents exert an average effort of 4.83. This difference is significant at the 1% level according to a Mann-Whitney test, z=2.77, p=0.005).When we consider the messages containing other arguments, we also find a small differences when looking at the messages containing as argument fairness: mediocre agents exert an average effort of 6.71 while the more qualified agents exert an average effort of 4.59. This difference is significant at the 5% level according to a Mann-Whitney test, z=2.180, p=0.03). If we consider the other arguments, the differences in the average effort exerted by agents are no longer significantly different depending on the agents ability. Summing up, we find that in the *communication* treatment the mediocre agents exert a significantly higher effort than the more qualified agents. By analyzing the content of the messages sent by the principals, we find that messages containing suggestion of an effort level or evoking fairness are particularly effective in inducing the mediocre agents to reciprocate. In next section we report result from the additional treatment aimed in investigating whether the effectiveness of these messages is due to the communication in itself or rather to the fact that agents are informed about the principals' expectations.

3.5. Additional Treatments

In this section we present the two additional control treatments. The *suggestion* treatment allows us to disentangle the effect of mere communication from the effects of coordination. The *random device* treatment has been designed in order to disentangle the role of the "I want you effect".

3.5.1. The Suggestion Treatment In this treatment principals were allowed to send messages to the selected employee, however, differently than in the *communication* treatment, messages were constrained in their content: only a number representing the desired effort level could be communicated to the selected employee. Comparing this treatment with the free-form *communication* treatment we aim at capturing why messages containing a suggested effort level were more effective than others. This could be due to the fact that selected agents were provided with a reference point, to which these agents react differently due to the fact that they feel less entitled for the position. An alternative possibility could be that the effect is driven by both having a reference point *together* with the increased closeness due to communication.

Treatment	*Suggestion*	*Random Device*
Average effort employed A	3.58 (2.91)	4.00 (2.75)
Average effort by A^H	3.93 (2.59)	3.76 (2.66)
Average effort by A^L	4.30 (3.16)	4.17 (2.87)
MW test: z	-.54	0.38
p-value	0.59	0.71

Table 9 Average Effort Exerted by the Employed Agents, St.Dev. in Parentheses

Consider first the expected effort indicate by principals[16]. The average expected effort suggested to the most qualified agent is equal to 7.02 while for mediocre agents it is equal to 7.6. These levels are not significantly different across types, (Mann Whitney test z-1.53, p-value=0.13). Similarly, if we compared these levels to the ones contained in the messages of the communication treatment differences are not statistically significant. Table 9 indicates the average effort exerted in the *suggestion* treatment. Employed most qualified agents exert an average effort level of 3.93, while mediocre agents exert an average effort level of 4.30. The effort level are not significantly different between types, Mann-Whitney test, z=-0.54, p-value=0.59. Similarly, if we compare the average effort across treatments, we find that for the high types there are no differences in the average effort exerted (Mann Whitney tests: *suggestion* vs *no-communication*, z=0.05, p=0.96; vs *communication*z=-0.95 p=0.34,); while when considering the mediocre agents we find no significantly difference with respect the no-communication treatment while a significantly lower average effort compared to the communication treatment, (Mann Whitney tests: *suggestion* vs *no-communication*, z=-0.20, p=0.85; vs *communication* z=2.26 p=0.02,). Based on the results of this treatment we exclude that the effectiveness of the messages in the communication treatment is entirely due to the increased information about the principals' expected effort level. It rather seems that this information, combined with an higher level of closeness are the features of an effective communication.

[16] The percentage of principal choosing mediocre agents is 18.52 (n=10/54), which is significantly lower than both the *no-communication* treatment (p=0.02) and the *communication* treatment (p=0.09).

3.5.2. The Random Device Treatment Our last treatment is the *random device* treatment, which only differs from the *no-communication* treatment for the fact that a random device instead of the principal picks the agent. Brandts et al. (2006) show that knowingly selected allocators keep less for themselves than randomly selected ones. Based on this evidence, our *random device* treatment aims at controlling whether the agents' reciprocal response can be exclusively explained by to the principal choice. Table 9 indicates the average effort exerted in the *random device* treatment, which is equal to 4.00. This effort is significantly higher than the minimum enforceable level, (Mann Whitney test, z=6.17, p< 0.01) and it is not significantly different from the effort level exerted in the *no-communication* treatment (Mann Whitney test, z= 0.08, p=0.94). We do not find significant differences when looking at the effort exerted by the employed agents depending on their ability. The more qualified agents exert on average an effort of 3.76, while the mediocre agents exert an effort of 4.17 (Mann Whitney test, z=0.38, p-value= 0.71).

4. Conclusion

In this paper, we provide empirical evidence that principals an induce mediocre agents to exert higher level of effort by making them feel in debt for being selected into position, when (ex-ante) more qualified candidates are available. There are, however, many interesting questions left for future research.

First, the long term effect of reciprocity concern in contract relationships has been questioned (Gneezy and List 2006). While our laboratory experiment focuses on the short term effect of selecting mediocre agents, we believe that additional reasons may arise to have mediocre agents when looking at long term relationships. Mediocre agents may be prone to obey to their principals, have less bargaining power and exert more effort even in the long run because they have less outside opportunity to find another employment.

Second, we only analyze a game between one principal and two agents. Therefore the choice of the principal was simply whether to select the agent with the higher or lower ability. When the principal selects one agent among a larger group of candidates with different ex-ante abilities, her choice becomes more complex. The principal should, in fact, predict how the effect of the entitlement feeling varies according to the ranking of the candidates. Hence a relevant question for the principal is whether it is more profitable to select the second ranked individual, who already feels indebted toward her but has a relatively high ability with respect to the other candidates, or to choose a *much* lower ranked individual who is *much* less qualified but who would be extremely grateful toward her.

Third, how does the reciprocity concern due to a different entitlement interact with a reciprocity concern due to the classical gift-exchange effect? If the principal not only selects the agent to perform a task but also decides about the size of his wage, then which is the most profitable way of inducing a higher non-contractible effort?

Fourth, it is important to keep in mind that in our setting, agents could only show their gratitude towards the principal by means of an increase in effort. However, agents in many circumstances may not (only) increase their effort, but also transfer (private) benefits to the principal, and this can lead to severe inefficiency when the interests of the principal who selects the agent are not necessarily aligned with the interests of the organization. While the literature on gift exchange in general states that the latter leads to an increase in effort, real world (employment) relationships are not limited to the exchange of labor and work but also include other types of interaction. Hence it might be that a worker, instead of reciprocating by means of an increase in effort, reciprocates in different ways - for example, by bribing the individual who is in charge of recruiting the employees. If it were the case that in such a setting reciprocity results in an increase in (inefficient) private transfers and corruption and not in an (efficient) increase in effort, then this would explain why, up to now, results of field experiments on the fair-wage hypothesis have been very mixed (for an overview, see Hennig-Schmidt et al. 2010).

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Appendix A: Messages

In the table below we report all the messages (translated from German) sent in our *communication* treatment and the categories (described in Table 6) to which they have been assigned. For each message, column 3 indicates whether it was sent to the agent with lowest (L) or highest (H) ability.

N	Session	Principal ID	Agent Chosen	Message	Categories
1	1	2	H		9
2	1	4	H	Since I made a great choice, you shall thankfully not contribute less than 5!	1,2
3	1	8	H	Hello employee, I chose you, because I trust you! Please choose a contribution of 8 and both of us will be compensated justly.	1,2,4,6
4	1	9	H	I am doing this today for the first time and am not sure which is a good strategy to choose. Maybe we don't start too high for the beginning.	9
5	1	10	L		9
6	1	11	H	Hello, now I've employed you. Before making a choice, you receive this message. It'd be fair, I guess, if either of us received a benefit from this game. Therefore I'd be great, if you chose a contribution of 7.	1,2
7	1	20	H	Live and let live? suggest you to choose a contribution of 7, that makes 40 for you and 37,5 for me. Why? The decision on employee A was clear. I want to look at this statistically?ll in all everyone has the highest benefit, when cooperating?hat is, because in the statistic mean everyone benefits from this...You're to decide and it's ok for you to benefit from this the most, but also consider, that you might be sitting here as well and inversely be setting your hopes in me...So, I am counting on you and on all of us participants profiting and not the bank :) Best regards	1,3,5
8	1	24	H	I want this business to turn out fair for you, as the employee, as well as for me. Therefore I would like to ask you, employee A, to choose a contribution of 7 or 8, so the income for either of us would be fair.	1,2,3,4
9	1	26	H	The employer would be happy about a fair decision, that will meet both - employer and employee)	2

table continues on next page

Table 10 Messages and Categories, First Part

N	Session	Principal ID	Agent Chosen	Message	Categories
10	2	1	L	Dear employee B, even though your performances so far were not quite as good as the other candidates (see Table 2), I decided on you - against all advices and against probability. I hope we get along well and can make a fair agreement, in which we both earn about the same. Therefore please choose a contribution of 7 or 8. Thank you, your new employer :)	1,2,3
11	2	4	H		9
12	2	8	H	in my opinion, we should make an agreement between employer and employee, the best for me and you, i want to demand a job performance of 7 from you, so everyone gets a piece of the cake, and in my opinion 7 ist the best for both of us.	1,6
13	2	13	L	Hello. I would be happy, if you made a contribution of 5 or 6, so the game ends quite well for either of us and everyone benefits from it :) You only lose 60 Cent and I receive 3 Euros in exchange. That'd be ideal and good for our organizational climate :P	1,6
14	2	17	L	Good evening :-) I think it'd be the fairest, if you chose a contribution of 6,7 or 8, so we both benefit from this. Still have some fun with the experiment	1,2,6
15	2	25	H	I' asking you to choose a job performance of 7. Then I'd receive 37.5 ECU and you 40 ECU. We'd both profit.	1,5,6
16	2	26	H		9
17	2	27	H	Dear partner, we're both here for the same reason. I want to make money in this experiment, yet I don't want to earn more than you do. I hope we can cooperate with a very good result for both of us. If you choose a contribution of 7, I earn 37,5 ECU. You earn even more. Greetings, to a good cooperation =)	1,2,5,6
18	2	28	L	I suggest, you pick a contribution of 8, so you receive a relatively fair income of 38 ECU and me an income of 40 ECU, which would be relatively equal!	1,2,5
19	2	29	H	Hello employee A. I picked you and gave you the opportunity to earn at least 3 times as much as the competitor. Insofar I'd be glad, if you'd give me the chance to earn at least half as much as you do, by choosing a medium contribution of 5. Thank you.	1,2
20	3	12	H	Choose the golden 7, because only seven is fair for both sides. So (make a) job performance of 7 and both are pleased.	1,2,6

table continues on next page

Table 10 Messages and Categories, Second Part

N	Session	Principal ID	Agent Chosen	Message	Categories
21	3	13	L	Hello, you are employed, I expect you to make a high contribution in favor of the company. Your employer	2,6,7
22	3	16	H	Dear employee A, in an experiment you have to keep quiet. Chewing gum and any sort of contact to other participants is forbidden. I have the feeling, that you are the right one for this job and I hope, to be proved correct.	7
23	3	17	L	Hello employee B! i picked you, even though i generally receive a lower income with you? sort of rescued you from unemployment. This is my first sign of confidence in your good work. My working suggestion: Your job performance is 8. Then we both make good money - and almost equal: You 38 ECU - me 40 ECU...I count on you!	3,4,7
24	3	19	H		9
25	3	23	H	Dear employee A, I picked you, since you are going to get me the highest profit. To be fair it'd be great, if you didn't choose a job performance too low, so we both get something out of this. Yours sincerely your employer.	2,6
26	3	24	H	Hi Hi! I hope you are playing fair and chose a contribution through which be both go out of this with a decent earning. I'd suggest you choose a contribution of seven. That gives you 4 Euro and me 3,75 Euro. Thank you!	1,5,6
27	3	25	H	For reasons of fairness I'd say, you act in a manner, that makes both of us profit in the end. I'd expect a job performance of at least 7 from you, since we both receive an almost equal income.	1,2,6
28	3	26	H	Dear employee, we welcome you to the company. For the distribution of incomes I suggest you a contribution of 8. That makes both income about equal, with regard to the entrepreneurial risk.	1,6
29	4	2	H	in my judgement 7 is a good choice. You still get a higher share than me and I receive almost as much as you. Of course you can choose 1 and leave the money here. But this would not give you much more than one Euro profit.	1,5,6
30	4	5	H	hey, congratulations. You got the job. I know, if you give me only one ecu, you'll get the highest possible share, but if you give me a 2 it'll only cost you one ecu and i already get 5 more. Since i gave the job to you, i'd be nice, if we could agree on a value, where we both receive a similar share.	6,7
31	4	8	H	Hello employee A, I decided on you, since your chosen contribution and the income connected to it are higher. Therefore I assume, you do a better job than employee B and of course deserve a higher income. Thus I hope you are more motivated. Best regards, your employer	3,6

table continues on next page

Table 10 Messages and Categories, Third Part

N	Session	Principal ID	Agent Chosen	Message	Categories
32	4	13	H	I think with a contribution of 5 we both get quite well through this round.	1,6
33	4	14	H	Hey, I picked you as my employee and would suggest a contribution of 6 ECUs.	1
34	4	16	L	I ask you to choose a contribution of 7 or 8. Then both of us will have a balanced earning (you have 40 / 38 and me 35 / 40). I'm asking you to also decide in my interest.	1,4,5,6
35	4	18	H	I think it'd be fair, if you contribute at least 2 ECU, because then everyone in our group would have at least 10 ECU and you'd even go out with 5 times as much. If you decide differently there's nothing I can do about it, but consider, that I am the one who gave you the chance to earn more money at all	2,5
36	4	19	H	One hands cleans the other	6
37	4	23	L		9
38	4	25	H	dear A, I'd like to ask you to contribute 7 or 8 units of work, since that'd make our income about equal, with relatively little financial effort for you, I'd benefit from that a lot. Thank you very much and to a good cooperation :), your employer	1,6,7
39	5	4	L	I suggest, you choose 7 or 8, since in that case, we'd receive almost the same profit.	1,2
40	5	10	L		9
41	5	12	H		9
42	5	14	H	For the employee and the employer a medium sized contribution of the employee would be advantageous. This choice might be rewarded by the employer in the second part of the experiment. I'm looking forward to the collaboration :)	2,6,7,8
43	5	16	L	Hello, I picked you, despite of the lower income proportion compared to A, with the expectation, that you choose a contribution of 8, since that's give us a relatively balanced income. Regards	1,2,3,6,8
44	5	19	H	Hello, here is your employer :) I'm giving you a contribution suggestion of 5 or higher?air, isn't it?	1,2
45	5	20	H	Hello, I picked you, because together we can receive a higher profit. I'd like to ask you to choose a contribution of 7, because then the profit will be distributed among us equally. With this distribution I already earn less than you!	1,2,7
46	5	25	H	I suggest to set the contributions equitably and if necessary, dependent on the position in the company (e.g. considering the distribution of responsibilities among the company). Nobody should lose on this.	2

table continues on next page

Table 10 Messages and Categories, Fourth Part

N	Session	Principal ID	Agent Chosen	Message	Categories
47	5	27	L	Hello! I think we are going to work together well (since B is my lucky letter)! I'd be glad, if you chose a high contribution, because either profit will be optimized! Have fun and good luck!	6,7,8
48	5	29	H		9
49	6	1	L	How about agreeing on a mean of 5? Then everyone benefits from this ;-)	1,2,6
50	6	2	H	Hello, please choose a contribution of 7 or 8. Then either of us gets the highest profit. Thanks a lot!	1,6
51	6	4	H		9
52	6	5	L	Hello, it'd be nice, if we could meet in the middle somehow, so we both get something out of this, which means approximately the same profit for both.. ;)	6,7
53	6	11	H	i'm in favor of both (employer, employee) choosing a contribution of 7 or 8. thus both have about the same income?f i understood everything correctly	1,2,6
54	6	19	H	Hello, for it to be fair, I'd suggest a contribution of 7. This would mean a profit of 4 instead of 5 for you, so a loss of 1. But my profit of 3,75 ist still less. If you chose a contribution of 1, I'd get less than the unemployment compensation, employee B receives. That'd not be fair somehow.	1,2,5
55	6	20	H	are we agreeing on a contribution of 7 ECU? Then i get 37,5 ECU and you 40 ECU, actually that'd be the fairest for both of us.	1,5,6
56	6	23	H	Hello team member! If you choose a contribution of 7 ECU, we both earned about the same, so we'd have a win-win-situation! Best regards and lots of fun with the experiment ;-)	1,6,7,8
57	6	24	L	A contribution of 8 would be most balanced for both sides, concerning the income. Thus both sides receive a relatively high result.	1,6
58	6	28	H	Dear employee, welcome to the Jenaer Company-Island. We sell cleaning supply and are specialized on brushes and scrubbers made from valuable ecological wood. I chose you hoping to win engaged employees, who put motivation and trust into our valuable scrubbers and into our company's team.	7,8

Table 10 Messages and Categories, Fifth Part

Appendix B: Instructions

In this section, we report the instructions for our four treatments. As benchmark we use the instructions for the *no-communication* treatment (NC) and report, in parentheses, the text which is specific for the other treatments. We will refer to the *communication*, *suggestion* and *random device* treatments as NC, S and RD, respectively. The post-experimental questionnaire is available upon request.

Welcome! You are about to participate in an experiment funded by the Max Planck Institute of Economics. Please switch off your mobile and remain quiet. It is strictly forbidden to talk to the other participants. Whenever you have a question, please raise your hand and one of the experimenters will come to your aid. You will receive 2.50 euros for showing up on time. Besides this, you can earn more. The show-up fee and any additional amounts of money you may earn will be paid to you in cash at the end of the experiment. Payments are carried out privately, i.e., the others will not see your earnings. During the experiment we shall speak of ECUs (Experimental Currency Unit) rather than euros. The conversion rate is 10 ECUs = 1 euro. This means that for each ECU you earn you will receive 0.1 euro. To simplify, in the following we will only be speaking of male participants. This is to be understood as gender neutral. The experiment consists of two parts. The instructions for the first part follow on the next page. The instructions for the second part will be distributed after all participants have completed the first part. All instructions are identical for all participants, and we read them aloud such that you can verify them.

B.1. Instructions of part one

B.1.1. Group formation In this experiment, you will be matched with two other participants to form a group of three persons. The three group members will interact with each other just once. We will refer to each group as a firm and to the three group members as Employer, Employee A, and Employee B:

- with 1/3 probability you will be the Employer;
- with 1/3 probability you will be Employee A;
- with 1/3 probability you will be Employee B.

This means that each participant has the same probability to be selected as Employer, Employee A, and Employee B. You will be assigned to a group and to a role entirely at random. The computer will inform you of your role before the decision-making part of the experiment begins. No one of the participants will at any point of the experiment know the identity of the other people in his group. Therefore all decisions are made anonymously.

B.1.2. Decisions within a firm The structure of decision making within each firm is as follows. There is a job to be offered.

First, [**C, NC and S:** the employer chooses] [**RD:** a random mechanism picks]

- one of the two employees to hire and to work for the employer
- [**C, S** and he can send one message to the chosen employee].

Then the selected employee

- learns whether the [**NC, C, S**: employer] [**RD**: random mechanism] selected him,

- [**C, S**: reads the message the employer has sent him, and]
- he chooses an effort level (effort): an integer number from 0 to 10 (included).

The employee who is not selected receives an unemployment benefit equal to 10 ECUs.

B.1.3. Communication [**C:** The employer may send one message to the employee he has selected. In this message, he can say anything he likes, including making a suggestion what he thinks is the best approach to the experiment, what he intends with his selection, or what he would like the other to do. The chosen employer can read the message before choosing the level of effort. However, there are two restrictions on the types of messages that he may send.

- First, he may not send a message that attempts to identify himself to other group members. Thus, he may not use his real name, nicknames, or self-descriptions of any kind (e.g., I am Smith here,I'm the guy in the red shirt sitting near the window; or It's me, Sandy, from French class, or even, e.g., I am a woman [Latino, Asian-American, etc.], etc...) To make sure that the rule of anonymity is adhered to, each message will be screened by a monitor who is a member of the experiment team before it is seen by the other member of your group.
- The second restriction is that there must not be any threats or promises pertaining to anything that is to occur after the experiment ends. To make sure that neither of the two restrictions is violated, all messages are going to be read by a member of the experimental staff before they are shown on the screen of the chosen employee.

If a message violates one of the restrictions, it is not going to be sent to the employee, and the employer does not receive payment for the experiment. The employer has a maximum of 3 minutes available to write a message. A clock will show you how much time you have left in the communication period.]

B.1.4. Suggestion [**S**: The employer may send one message to the employee he has selected. In this message, he can ONLY indicate a number between 0 and 10 representing the effort level he would like the other to choose.

The chosen employer can read the message before choosing the level of effort

The messages sent can only contain a number between 0 and 10 and no words or symbols. To make sure that this restriction is not violated, all messages are going to be read from a member oft he experimental staff before they are shown on the screen of the chosen employee.

If a message violates one of the restrictions, it is not going to be sent to the employee and the employer does not receive any payment for the experiment.

The employer has a maximum of 3 minutes available to write a message. A clock will show you how much time you have left in the communication period.]

B.1.5. Distribution of earnings within a firm Earnings within the Firm are determined according to the following rules:

Earnings of the employer: The employer receives revenue from the effort chosen by the selected employee and incurs costs from the wage paid to him. The revenue produced by the effort chosen by the selected

employee is the following: If the selected worker is **employee A**, then the revenue produced equals 50 times the effort chosen by the employee, plus 0.05, times 0.10 . Therefore the employer's earnings are:

Employer's earnings = [50*(effort chosen by employee A+0.5)*0.10]

if effort >0 while employer's earnings = 0 if effort = 0.

Table B.1.5 reports the earnings (in ECUs) for the employer when employee A is selected for each effort level.

Chosen effort	0	1	2	3	4	5	6	7	8	9	10
Income of employer if A is selected	0	7.5	12.5	17.5	22.5	27.5	32.5	37.5	42.5	47.5	52.5

If the selected worker is **employee B**, then the revenue produced equals 50 times 0.10 times the effort he chooses. Therefore the employer's earnings are:

Employer's earnings = [50 * (effort chosen by employee B) * 0.10]

if effort >0, while employer's earnings = 0 if effort = 0.

Table B.1.5 reports the earnings (in ECUs) for the employer when employee B is selected for each effort level.

Chosen effort	0	1	2	3	4	5	6	7	8	9	10
Income of employer if B is selected	0	5	10	15	20	25	30	35	40	45	50

Please note that in both cases, the employer's earnings increase with higher effort levels. For example,

- when the [employer] [RD:random mechanism] selects employee A and
  - —chooses effort = 0, the earnings for the employer are 0 ECUs;
  - —if instead he chooses effort =5, the earnings for the employer are 27.5 ECUs.
  - —if instead he chooses effort =9, the earnings for the employer are 47.5 ECUs.
- When the [employer] [RD: random mechanism] selects employee B and employee B:
  - —chooses effort = 3, the earnings for the employer are 15 ECUs;
  - —if instead he chooses effort =6, the earnings for the employer are 30 ECUs.
  - —if instead he chooses effort =8, the earnings for the employer are 40 ECUs.

Please note that the numbers used in all the examples were selected arbitrarily. They are not intended to suggest how you might decide.

Earnings for the selected employee:

Once the [employer] [RD:random mechanism] chooses the employee, the selected employee chooses the level of effort to exert and consequently his earnings as shown in Table B.1.5:

Effort	0	1	2	3	4	5	6	7	8	9	10
Income of chosen empl.	0	50	49	48	46	44	42	40	38	35	32

For example,

- when the selected employee:
  - chooses effort=2, his earnings are 49 ECUs
  - chooses effort = 5, his earnings are 44 ECUs; if instead
  - he chooses effort =8, his earnings are 38 ECUs.

Earnings of the non-selected employee: The employee who is not selected receives an unemployment benefit equal to 10 ECUs.

B.1.6. What happens next?

- Before the experiment starts, on the next screens, you will be asked to answer a few questions.
- When the experiment starts, you will be informed about whether you are an employer or an employee in this experiment. In case you are an employee, it will be specified whether you are employee A or employee B.

B.1.7. Summary We will now briefly summarize the content of the instructions you have just read. At the beginning of the experiment, you will be randomly matched with two other participants to form a group of three, and you will be randomly assigned a role within this group which we will call "firm." You will be either the employer or employee A, or employee B. The structure of decision making within each firm is as follows.

- First, the [**NC, C, S:** employer] [**RD**: random mechanism] chooses to hire one of the employees. The employer's earnings increase with higher effort levels of the selected employee.
- Next, the selected employee learns that he has been chosen. He then chooses an effort level (Effort). The selected employee's earnings decrease with higher effort.
- The non-selected employee receives an unemployment benefit = 10 ECUs

Please note that the decision task of this part of the experiment will be performed only once. Please, raise your hand if you have any questions.

B.1.8. Hypothetical examples for demonstration purposes

• Assume that the [**NC, C, S**:employer] [**RD**:random mechanism] chooses employee B. Employee B chooses the effort = 9. This situation results in the following earnings:

— employer's earnings: The employer receives revenue from the effort of employee A, i.e.: 50*9*0.10 = 45 ECUs. The earnings of the employer are 45 ECUs.

— employee A's earnings: employee A receives an unemployment benefit of 10 ECUs. The earnings of employee A are 10 ECUs.

— employee B's earnings: employee B receives a wage of 50 ECUs and chooses an effort = 9. The earnings of employee B are 35 ECUs.

• Assume that [**NC, C, S**:employer] [**RD**:random mechanism] chooses employee A. Employee A chooses the effort = 8. This situation results in the following earnings:

— Employer's earnings: The employer receives revenue from the effort of employee A, i.e.: 50*(8+0.5)*0.10 = 42.5 ECUs. The earnings of the employer are 42.5 ECUs.

— employee A's earnings: employee A receives a wage of 50 ECUs and chooses an effort = 8. The earnings of employee A are 38ECUs.

— employee B's earnings: employee B receives an unemployment benefit of 10 ECUs. The earnings of employee B are 10 ECUs.

B.2. Instructions of part two

In this part, you will face a situation similar to that encountered in the first part. As before:

• you will be matched with two other participants;

• the three group members will be identified by as employer, employee A, and employee B.

• your role is the same as in part one (i.e., you will be the employer, employee A, or employee B, if you previously were, respectively, the employer, employee A, or employee B);

• the [**C, NC:** employer in your group] [**RD**: random device] selects one between the two employee.

• The selected employee then chooses an effort level between 0 and 10.

• The employee who is not selected gets an unemployment benefit = 10 ECUs.

• The earnings within the firm are divided as in part one.

But now

• Part two consists of 5 rounds. In every round, you will be placed in a NEW group of three persons (i.e., the two participants you will be matched with are different ones in every round);

• You will not be informed of the identity of the participants you will be matched with, but it will never be the same in any group.

• How we determine your earning in part two

— Once part two is over, one participant will be randomly selected.

— This participant will determine which of the 5 rounds of part two is paid by making a random draw from the urn containing 5 balls (numbered 1 to 7).

— The earnings corresponding to this round will be converted to euros and paid out in cash.

— The outcome of the draw will apply to all the participants. Thus, only 1 of the 5 decisions you will make in this part will be paid out.

• Obviously, each decision has an equal chance of being used in the end. So think carefully when making your choice in each round!

B.2.1. Control questions The questions on the next screens will help us to know whether you understood the instructions. Attention: the numbers are chosen randomly. They should not suggest to you a way of playing the game.

• Think about the role of the employer.

1. How much is the income of the employer when he selects employee A, and employee A chooses an effort of 2?

2. How much is the income of the employer when he selects employee B, and employee B chooses an effort of 9?

• Think about the role of employee A.

1. How much is the income of employee A when he is selected by the employer and chooses an effort of 6?

2. How much is the income of employee A when he is selected by the employer and chooses an effort of 0?

• Think about the role of employee B.

1. How much is the income of employee B when he is selected by the employer and chooses an effort of 8?

2. How much is the income of employee B when he is selected by the employer and chooses an effort of 1?