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Strategic Use of Unfriendly Leadership and Labor Market Competition: An Experimental Analysis

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Abstract

A significant portion of the workforce experiences what we term 'unfriendly leadership,' encompassing various forms of hostile behavior exhibited by managers. The motivations driving managers to adopt such behaviors are insufficiently understood. To explore this phenomenon, we conducted a laboratory experiment examining the relationship between managers' use of unfriendly leadership and labor market competition. We discern two labor market states: excess labor demand, where managers compete to hire workers, and excess labor supply, where workers compete to be hired. By perceiving unfriendly leadership as a performance-contingent punishment device inflicting discomfort on workers, we hypothesize that managers are less inclined to resort to unfriendly leadership when they compete to hire workers. We find that managers tend to engage in unfriendly leadership more frequently and intensely under excess labor supply, in comparison to excess labor demand. This trend is particularly pronounced among male participants. Additionally, workers display a decreased likelihood of accepting employment offers from more unfriendly managers and exert lower levels of effort when working under such managers, indicating that unfriendly leadership is costly.

Keywords: leadership style; labor market competition; non-monetary incentives

JEL classification: L20; M14; M55

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1 Introduction

According to Schat et al. (2006), 13.5% of the U.S. workforce report experiencing hostile leadership behaviors, which have typically been depicted as a sign of dysfunctional leadership. The more recent leadership literature, however, suggests that a manager's hostility may not necessarily imply their incompetence as a leader but may be part of deliberate leadership strategy (Ferris et al., 2007; Salin, 2003; Tepper et al., 2012).[1] Using an economic model, Dur et al. (2022) study the strategic implementation of an 'unfriendly leadership style,' which they define as hostile behavior adopted by a manager in response to a worker's poor performance. They show that, even though unfriendly leadership is socially inefficient, managers may substitute performance pay with unfriendly leadership to elicit higher effort from workers at lower wage costs. Whether or not managers exercise unfriendly leadership is driven by the prevailing labor market conditions, which determine whether workers earn rents. If workers earn rents when working for an unfriendly manager, unfriendly leadership can be a profitable incentive device. In this paper, we resort to the idea of leader hostility as a non-monetary punishment for poor worker performance and introduce different states of labor market competition as a source of worker rents. To our knowledge, we provide the first experimental evidence of a causal relationship between the use of unfriendly leadership and labor market competition.

To begin with, we propose a simple model where workers earn a fixed wage and managers can influence worker behavior only through their choice of leadership style. A manager (she) can choose between an unfriendly leadership style and no leadership to motivate a worker (he). When the manager adopts an unfriendly leadership style, she commits to engaging in hostile behavior in response to low work performance. No leadership means that the manager will not respond to the worker's performance. Compared to no leadership, the adoption of unfriendly leadership entails two opposing forces on worker behavior, a positive *incentive effect* and a negative *reciprocal effect*. The incentive effect arises because being exposed to hostile behavior when delivering poor performance creates disutility for the worker, and working harder lowers the probability of poor performance. The reciprocal effect occurs because the worker perceives the adoption of unfriendly leadership as an unkind intention of the manager. To retaliate, the worker can reduce the manager's expected payoff by implementing low effort or by refusing to work for the manager in the first place. The adoption of unfriendly leadership includes a commitment to a certain intensity of hostile behavior. A higher intensity increases both the incentive effect and the worker's propensity to retaliate. Such a setting where a manager may scold

[1] Leadership scholars use various labels to classify hostile leadership behaviors, e.g., incivility (Pearson et al., 2000), toxicity (Lipman-Blumen, 2010), bullying (Harvey et al., 2007), or abusive supervision (Tepper, 2000). Leaders that have been accused of displaying hostile leadership include Tesla's CEO Elon Musk (Levin, 2021) or Yahoo's former CEO Marissa Mayer (Carlson, 2012). The former basketball coach Bobby Knight is sometimes depicted as an example of strategic and seemingly effective bullying (Ferris et al., 2007).

low performance but will not praise high performance may reflect an organization where praise is not part of the workplace culture, e.g., because high performance is generally considered the standard and taken for granted. For example, according to Kantor and Streitfeld (2015), under former CEO Jeff Bezos, standards at Amazon were "unreasonably high," and employees felt that their work was never good enough. The workplace culture was described as "bruising" and "sometimes-punishing." A former employee said "Amazon is where overachievers go to feel bad about themselves."[2]

Our model shows that when there is *excess labor demand* and hence not all managers can employ a worker, managers try to make their contracts more attractive relative to those of their competitors by reducing the intensity of unfriendly leadership. This competitive undercutting entails an equilibrium where all managers in the market abstain from adopting an unfriendly leadership style. In contrast, if there is *excess labor supply* such that there are more workers than employment opportunities, managers may adopt an unfriendly leadership style and choose its intensity to optimally balance the incentive effect and the reciprocal effect.

According to our theoretical model, we hypothesize that managers will be more inclined to adopt an unfriendly leadership style when there is excess labor supply. To examine this hypothesis, we conduct a laboratory experiment, mirroring our model. The design incorporates a one-shot gift-exchange game (Akerlof, 1982) and laboratory labor market features of a one-sided auction (Brandts et al., 2009; Brown et al., 2004; Fehr et al., 1998; Fehr et al., 1993). In our experimental labor markets, managers specify their leadership style in their contract offer, which determines the manager's response to low performance: a number of hostile messages a worker will receive if his performance is low. Workers, in turn, must decide whether to accept the contract offers. Hired workers also choose effort levels, which affect their performance. In one treatment, each labor market comprises two managers and one worker, reflecting excess labor demand. In another treatment, one labor market includes two managers and three workers, corresponding to excess labor supply. By comparing the managers' choices of leadership styles across the two conditions, we identify the effect of labor market competition on leadership styles. We say that a manager adopts an unfriendly leadership style if the manager sends at least one hostile message in the event of low performance. The degree of unfriendliness refers to the number of hostile messages and ranges from zero to 10.

Our main results show that managers are more likely to adopt an unfriendly leadership style under excess labor supply than under excess labor demand. Moreover, the average degree of unfriendliness of contracts is higher under excess labor supply. These observations are mainly driven by male participants, who employ unfriendly leadership more frequently and with higher degrees of unfriendliness when there is excess labor sup-

[2]To incorporate the possibility of choosing a 'friendly leadership style,' we conducted a second experiment, which we describe below.

ply, whereas non-male managers are equally unlikely to engage in unfriendly leadership regardless of the competitive state of the market.[3]

We also investigate the workers' response to the leadership style. First, we find no evidence for the incentive effect of unfriendly leadership. On the contrary, the workers reduce their effort levels as well as contract acceptance rates as the degree of unfriendliness of the leadership style increases. Second, the workers' adverse reaction to unfriendly leadership is less pronounced when the labor market is characterized by an excess labor supply. This suggests that workers perceive their managers' hostile behavior as more acceptable when they are disadvantaged in the labor market.

In practice, depending on the workplace environment and the managers' personal characteristics, a manager may be able to choose between an unfriendly and a friendly leadership style (Dur et al., 2022). In the latter case, managers motivate workers by expressing recognition and praise in case of high performance. To study how the availability of friendly leadership affects managers' choices, we conduct a second experiment, where managers can choose between unfriendly leadership, friendly leadership, and no leadership. A friendly leadership style involves written messages of approval when performance is high. Our model predicts that managers prefer a friendly leadership style to an unfriendly one under excess labor demand. In contrast, unfriendly leadership may still be adopted under excess labor supply when certain parameter conditions are met. In our experiment, the majority of managers adopt a friendly leadership style with a similar degree of friendliness in both labor markets with excess demand and excess supply. We conjecture that having the option to be friendly emphasizes the negative reciprocity concern (i.e., concern for being perceived as unkind), hindering the managers from adopting an unfriendly leadership style even under excess labor supply.

The remainder of the paper is organized as follows: In section 2, we discuss the related literature. In section 3, we introduce the details of our experimental design. In section 4, we present the theoretical model to build hypotheses. We report our results in section 5. In section 6, we present our second experiment. Section 8 concludes.

2 Related Literature

Most closely related to our paper is Dur et al. (2022), who theoretically analyze the strategic choice between friendly and unfriendly leadership styles in a moral-hazard setting with performance pay. They show that the existence of a binding wage floor for workers—which can be due to trade union wage bargaining, minimum wage legislation, or limited-liability protection—can entail the use of unfriendly leadership. Although the adoption of this style is socially inefficient, it reduces the need for high bonus pay, which

[3]Non-male participants include females and individuals who report their gender as 'diverse' or 'prefer not to say.'

allows the firm to extract rent from the worker. Following Dur et al. (2022), we consider unfriendly leadership as a performance-contingent, non-monetary incentive device. In contrast to Dur et al. (2022), who investigate the impact of varying wage floors on the combination of performance pay and leadership styles, we keep the wage fixed and vary the type of labor market competition. We incorporate social preferences of workers toward managers in our model, while it is the other way around in Dur et al. (2022). In spite of these differences, both models corroborate the idea that firms may benefit from using unfriendly leadership as an incentive device if workers earn a rent when being employed by an unfriendly manager. To the best of our knowledge, we are the first to provide experimental evidence on a causal relationship between labor market conditions and the adoption of unfriendly leadership.

Leadership research has addressed "the dark side of leadership" (Dinh et al., 2014; Mackey et al., 2021), which include studies on destructive (Einarsen et al., 2007), abusive (Tepper et al., 2017), or toxic leadership (Lipman-Blumen, 2010). This literature explains leader aggression with individual-specific (e.g., personality traits) or organization-specific characteristics (e.g., organizational structure, norms) (Martinko et al., 2013). Salin (2003), Tepper et al. (2012), and Ferris et al. (2007) distinguish the strategic adoption of such leadership behaviors from impulsive expressions of hostility. Tepper et al. (2012) suggest that enhancing control over subordinates, impression management, or reacting to injustice can be strategic motives behind abusive supervision. Ferris et al. (2007) conceptualize leader bullying as a part of organizational politics and describe leader bullying as a pursuit of influence and particular images. Salin (2003) supports this view by providing correlational evidence regarding the relationship between the competitiveness of the organizational environment, the intensity of organizational politics, and bullying. Walter et al. (2015) support the instrumentality of leader hostility and find a negative correlation between abusive supervision and perceived subordinate performance, moderated by the degree of leader outcome dependence on subordinate performance.

The emergence and consequences of hostile leadership behaviors are generally studied by surveying workers' perceptions of such behaviors and the self-reported psychological (or physical) injury they cause (Martinko et al., 2013; Tepper, 2007; Tepper et al., 2017). However, some papers also study workers' behavioral responses by experimentally manipulating subjects' exposure to different leadership behaviors. For example, Van Kleef et al. (2009) and Van Kleef et al. (2010) study differences in team performance in a military simulation in response to anger expression via pictures or feedback videos, respectively. The results show that the effectiveness of anger expression depends on followers' epistemic motivation (Van Kleef et al., 2009) or agreeableness (Van Kleef et al., 2010). Melwani and Barsade (2011) show enhanced individual performance in a business strategy simulation task after getting contemptuous written feedback. We contribute to this strand of research by studying how workers adapt their behavior in a contractual relationship

in response to unfriendly leadership. More importantly, with our laboratory setting we endogenize the choice of leadership style, which is directly observable, not resorting to subordinates' reports and evaluations, with a simple measure of hostility. We also add a new perspective to the emergence and consequences of leader hostility by examining the role of a general institutional factor, the states of labor market competition, that are not specific to individual managers or organizations. By experimentally manipulating the state of labor market competition, we provide a clean test of its impact not only on the leadership style choice of managers but also on the effectiveness of leadership.

We also contribute to the experimental literature that studies the use and effect of ex-post communication. A typical design feature of these studies is to add a one-way communication stage after payoff-relevant interactions between players. Ellingsen and Johannesson (2008) and Xiao and Houser (2009) find that the prospect of ex-post communication in the form of written messages affects behavior in a one-shot dictator game. They allow recipients to write and send a message to their matched divider *after* learning about the division. The anticipation of possibly receiving a message from the counterpart makes the dividers behave less selfishly. Our paper differs from this literature in two important ways. First, we highlight the strategic role of communication to achieve a desired outcome through the way in which we elicit our managers' endogenous choice to engage in communication. In our study, players' choice to communicate disapproval (or approval) is made and revealed ex ante and implemented ex post, in a one-shot interaction that is free from any emotional residue that may develop during repeated interaction. This approach allows managers to make a strategic choice of whether to utilize communication under a 'cold' state and suppresses the urge to express emotion in 'the heat of the moment.'[4] Second, we study the differences in the use of communication across varying market conditions, which enables us to detect strategic adjustments in communication in response to an institutional factor.

Our paper, in particular our second experiment on the use of friendly leadership, is also related to a laboratory experiment by Eriksson and Villeval (2012). They compare employers' use of a non-monetary reward, a thumbs-up symbol, across varying states of market competition: a balanced labor market, a market under excess labor demand, and a market under excess labor supply. Eriksson and Villeval (2012) suggest that there are strategic motives for using the reward as a coordination device to build relational contracts in repeated interactions. They provide evidence of such motives by manipulating the size of the expected profit of long-term relationships through the varying states of market competition and showing that the rewards are used less frequently under excess demand where the expected profit is low.[5] In our setting, the use of friendly leader-

[4]Loewenstein (2005) reviews research about the 'hot-cold empathy gap.' One form of the empathy gap is the "cold-to-hot" intrapersonal empathy gap: When people are in cold states, they tend to underestimate the effect of their feelings in future hot states (Loewenstein, 2005, p. S49).

[5]A number of papers study the effect of similar symbolic rewards on worker behavior in field settings

ship as an instrument to motivate better performance does not vary across labor market conditions.

Finally, Kocher et al. (2013) also use a laboratory experiment to examine managers' choice of leadership style, which can be 'democratic' or 'autocratic' in their setting and reflects whether managers incorporate the preferences of other team members in their decision-making. They focus on how managers' other-regarding preferences impact their choice of leadership style. In contrast to our paper, there is no scope for strategic choices of leadership styles in their experiment. Interestingly, similar to us, they find gender differences in leadership style adoption.

3 Experimental Design and Procedures

3.1 General setting

Our study examines how different states of labor market competition affect managers' use of unfriendly leadership as well as workers' responses in terms of contract acceptance and effort in experimental labor markets. Central to our experiment are the following three elements: The first element is a modified **gift-exchange game** as initially introduced by Akerlof (1982). A manager can sign a contract with a worker to complete a project, whose outcome is relevant for the manager's profit. When hired, the worker receives a fixed wage and can expend costly effort to work on the project. To do so, the worker chooses an effort level e, which is an integer between zero and 10. The effort cost follows the function $c(e)$ represented in table 1. The manager can neither observe nor contractually enforce the worker's effort level but observes the project outcome. The outcome is binary, either success or failure, with the probability of success being $\frac{e}{10}$ and the probability of failure being $1 - \frac{e}{10}$.

Table 1: Worker's effort cost, $c(e)$

Effort level (e)	0	1	2	3	4	5	6	7	8	9	10
Effort cost (in ECU)	0	0.2	0.7	1.6	2.9	4.5	6.5	8.9	11.6	14.7	18.2

The second central element of our experimental design is the **unfriendly leadership style** that managers can exercise. The manager decides on the composition of a text that workers have to read and replicate by typing when the project fails. Overall, the text comprises 10 messages, each with approximately 13 words. The default content of these messages is framed to have a neutral meaning and include trivial facts about the calendar, seasons, and time (e.g., "The four seasons, spring, summer, autumn, and winter, follow

(e.g., Bradler et al., 2016; Grant & Gino, 2010; Kosfeld & Neckermann, 2011), but not its strategic use by managers.

one another."). The managers can replace some or all of these messages with unfriendly content of a similar length from a list of messages pre-written by experimenters (e.g., "If there were only employees like you, every company would go bankrupt!"). Thus, the number of replaced messages can range between zero and 10. When the manager replaces at least one message, we say that she adopts an unfriendly leadership style. The specific number of replaced messages determines the manager's *degree of unfriendliness*. The remaining messages are of neutral content so that the worker always receives a list of 10 messages if the project fails. If the project is a success or if the worker is not hired, he receives 10 default messages of neutral content and has to replicate them in a typed list. Thus, reading and typing messages is not an additional workload for hired workers whose project failed but an experimental task for all workers.

The list of the unfriendly messages that subjects might have to type was presented to all subjects at the beginning of the experiment together with the experimental instructions, which can be found in supplementary materials C.1. We deliberately do not employ free-form text messages from managers to workers to keep a tight control over the degree of unfriendliness and its measurability. We test the perception of these messages in a separate survey. We find that they are perceived as significantly unpleasant, hostile, and socially unacceptable. Moreover, when we provide the survey participants with an opportunity to swap some or all of the messages for neutral ones, 27% of the participants forego monetary payoffs to avoid typing unfriendly messages.[6]

Finally, the third central element of our experimental design is the **experimental labor market**, where managers offer work contracts and workers decide whether or not to accept them (Brandts et al., 2009; Brown et al., 2004; Fehr et al., 1998; Fehr et al., 1993). In our experiment, the wage was set by the experimenter and was constant for all employed workers. A manager thus chooses only the number of unfriendly messages that will be sent to the hired worker if the project fails. The number of unfriendly messages is specified in the contract, that is, the manager commits to her leadership style ex ante. Each manager offers one contract and can close only one contract with one worker. Likewise, a worker can work for at most one manager. When the contract is concluded, the manager pays the hired worker a fixed wage of 20 Experimental Currency Units (ECU).

3.2 Payoffs

A manager's payoff (X_M) depends on the labor market outcome and the outcome of her project. There are three possible cases. If she hires a worker and the project succeeds, the manager earns 40 ECU minus the worker's wage of 20 ECU, resulting in a net profit of 20 ECU. If she hires a worker and the project fails, she earns 25 ECU minus the

[6]For details, see the appendix A.1.

worker's wage of 20 ECU, resulting in a net profit of 5 ECU. If the manager hires no worker, the manager's net earnings are 0 ECU. Thus, the manager's expected payoff can be formalized as follows:

$$X_M = \begin{cases} \frac{e}{10} \cdot 40 + \left(1 - \frac{e}{10}\right) \cdot 25 - 20 & \text{if the manager hires a worker;} \\ 0 & \text{otherwise.} \end{cases}$$

A worker's payoff (X_W) depends on the labor market outcome and his effort. If hired, a worker earns the wage of 20 ECU minus the effort cost (see table 1), regardless of the project outcome. If the worker is not hired, he earns 0 ECU. The worker's payoff is, therefore:

$$X_W = \begin{cases} 20 - c(e) & \text{if the worker is hired by a manager;} \\ 0 & \text{otherwise.} \end{cases}$$

The conversion rate was 2 ECU to €1.

3.3 Treatments

We employ two treatments that correspond to different states of labor market competition: Excess Labor Supply treatment (henceforth *ELS*) and Excess Labor Demand treatment (henceforth *ELD*). The number of managers in each labor market is always two. In ELS, there are three workers in each labor market so that workers compete for work contracts. In ELD, there is only one worker in each labor market so that managers compete for the worker. Thus, the only difference between treatments is the number of workers available in each labor market.

3.4 Procedures

The study was pre-registered as AEARCTR-0009365 (Danilov et al., 2022). The experiment was programmed with zTree (Fischbacher, 2007) and conducted at the Laboratory for Experiments in Economics at the Technische Universität Berlin in October 2022. The recruitment of 256 individuals was done via ORSEE (Greiner, 2015).[7] The vast majority (95.7%) of the subjects were students.[8] The average age of the subjects was 27, and the share of male subjects was 62%. More information on demographics by treatments can be found in the appendix A.2, table A2. All subjects participated in the experiment only once, and there was no in-person interaction between participants. The experiment

[7]The sample size is based on our preregistration of power analysis with an effect size of 0.5 (Power 0.8, alpha 0.5) for the mean difference between treatments regarding the leadership style choices.

[8]The field of study included Engineering (32.8%), Applied, Natural, or Formal Sciences (31%), Economics and Business Administration (12.4%), Professions (24% including Law, Architecture, Medicine, Pedagogy, and Media studies), Social Sciences (2.6%), and Humanities (3.6%). 13.5% of the subjects did not provide information on their field of study.

lasted for about 50 minutes, during which subjects earned €12.80, on average, including a participation fee of €7.

Each session consisted of 16 subjects, who participated in only one of the treatments. One part of the randomly selected subjects was assigned to the ELS treament and the other to the ELD treatment. The roles of workers and managers were also randomly assigned. In the ELS treatment, the subjects were randomly allocated to groups of five, consisting of two managers and three workers. In contrast, in the ELD treatment, the subjects were allocated to groups of three: two managers and one worker. Each group represented one experimental labor market and did not interact with any other group in the experiment. All decisions were made individually and anonymously.

The experimental instructions were distributed on paper and read by subjects privately. The subjects had an opportunity to call the experimenters and ask questions if they had any. The experiment started with eight sets of comprehension questions.[9] Subjects could proceed only after all these questions had been answered correctly.

3.5 Experimental timeline

Managers made a contract offer by choosing their degree of unfriendliness, i.e., the number of unfriendly messages they wanted to send to the worker in the case of project failure. At the same time, workers' decisions were elicited via the strategy method (Selten, 1967). They received a list of all possible contract offers (11 in total) and stated (i) which contracts they would accept, (ii) which effort they would choose for each accepted contract if hired, and (iii) their preference ranking of contracts. Then, based on managers' actual offers and workers' contract acceptance and preference ranking, employment contracts between managers and workers were either entered into or not.[10]

In the ELD treatment, the single worker in the market was hired for his most preferred contract among the contracts offered by the managers and indicated as accepted by the worker. If he was indifferent between the managers' contracts, he was randomly assigned to one of them with equal probability. If the worker did not accept any offered contract, he remained unemployed.

In the ELS treatment, the contract assignment followed the random serial dictatorship mechanism (Abdulkadiroğlu & Sönmez, 1998). First, the three workers were randomly ordered (henceforth, first, second, and third). Then, the first worker was hired for his most preferred contract among the contracts offered by the managers and indicated as accepted by the worker. In case of indifference, one of the contracts was randomly assigned to him. If the first worker closed a contract with one manager, the second worker was hired for the remaining contract if he indicated the acceptance of this contract. If the first

[9] See supplementary material C.2 for details.

[10] Note that workers' effort levels were irrelevant to the hiring process.

worker was not hired because he did not accept any contracts offered by the managers, the preference rank of the second worker was taken into account. The third worker could be hired only if at least one of the other two workers were not assigned to a contract, taking into account his acceptance and, if necessary, preference rank choices. Otherwise, the third worker remained without a contract.

Afterwards, for each hired worker, the project outcome was realized based on the worker's effort level elicited via the strategy method at the beginning of the experiment. Then, the subjects received the following information: The workers learned whether they were hired and, if so, for which contract. The managers learned whether a worker was hired for their contract. Both types of subjects learn the project outcome from their contract.

In the next step, the workers saw the list with 10 messages that they had to replicate by typing into dedicated text fields on the computer screen. If the project was successful, the worker had to type the 10 default statements with neutral content. The same applied if the worker was not hired. If the project failed, the composition of the message list was as specified in the contract, and could contain up to 10 messages of unfriendly content.

The experiment ended with an exit questionnaire. The questionnaire included (i) questions about beliefs on workers' acceptance rates and effort for contracts with three and seven unfriendly messages after the project failure, (ii) questions about the social acceptability and the fairness perception of unfriendly messages, (iii) questions on reciprocity, trust, and risk-taking adopted from the Global Preferences Survey (Falk et al., 2018), (iv) the 10-item measure of the Big Five Personality traits (Rammstedt & John, 2007), and (v) measures of Machiavellianism and psychopathy (Jones & Paulhus, 2014).[11] After answering the questionnaire, the subjects learned their payoffs and received payments in private.[12]

The experiment consisted of only one single period, as our aim was to provide a clean test of the strategic use of unfriendly leadership as a motivational device and abstain from reputational effects and other confounding factors coming from the dynamics of interactions.

4 Theory and Hypotheses

In this section, we present and solve a simple model that closely reflects the experimental design described in section 3. We derive predictions for managers and workers' behavior in a market with excess labor supply (ELS market) and in a market with excess labor

[11] See supplementary materials C.3 for details.

[12] On the same screen with the payoff information, we asked the subjects not to take the messages personally if they had encountered the unfriendly leadership style. We told them to contact us when they think they experienced personal discomfort, but no one reported such an experience.

demand (ELD market).

4.1 The model

Each of the two managers in a market offers a contract to hire a worker (among the three workers in the ELS market or the single worker in the ELD market) to execute a project. Workers can work for at most one manager. Managers and workers are risk neutral. A hired worker chooses an effort e at a cost $c(e) = \frac{1}{2a}e^2$, with $0 \leq e \leq 10$ and a cost parameter $a > 0$.[13] A manager earns π_H in case of project success and π_L in case of project failure, which occur with probability $\frac{e}{10}$ and $1 - \frac{e}{10}$, respectively. A manager has to pay an exogenously fixed wage w to a worker she hires. Thus, a manager who hires a worker receives the expected monetary payoff:

$$X_M(e) = \frac{e}{10}\Delta\pi + \pi_L - w,$$

where $\Delta\pi := \pi_H - \pi_L > 0$. The worker's monetary payoff is $X_W(e) = w - c(e)$. We assume that $X_M(e) > 0$ and $X_W(e) > 0$ for all e.[14]

A manager chooses the degree of unfriendliness, m, with $0 \leq m \leq 10$. If the manager adopts an unfriendly leadership style (i.e., chooses $m > 0$), she will bear a non-monetary cost $k > 0$ if the project fails, which can be interpreted as a psychological cost of behaving unfriendly (e.g., scolding or belittling the worker). We designate the adoption of unfriendly leadership with an indicator function $I(m)$, where $I(0) = 0$ and $I(m) = 1$ for $0 < m \leq 10$. Accordingly, the utility of a manager who hires a worker is given by:

$$U_M(e, m) = X_M(e) - I(m)\left(1 - \frac{e}{10}\right)k.$$

To simplify the analysis, we treat m and e as continuous variables in this section.

Being exposed to unfriendly leadership decreases a worker's utility by sm, where the parameter $s > 0$ represents the worker's sensitivity to unfriendliness.[15] Furthermore, the worker displays social preferences toward the manager he works for, which depend on the manager's choice of the degree of unfriendliness. The worker's utility is:

$$U_W(e, m) = X_W(e) - \left(1 - \frac{e}{10}\right)sm + (\rho + \theta(m))X_M(e).$$

Accordingly, the worker cares not only about his own but also the manager's payoff. The weight the worker attaches to the manager's payoff, $\rho + \theta(m)$, is strictly smaller

[13] In our experiment, $a \approx 2.25$.

[14] Our parameter settings in the experiment, $w = 20$ ECU, $\pi_H = 40$ ECU, $\pi_L = 25$ ECU and the effort cost $c(e)$ as presented in table 1 ensure strictly positive $X_M(e)$ and $X_W(e)$ for all e.

[15] Dube et al. (2022) provide evidence that workers value "dignity at work," which includes fair and respectful treatment by supervisors.

than one, i.e., the worker cares relatively more about his own payoff.[16] The parameter ρ indicates the worker's baseline social preferences. The worker can be altruistic toward the manager ($\rho > 0$), selfish ($\rho = 0$), or spiteful ($\rho < 0$). The term $\theta(m)$ describes how the adoption of unfriendly leadership affects the worker's social preferences. We assume that the worker dislikes a manager's intention to decrease his utility via unfriendly behavior in case of project failure. Thus, $\theta(0) = 0$ and $\theta(m) < 0$ for $0 < m \leq 10$, i.e., the adoption of unfriendly leadership decreases the weight the worker attaches to the manager's payoff. This effect is larger the higher the degree of unfriendliness, i.e., $\theta'(m) < 0$. We also assume $\theta''(m) < 0$ to obtain a well-defined closed-form expression for a manager's optimal choice of m.

To simplify our analysis, we further assume that $U_M(e, m) > 0$ and $U_W(e, m) > 0$ for all e and m. The former assumption implies that the manager's cost of implementing unfriendly leadership is not prohibitively high. The latter assumption means that the wage is high enough to cover all disutility caused by employment and thus implies that workers will accept all contracts, i.e., we rule out voluntary unemployment.

4.2 The worker's effort choice

We first describe the effort choice of a hired worker, which is independent of the state of labor market competition. Suppose the worker has accepted a contract with a degree of unfriendliness m. He then chooses effort to maximize $U_W(e, m)$. From the corresponding first-order condition, we obtain the worker's optimal effort choice:

$$e^*(m) = \max\left\{0, \frac{a}{10}[\rho\Delta\pi + sm + \theta(m)\Delta\pi]\right\}. \tag{1}$$

First suppose that there is no unfriendly leadership, i.e., $m = 0$ and hence $\theta(m) = 0$. If the worker is selfish or spiteful toward the manager ($\rho \leq 0$), he chooses zero effort. However, when the worker is altruistic toward the manager ($\rho > 0$), he chooses a strictly positive effort level.

Now suppose that the worker will be subject to unfriendliness in the case of project failure, i.e., $m > 0$ and $\theta(m) < 0$. Unfriendly leadership entails two opposing effects. On the one hand, there is an *incentive effect*. The worker is motivated to exert effort to decrease the probability of being exposed to unfriendliness. This effect is described by the term sm. The more sensitive the worker is to unfriendliness (the higher s), the stronger the incentive effect. On the other hand, there is *negative reciprocity*. The worker reduces his effort compared to a situation without unfriendly leadership because he attaches less weight to the payoff of an unfriendly manager. This effect is described by the term

[16] We follow the modeling approach in Levine (1998, p. 600), where a player attaches a weight to other players' payoffs and gains utility from it, with the weight depending on the details of the game being played. To derive meaningful predictions, we let the weight be independent of the disparity between players' payoffs.

$\theta(m)\Delta\pi$. The worker exerts strictly positive effort if and only if $sm + (\rho + \theta(m))\Delta\pi > 0$. This may include situations where the worker does not assign a positive weight to the manager's payoff, i.e., when $\rho + \theta(m) \leq 0$. Unfriendly leadership increases the worker's effort relative to the case $m = 0$ if the incentive effect dominates the negative reciprocity.

4.3 The market under excess labor demand

The game in the ELD market has three players: $Manager_1$, $Manager_2$, and a worker. The timing of the game is equivalent to the description of the experimental timeline in section 3.5. The decision sequence is as follows. First, $Manager_1$ and $Manager_2$ simultaneously offer a work contract specifying their individual number of unfriendly messages, m_i, for $i \in \{1, 2\}$. Second, the worker chooses which manager to work for. Lastly, the worker chooses effort.

We solve the game by backward induction. At the last decision stage, assuming that the worker has accepted $Manager_i$'s contract, he chooses $e^*(m_i)$ as given in equation (1). In the second decision stage, the worker prefers $Manager_i$'s contract to $Manager_j$'s contract if and only if $m_i < m_j$ because the worker's utility $U_W(e^*(m_i), m_i)$ is strictly decreasing in the number of unfriendly messages.[17] The intuition is that a higher degree of unfriendliness increases the expected disutility of being exposed to unfriendly leadership and reduces the worker's utility from the manager's monetary payoff. Therefore, if $m_i < m_j$, $Manager_i$ hires the worker. If $m_i = m_j$ and hence the worker is indifferent between contracts, it is equally likely for $Manager_i$ and $Manager_j$ to hire the worker.

In the first decision stage, $Manager_i$'s utility can thus be written as:

$$U_{M_i} = \begin{cases} \frac{e^*(m_i)}{10}\Delta\pi + \pi_L - w - I(m_i)\left(1 - \frac{e^*(m_i)}{10}\right)k & \text{if } m_i < m_j, \\ \frac{1}{2}\left\{\frac{e^*(m_i)}{10}\Delta\pi + \pi_L - w - I(m_i)\left(1 - \frac{e^*(m_i)}{10}\right)k\right\} & \text{if } m_i = m_j, \\ 0 & \text{if } m_i > m_j. \end{cases}$$

$Manager_1$ and $Manager_2$ compete to attract and win the worker. The competitive force drives m_i down to zero as the managers try to undercut each other's contract offer in a similar manner to Bertrand competition.[18]

In summary, for the ELD market, the model predicts that the managers will not engage in unfriendly leadership and hence will offer identical contracts with $m_1^* = m_2^* = 0$. The worker, who is indifferent between the contracts, will be randomly assigned to a manager and chooses the effort $e^*(0)$ described in equation (1).

[17] See the appendix B.1 for a proof.
[18] See the appendix B.2 for a proof.

4.4 The market under excess labor supply

The game in the ELS market involves five players: $Manager_1$, $Manager_2$, $Worker_1$, $Worker_2$, and $Worker_3$. The timing of the game is as described in section 3.5. The decision sequence is the following: First, $Manager_1$ and $Manager_2$ simultaneously offer a work contract specifying m_i, for $i \in \{1, 2\}$. Second, $Worker_k$ for $k \in \{1, 2, 3\}$ submit acceptance decisions and preferences over accepted contracts, and centralized matching with random serial dictatorship determines the contract assignment. Third, $Worker_k$ chooses effort.

We again solve the game by backward induction. At the last decision stage, assuming that the worker has accepted $Manager_i$'s contract, he chooses $e^*(m_i)$ as given in equation (1). As the random serial dictatorship mechanism induces the truthful reporting of preferences (Bogomolnaia & Moulin, 2001), a worker's strategy at the second stage is the same as in the ELD market: $Worker_k$ prefers $Manager_i$'s contract if $m_i < m_j$. If $m_i = m_j$, he is indifferent between the contracts.

At the first decision stage, $Manager_i$ offers the contract that specifies the m_i that maximizes her utility,

$$U_{M_i} = \frac{e^*(m_i)}{10}\Delta\pi + \pi_L - w - I(m_i)\left(1 - \frac{e^*(m_i)}{10}\right)k,$$

where $e^*(m_i)$ is given by equation (1). In contrast to the ELD market, $Manager_i$'s utility does not depend on $Manager_j$'s choice m_j. This is because all workers accept both contracts and the market exhibits excess labor supply. Thus, $Manager_i$ hires a worker regardless of $Manager_j$'s strategy.

Because unfriendly leadership leads to non-monetary costs for the leader, a necessary condition for $Manager_i$ to adopt unfriendly leadership is that this leadership style entails a higher effort level than $m_i = 0$. According to equation (1), this can be the case only if $sm + \theta(m)\Delta\pi$ is strictly increasing in m at $m = 0$:[19]

$$s + \theta'(0)\Delta\pi > 0. \tag{2}$$

Suppose that condition (2) holds and let m_i^* denote $Manager_i$'s optimal degree of unfriendliness *conditional on adopting unfriendly leadership*, i.e.,

$$m_i^* = \arg\max_{0<m_i\leq 10} \frac{e^*(m_i)}{10}\Delta\pi + \pi_L - w - \left(1 - \frac{e^*(m_i)}{10}\right)k.$$

It follows that m_i^* maximizes $sm_i + (\rho + \theta(m_i))\Delta\pi$ and is thus either implicitly defined by $s + \theta'(m_i^*)\Delta\pi = 0$ or we have a corner solution with $m_i^* = 10$ (if $sm_i + (\rho + \theta(m_i))\Delta\pi$

[19] Note that, because of our assumption $\theta''(m) < 0$, the function $sm + \theta(m)\Delta\pi$ is strictly concave in m.

is still increasing at $m_i = 10$).

Overall, $Manager_i$ adopts unfriendly leadership if (2) holds and if

$$\frac{e^*(0)}{10}\Delta\pi < \frac{e^*(m_i^*)}{10}\Delta\pi - \left(1 - \frac{e^*(m_i^*)}{10}\right)k. \tag{3}$$

The latter condition implies that unfriendly leadership needs to entail an effort increase ($e^*(m_i^*) > e^*(0)$), which is large enough to lead to an increase in expected payoffs that exceeds the expected non-monetary costs of unfriendly leadership.

To summarize, in the ELS market, if conditions (2) and (3) hold, both managers adopt unfriendly leadership and choose the same degree of unfriendliness, $m_i^* = m_j^* > 0$. Otherwise, they choose $m_i^* = m_j^* = 0$. All three workers accept both contracts and are indifferent between them. Two of the three workers will be assigned to a contract and will choose $e^*(m_i^*)$.

4.5 Hypotheses

Our model predicts that managers do not adopt the unfriendly leadership style in the ELD market but do so in the ELS market under certain parameter configurations. Accordingly, we derive the following hypothesis regarding managers' choice of leadership style:

Hypothesis 1. *The unfriendly leadership style is more frequently adopted in the ELS than in the ELD treatment.*

Regarding the degree of unfriendliness, which corresponds to the number of unfriendly messages that a manager includes in her contract, $m_i \in \{0, 1, \ldots, 10\}$, we obtain the following hypothesis.

Hypothesis 2. *The average degree of unfriendliness will be greater in the ELS than in the ELD treatment.*

We now turn to the relationship between workers' effort and the degree of unfriendliness. Conditional on workers' acceptance of contracts with different degrees of unfriendliness, the relationship between the degree of unfriendliness and effort may turn out to be positive or negative, depending on the relative size of the positive incentive and the negative reciprocal effect.

When it comes to the comparison of effort across treatments given acceptance and the same degree of unfriendliness, we expect lower effort under excess labor demand than under excess labor supply. Although we do not assume that negative reciprocity depends on the state of labor market competition in our model, previous literature suggests that the intention behind the same behavior can be perceived as kinder or unkinder depending on the circumstances the decision-maker faced, leading to context-dependence of preferences (Sobel, 2005). For example, Brandts and Charness (2004) suggest that workers'

perception of firms' intention may differ when firms' 'gift-giving' is forced by competitive pressure compared to a situation where the intention can be attributed to pure generosity (Brandts & Charness, 2004, p. 687–688). In our setting, the competition between managers inhibits the adoption of the unfriendly leadership style in the ELD market. We conjecture that the adoption of unfriendly leadership in ELD, which has survived the discouraging force of market competition, is more easily attributable to the unkindness of a manager than the use of unfriendly leadership in ELS. Accordingly, we expect workers' negative reciprocal response to be more intense in ELD than in ELS for the same degree of unfriendliness.[20] If the incentive effect of unfriendly leadership is independent of the market condition, as we assume in our model by specifying a market-independent parameter $s > 0$, a higher degree of negative reciprocity in the ELD market entails a lower effort level in the ELD than in the ELS market, given the same level of unfriendliness.

Hypothesis 3. *Workers will choose higher effort in the ELS than in the ELD treatment, conditional on the same degree of unfriendliness,* $0 < m_i \leq 10$.

5 Results

5.1 Managers' use of unfriendly leadership

The first outcome variable of our interest is whether managers engage in unfriendly leadership or not. In the ELD treatment, 39.1% of the managers incorporated at least one unfriendly message in their contract offers.[21] This number rises to 54.7% in the ELS treatment. The treatment difference is not statistically significant ($p = 0.111$, two-sided Fisher's exact test). However, a regression analysis corroborates a more pronounced use of unfriendly leadership in the ELS treatment than in the ELD treatment. Regression coefficients reported in model (1) of table 2 indicate that the probability of adopting unfriendly leadership is higher by 15.6 percentage points in the ELS treatment compared to the ELD treatment ($p = 0.038$). Adding controls for demographic characteristics in model (2) does not virtually change the result. This observation provides support for our hypothesis 1 and leads to the first result:

Result 1. *The managers adopt the unfriendly leadership style more often in the ELS than in the ELD treatment.*

Our second variable of interest is the degree of unfriendliness that managers adopt, i.e., the number of unfriendly messages they include in their contracts. We find a statistically

[20] This can be easily incorporated in our model by assuming different $\theta(\cdot)$ functions for the ELD and the ELS market. If we allow for $\theta_G(\cdot)$ to be market-specific where $G \in \{ELD, ELS\}$, our conjecture corresponds to assuming $\theta_{ELD}(m_i) < \theta_{ELS}(m_i) < 0$ for $0 < m_i \leq 10$.

[21] The total sample comprises 128 independent observations with 64 managers in each treatment.

Table 2: Managers' use of unfriendly leadership

Dependent variable	Adoption of unfriendly leadership (0/1)		Number of unfriendly messages	
	(1)	(2)	(3)	(4)
ELS	0.156**	0.162**	1.985**	1.943***
	(0.075)	(0.074)	(0.761)	(0.726)
Male		0.211**		1.898**
		(0.086)		(0.776)
Constant			-1.069*	-1.636
			(0.633)	(1.247)
Controls	No	Yes	No	Yes
Observations	128	128	128	128
Pseudo R^2	0.018	0.063	0.012	0.026

Notes: Columns (1) and (2) present marginal effects resulting from a Probit model. The dependent variable is set to one if a manager incorporates at least one unfriendly message into her contract and zero otherwise. Columns (3) and (4) present the Tobit estimators. The dependent variable is the number of unfriendly messages included in the contract, and is left-censored at zero and right-censored at 10. *ELS* is a treatment dummy that equals one in the ELS treatment and zero in the ELD treatment. *Male* equals one if the subject's gender is male and zero otherwise. Specifications for columns (2) and (4) include demographics such as gender, age, education, years of work experience, and experience in management positions as covariates. The direction and size of the results and the statistical significance of the estimates remain similar with controls for personality traits or when using the linear probability model (OLS). The standard errors are clustered at the session level and reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

significant difference in the average number of unfriendly messages between treatments: On average, managers in the ELD treatment impose 1.27 ($SD = 1.87$) unfriendly messages, and the managers in the ELS treatment 2.30 ($SD = 2.68$) unfriendly messages ($p = 0.030$, $z = -2.172$, two-sided Wilcoxon rank-sum test).[22] In the same vein, the results of the regression estimation reported in model (3) of table 2 show that the degree of unfriendliness is significantly higher in the ELS treatment ($p = 0.010$). The effect size of the ELS treatment corresponds to 1.985 messages. This observation supports hypothesis 2 and leads us to result 2:

Result 2. *The average degree of unfriendliness is greater in the ELS than in the ELD treatment.*

We conclude that managers more frequently and extensively resort to the unfriendly leadership style when confronted with excess labor supply, in contrast to situations of excess labor demand.

5.2 Effects of unfriendly leadership on workers

In this section, we extend our focus toward the effects of unfriendly leadership on workers' behavior, including their acceptance of contracts and level of effort.[23] Figure 1a suggests that the contract acceptance rates decrease with increasing degree of unfriendliness. The average degree of unfriendliness of all contracts accepted by workers is 4.02 ($SD = 1.67$) in the ELD treatment and 3.99 ($SD = 1.29$) in the ELS treatment and does not significantly differ between the treatments ($p = 0.886$, $z = 0.144$, two-sided Wilcoxon rank-sum test).[24]

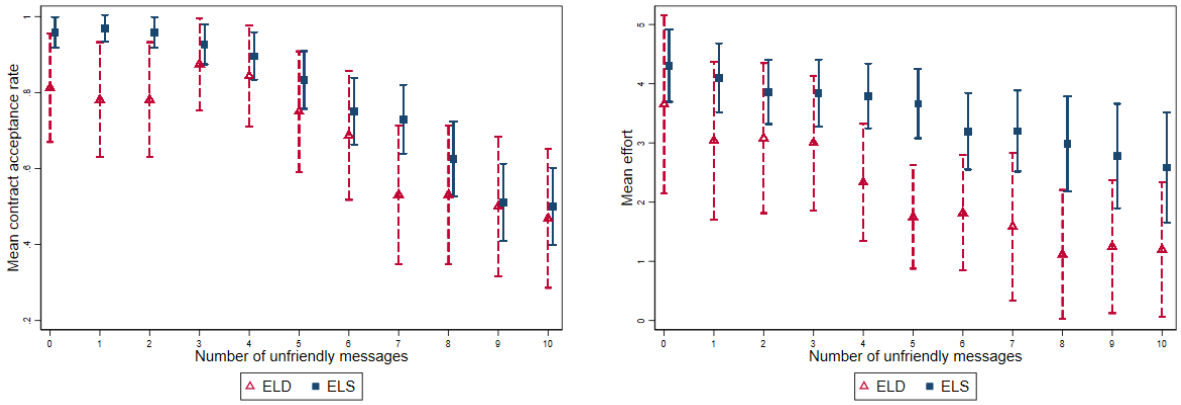
Delving into the results of regression estimations presented in table 3, model (1) suggests that the overall contract acceptance rate is 10.6 percentage points higher in the ELS treatment than in the ELD treatment when controlling for the degree of unfriendliness ($p = 0.056$). Furthermore, the negative and significant coefficient of the variable *Number of unfriendly messages (m)* in model (1) indicates a 4.7 percentage-point decline in acceptance rates for one additional unfriendly message ($p < 0.001$). The negative and statistically significant coefficient for the interaction term, 'ELS $\times$ m' in model (3), suggests that the treatment difference disappears with increased unfriendliness ($p = 0.046$). Figure 1a and model (1) in table A4 in the appendix A.2 provide additional insights on the effect of unfriendly leadership on contract acceptance rates. As we can see, the effect of unfriendly leadership is not linear: It is especially pronounced for a number of messages above four. We formulate the following result:

[22] See figure A1 in the appendix A.2 for distributions.

[23] Our sample includes 32 workers in the ELD treatment and 96 workers in the ELS treatment, aiming for a balanced sample size of managers in both groups.

[24] When a worker accepts all contracts, the average number of accepted unfriendly messages equals five. In both treatments, the accepted degree of unfriendliness is statistically significantly lower than five (both $p < 0.01$, $z = -2.953$ in ELD and $z = -6.667$ in ELS, two-sided Wilcoxon signed-rank test).

Figure 1: Contract acceptance and effort by the degree of unfriendliness



(a) Contract acceptance rates

(b) Effort level

Notes: Figure 1a plots mean acceptance rates and 95% confidence intervals for each contract by treatment. When we compare the acceptance rates for each degree of unfriendliness, the difference between the treatments is statistically significant, with higher acceptance rates in the ELS treatment for contracts with zero, one, two, and seven unfriendly messages (all $p < 0.05$, two-sided Fisher's exact tests), while the acceptance rate for the rest does not differ statistically significantly across treatments. Figure 1b displays mean effort choice conditional on contract acceptance, with 95% confidence intervals. When we compare effort levels for each degree of unfriendliness, the difference between the ELD and ELS treatments is statistically significant, with higher effort levels in the ELS treatment, for contracts with a medium degree of unfriendliness (between three and 10 messages, $p < 0.05$ for $3 < m < 9$ and $p = 0.073$ for $m = 9$, two-sided Wilcoxon rank-sum tests).

Table 3: Workers' contract acceptance

Dependent variable	Contract acceptance (0/1)			
	(1)	(2)	(3)	(4)
ELS	0.106*	0.101*	0.255***	0.251***
	(0.056)	(0.058)	(0.081)	(0.083)
Number of unfriendly messages (m)	-0.047***	-0.047***	-0.031***	-0.031***
	(0.005)	(0.005)	(0.010)	(0.010)
ELS $\times$ m			-0.024**	-0.024**
			(0.012)	(0.012)
Controls	No	Yes	No	Yes
Observations	1408	1408	1408	1408
Pseudo R^2	0.138	0.142	0.145	0.149

Notes: Marginal effects from Probit estimations, with standard errors in parentheses. The dependent variable is the contract acceptance (equal to one if a contract with m unfriendly messages is accepted and zero otherwise). *ELS* is a treatment dummy that equals one in the ELS treatment and zero in the ELD treatment. The level of unfriendliness, captured by the number of unfriendly messages, is denoted with m. Specifications for columns (2) and (4) include demographics such as gender, age, education, years of work experience, and experience in management positions as covariates. The standard errors are clustered at the subject level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Workers' effort

Dependent variable	Effort			
	(1)	(2)	(3)	(4)
ELS	2.066**	2.026**	1.211	0.927
	(0.896)	(0.884)	(1.032)	(1.060)
Number of unfriendly messages (m)	-0.289***	-0.295***	-0.451***	-0.503***
	(0.057)	(0.057)	(0.152)	(0.153)
ELS $\times$ m			0.203	0.261
			(0.163)	(0.162)
Constant	2.268***	-0.338	2.949***	0.589
	(0.847)	(2.246)	(0.976)	(2.277)
Controls	No	Yes	No	Yes
Observations	1073	1073	1073	1073
Pseudo R^2	0.020	0.030	0.021	0.032

Notes: Tobit regression results, conditional on contract acceptance. The dependent variable is the effort choice with a lower limit of zero and an upper limit of 10. *ELS* is a treatment dummy that equals one in the ELS treatment and zero in the ELD treatment. The degree of unfriendliness, captured by the number of unfriendly messages, is denoted with m. Specifications for columns (2) and (4) include demographics such as gender, age, education, years of work experience, and experience in management positions as covariates. Clustered standard errors at the subject level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Result 3. *Workers are more likely to accept contracts with the unfriendly leadership style in the ELS treatment than in the ELD treatment. In both treatments, workers' willingness to accept a contract decreases in the contract's degree of unfriendliness. This effect is more pronounced in the ELS treatment than in the ELD treatment.*

The average effort of workers over all accepted contracts is 3.31 ($SD = 2.88$): 2.32 ($SD = 2.79$) in the ELD treatment and 3.59 ($SD = 2.84$) in the ELS treatment. Figure 1b demonstrates the average effort levels by treatments and conditional on the degree of unfriendliness. A comparison of effort levels conditional on the contract's unfriendliness shows that effort levels in the ELS treatment are statistically significantly higher than in the ELD treatment when the degree of unfriendliness is between three and 10 messages ($p < 0.05$ for $3 < m < 9$ and $p = 0.073$ for $m = 9$, two-sided Wilcoxon rank-sum tests). Table 4 presents the regression estimations for a subset of contracts that workers were willing to accept. We use effort as a dependent variable and the treatment dummy, the degree of unfriendliness, and their interaction as independent variables. The regression analysis confirms that workers reduce their effort as the degree of unfriendliness increases. The coefficient *Number of unfriendly messages (m)* is statistically significant at the 1% level in all model specifications. Additionally, in support of hypothesis **??**, the effort level is, ceteris paribus, higher in the ELS than in the ELD treatment (see models (1) and

(2)). In models (3) and (4), the treatment dummy and the interaction term $ELS \times m$ are jointly significant ($p = 0.048$, $F = 3.04$ in model (3) and $p = 0.028$, $F = 3.60$ in model (4)), while the coefficient of the interaction term alone is not statistically significantly different from zero in both models ($p = 0.212$ in model (3), $p = 0.108$ in model (4)).

Result 4. *Workers decrease effort levels when the degree of unfriendliness increases. For the same degree of unfriendliness, workers choose higher effort levels in the ELS treatment than in the ELD treatment.*

6 The Second Experiment

The above-described experiment captures a situation where unfriendly leadership is the only available leadership style (e.g., due to organizational culture or norms as described in the introduction). In the second experiment, we consider a situation, where managers can adopt a friendly or an unfriendly leadership style. The friendly leadership style is implemented by sending messages of praise and approval in case the worker's performance is high.

6.1 Experimental design and procedures

The general setting, treatments, and procedures of the second experiment are identical to those of the first experiment with only one additional option: Besides adopting unfriendly leadership or no leadership, managers can now also exercise a friendly leadership style. When adopting the friendly leadership style, the managers replace some or all of the default messages with pre-written friendly messages in the case of project success. One example of such a friendly message is: "It's amazing how well you performed. You were essential to the project success." or similar (all messages can be found in instructions in supplementary materials C.5).

The workers' decisions were elicited with the partial strategy method. Each worker had to state their contract acceptance, preference, and effort for a set of *nine contracts*: zero messages; one, four, seven, and 10 unfriendly messages in the case of project failure; one, four, seven, and 10 friendly messages in the case of project success. Additionally, if the actual managers' contracts were not included in this set, then these contracts were added to the contract list. The level of detail in the experimental instructions was such that the workers could not discern which of the contracts were the actual managers'. The following analysis focuses on workers' decisions for the *nine contracts that were displayed to each worker*.

The experiment was conducted in December 2022. In total, 251 subjects participated: 96 in the ELD treatment and 155 in the ELS treatment. The sample size was 64 managers, 32 workers in the ELD treatment and 62 managers, 93 workers in the ELS treatment.

6.2 Predictions for leadership style choice

In addition to the assumptions made in section 4, we assume that the friendly leadership style has an incentive effect and also triggers positive reciprocal responses from workers. See the appendix B.3 for the model extension. Our model extension suggests that, in the ELD treatment, managers choose the friendly leadership style over the unfriendly one. This choice arises because managers are competing to hire workers, and their optimal strategy is to utilize the friendly leadership style to its fullest extent.

In the ELS treatment, however, the competition between managers falls away. Therefore, managers may adopt unfriendly leadership if the incentive effect of unfriendly leadership compared to that of friendly leadership is sufficiently high (e.g., due to workers' different sensitivities to scolding and praising), and adopting the unfriendly leadership style does not trigger too much negative reciprocity.

Hypothesis 4. *In the ELD treatment, the friendly leadership style is more frequently adopted than the unfriendly leadership style. In the ELS treatment, both leadership styles can be observed.*

Our model also predicts that, conditional on adopting friendly leadership, managers use the maximum degree of friendliness in both treatments. Intuitively, when the friendly leadership style is adopted, both the incentive effect and the positive reciprocity contribute to an increase in effort levels. This is in contrast to the unfriendly leadership style, where managers must consider the opposing forces of the incentive effect and negative reciprocity.

Hypothesis 5. *The average degree of friendliness will be at the maximum in both treatments, conditional on the adoption of the friendly leadership style.*

Regarding workers' effort reaction toward the friendly leadership style, we conjecture that workers reciprocate managers' friendliness more positively in the ELS treatment than in the ELD treatment. As discussed in developing hypothesis 3 in section 4.5, the same degree of friendliness can be more easily attributable to one's kindness in the ELS treatment than in the ELD treatment where the competition between the managers may 'force' them to be friendly. In turn, we expect higher effort levels in the ELS treatment than in the ELD treatment when the degree of the friendliness is kept constant.

Hypothesis 6. *Workers will choose higher effort in the ELS than in the ELD treatment, conditional on the same strictly positive degree of friendliness.*

6.3 Results

6.3.1 Managers' choice of leadership styles

When managers have a choice between the friendly and the unfriendly leadership style, the vast majority choose the friendly style regardless of the market condition. Among the 64 managers under the ELD treatment, 90.6% of the 64 adopt the friendly leadership style, 4.7% choose the unfriendly leadership style, and the remaining 4.7% choose no leadership style. This observation supports hypothesis 4. In the ELS market, 88.7% of the 62 managers choose to adopt the friendly leadership style, 9.7% the unfriendly leadership style, and 1.6% no leadership. The difference between treatments in the frequency of each leadership style category is not statistically significant ($p = 0.359$, Pearson chi-squared test). In table 5, we report the coefficients of the ordered Probit regression with the dependent categorical variable of leadership style. Neither the treatment coefficient nor the estimated marginal effects are statistically significant. Thus, the analysis does not provide any support for a difference between treatments in the adoption of leadership styles.

Managers who adopt the *friendly* leadership style set 6.6 friendly messages on average ($SD = 2.79$), which is statistically significantly below ten, the maximum number of friendly messages ($p < 0.001$, $t = -12.891$, two-sided t-test). We thus find no support for hypothesis 5. Managers in the ELD and ELS treatments choose a similar degree of friendliness by including, on average, 6.8 ($SD = 2.90$, ELD) and 6.4 ($SD = 2.68$, ELS) friendly messages in their contracts ($p = 0.325$, $z = 0.985$, two-sided Wilcoxon rank-sum test). Among the managers who adopt the *unfriendly* leadership style, the average number of unfriendly messages included in their contracts is 5.6 ($SD = 4.04$) in the ELD treatment and 7.8 ($SD = 2.13$) in the ELS treatment ($p = 0.515$, $z = -0.651$, two-sided Wilcoxon rank-sum test). Also, the regression analysis with the dependent variable *number of friendly messages* does not provide any statistical evidence of a treatment difference in this respect (see models (1) to (3) in table A5).[25]

Result 5. *Managers choose the friendly leadership style significantly more often than the unfriendly leadership style. The adopted leadership styles and the average degree of friendliness and unfriendliness are not different between the treatments.*

6.3.2 Effects of leadership styles on workers

The average number of messages in the accepted contracts with the *friendly* leadership style is 3.95 ($SD = 0.99$) in the ELD treatment and 3.87 ($SD = 1.19$) in the ELS treatment. Between-treatment differences in the average number of friendly messages

[25] Due to the small number of managers who adopt unfriendly leadership (N=3 in ELD, N=6 in ELS), we refrain from the regression analysis with the dependent variable *number of unfriendly messages*. See figure A2 in the appendix A.2 for distributions.

Table 5: Managers' choice between leadership styles

Dependent variable	Adoption of leadership style		
	(1)	(2)	(3)
ELS	-0.162	-0.020	0.089
	(0.300)	(0.278)	(0.484)
Male		-0.292	-0.203
		(0.220)	(0.228)
ELS × Male			-0.157
			(0.452)
Threshold parameters			
Cutoff 1	-1.549***	-1.641***	-1.563***
(Unfriendly leadership - No leadership style)	(0.243)	(0.414)	(0.409)
Cutoff 2	-1.346***	-1.432***	-1.354***
(No leadership style - Friendly leadership)	(0.233)	(0.440)	(0.399)
Marginal effect of ELS treatment			
Unfriendly leadership	0.022	0.003	0.003
	(0.040)	(0.036)	(.036)
No leadership	0.007	0.001	0.001
	(0.013)	(0.011)	(0.011)
Friendly leadership	-0.029	-0.003	-0.003
	(0.053)	(0.047)	(0.047)
Controls	No	Yes	Yes
Observations	126	126	126
Pseudo R^2	0.003	0.039	0.039

Notes: All models report ordered probit specifications. The dependent variable marks three categories: unfriendly leadership style, no leadership style, and friendly leadership style. The dependent variable equals one if managers adopt unfriendly leadership, two if they adopt no leadership style, and three if they adopt the friendly leadership style. We also report the marginal effects (and standard errors in parentheses) of ELS treatment on the likelihood of a manager's leadership style being under each category. ELS treatment increases the likelihood of adopting unfriendly leadership and decreases the likelihood of adopting friendly leadership. However, these marginal effects are not statistically significant at conventional confidence levels and vanish when we control for demographic characteristics. *ELS* is a treatment dummy that equals one in the ELS treatment and zero in the ELD treatment. *Male* equals one if the subject's gender is male and zero otherwise. Model (2) includes demographic controls such as gender (indicated by *Male*), age, education, years of work experience, and experience in management positions. The standard errors are clustered at the session level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

are not statistically significant ($p = 0.496$, $z = -0.681$, two-sided Wilcoxon rank-sum test). The average number of messages in the accepted contracts with the *unfriendly* leadership style is 1.85 ($SD = 1.64$) in the ELD treatment and 2.45 ($SD = 1.77$) in the ELS treatment. The difference across treatments is not statistically significant ($p = 0.114$, $z = -1.582$, test of differences in individual averages with the two-sided Wilcoxon rank-sum test).

Table 6 reports the marginal effects of the Probit regressions. The binary dependent variable corresponds to workers' contract acceptance decision. The variable *Number of friendly messages* equals one, four, seven, or 10 for the respective contract with the friendly leadership style, and equals zero otherwise. The reference group is the contract with no leadership style (i.e., zero messages). The variable *Number of unfriendly messages* equals one, four, seven, or 10 corresponding to the degree of unfriendliness in the respective contract, and zero otherwise. The regression coefficients of the ELS treatment dummy on contract acceptance are positive and statistically significant at the 10% level across all models. The effect size varies between 7.9 and 13.2 percentage points. Therefore, the acceptance rate is significantly higher in the ELS treatment than in the ELD treatment, *ceteris paribus*.

The degree of *unfriendliness* has, on average, a negative and statistically significant effect on contract acceptance. As reported in table 6, the effect size is a roughly 3 percentage-point decrease in the acceptance rate with one additional unfriendly message ($p < 0.01$ in all models). However, the degree of *friendliness* has a positive effect on contract acceptance. The effect size is statistically significant for all model specifications (all $p < 0.01$) and varies between 1.5 and 3.1 percentage points. As can be seen from the regression estimations reported in model (1) of table A6 and a graphical illustration in figures A3a and A3b in the appendix A.2, these effects are smaller for lower number of (friendly and unfriendly) messages and more pronounced for higher number of messages.

Result 6. *The overall contract acceptance rate is lower in the ELD treatment than in the ELS treatment when controlling for the leadership style. The workers are more likely to accept contracts with a higher number of friendly messages, while they are less likely to accept contracts with a higher number of unfriendly messages.*

In models (3) and (4), we add the interaction terms between the treatment dummy and the degree of (un)friendliness. While the coefficient of the interaction term, $ELS \times m_u$, is close to zero and not statistically significant, we observe a negative coefficient of the interaction term, $ELS \times m_f$, for the degree of friendliness (both $p < 0.10$ in models (3) and (4)). This indicates that the difference between the ELS and ELD treatments diminishes with the increasing degree of friendliness. The comparison of the size of the treatment and interaction terms' coefficients suggests that the treatment difference disappears for contracts with six or more friendly messages.

Table 6: Workers' contract acceptance in the second experiment

Dependent variable	Contract acceptance (0/1)			
	(1)	(2)	(3)	(4)
ELS	0.079*	0.087*	0.126*	0.132*
	(0.045)	(0.047)	(0.068)	(0.071)
Number of friendly messages (m_f)	0.015***	0.015***	0.031***	0.031***
	(0.005)	(0.005)	(0.011)	(0.011)
Number of unfriendly messages (m_u)	-0.031***	-0.031***	-0.030***	-0.030***
	(0.004)	(0.004)	(0.009)	(0.009)
ELS $\times$ m_f			-0.021*	-0.021*
			(0.012)	(0.012)
ELS $\times$ m_u			-0.001	-0.001
			(0.010)	(0.010)
Controls	No	Yes	No	Yes
Observations	1125	1125	1125	1125
Pseudo R^2	0.100	0.112	0.104	0.115

Notes: Marginal effects from Probit estimations, with standard errors in parentheses. The dependent variable is the contract acceptance decision (equal one if accepted and zero otherwise). *ELS* is a treatment dummy that equals one in the ELS treatment and zero in the ELD treatment. The variable *Number of friendly messages (m_f)* equals one, four, seven, or 10 for the respective contract with friendly leadership style, and equals zero otherwise. The variable *Number of friendly messages (m_u)* equals one, four, seven, or 10 for the respective contract with unfriendly leadership style, and equals zero otherwise. Specifications for columns (2) and (4) include demographics such as gender, age, education, years of work experience, and experience in management positions as covariates. The standard errors are clustered at the subject level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Workers' effort in the second experiment

Dependent variable	Effort			
	(1)	(2)	(3)	(4)
ELS	0.199	0.160	0.078	0.031
	(0.719)	(0.724)	(0.779)	(0.771)
Number of friendly messages (m_f)	0.159***	0.160***	0.212***	0.208***
	(0.029)	(0.029)	(0.050)	(0.048)
Number of unfriendly messages (m_u)	-0.145***	-0.141***	-0.375***	-0.371***
	(0.047)	(0.046)	(0.135)	(0.136)
ELS $\times$ m_f			-0.077	-0.071
			(0.061)	(0.060)
ELS $\times$ m_u			0.277*	0.276*
			(0.142)	(0.143)
Constant	2.639***	2.262**	2.752***	2.393**
	(0.657)	(0.965)	(0.698)	(1.008)
Controls	No	Yes	No	Yes
Observations	787	787	787	787
Pseudo R^2	0.013	0.015	0.016	0.017

Notes: Tobit regression results, conditional on contract acceptance. The dependent variable is the effort choice, with a lower limit of zero and an upper limit of 10. *ELS* is a treatment dummy that equals one in the ELS treatment and zero in the ELD treatment. The variable *Number of friendly messages (m_f)* equals one, four, seven, or 10 for the respective contract with friendly leadership style, and equals zero otherwise. The variable *Number of friendly messages (m_u)* equals one, four, seven, or 10 for the respective contract with unfriendly leadership style, and equals zero otherwise. Specifications for columns (2) and (4) include demographics such as gender, age, education, years of work experience, and experience in management positions as covariates. The standard errors are clustered at the subject level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

One potential interpretation of our results is that managers are punished when they do not exploit the costless friendly leadership style to the full extent. The adverse reaction of workers in the form of the rejection of a contract is more pronounced in the ELD treatment than in the ELS treatment. This context-dependent *punishment* is in line with Falk et al. (2006) who report varying perceptions of fair pay depending on the minimum wage in place.

When shifting focus to the workers' effort levels for the accepted contracts, we observe that the effort is increasing with the degree of friendliness. In table 7, the effect size varies between 0.159 and 0.208 effort units for one friendly message (all $p < 0.01$). In contrast, *unfriendliness* decreases workers' effort level by 0.141 to 0.375 units per one unfriendly message (all $p < 0.01$). On average, there is no treatment effect on the workers' effort, lacking support for hypothesis 6. However, the interaction coefficient between the number

of unfriendly messages and the treatment dummy is positive and statistically significant (models (3) and (4), $p < 0.10$).[26] This suggests that (i) the adverse effect of unfriendliness is less pronounced in the ELS than in the ELD treatment; (ii) the effort levels are higher in ELS treatment than in ELD treatment for contracts with one or more unfriendly messages.

Result 7. *For the accepted contracts, workers increase effort levels with the degree of friendliness and decrease effort with the degree of unfriendliness. There is no treatment difference in workers' effort adjustment toward the degree of friendliness. However, the negative reaction toward more unfriendliness is less pronounced in the ELS treatment than in the ELD treatment.*

To sum up, also in the second experiment, we find a similar interplay of the treatment and the unfriendly leadership style as in the first experiment: Workers react less harshly to the unfriendly leadership style in the labor markets with an extensive labor supply compared to the markets with an extensive labor demand.

7 Exploratory Analysis

7.1 Managers' beliefs about others' behavior

Are the managers' beliefs about the effects of the leadership styles correct? What leadership style do they expect the other manager to choose? To address these questions, we elicited (i) incentivized beliefs about the other manager's decision, (ii) incentivized beliefs about workers' contract acceptance, and (iii) non-incentivized beliefs about workers' effort. This belief elicitation was done in the second experiment and the analysis is presented below.[27]

The belief about the other manager's decision captures the number of (un)friendly messages included in the contract. Respectively, they could range between -10 (a maximum of 10 unfriendly messages) to 10 (a maximum of 10 friendly messages). The expected degree of (un)friendliness differs significantly across treatments: managers believe the other managers to be less friendly in the ELS treatment than in the ELD treatment. The average expected number of messages in the other managers' contracts is 5.3 ($SD = 4.12$) in the ELD treatment and 3.6 ($SD = 4.96$) in the ELS treatment ($p = 0.041$, $z = 2.048$, two-sided Wilcoxon rank-sum test). The difference is also statistically significant when running regression analysis as reported in models (4) and (5) in table A5 in the appendix

[26] See figure A3d in the appendix A.2 for a graphical illustration.

[27] The details of the belief elicitation procedure are reported in supplementary materials C.3 and C.7. In the first experiment, we only elicited managers' beliefs about workers' decisions but used a different beliefs elicitation method. Therefore, we refrain from direct comparisons of beliefs in the first and second experiments. Nevertheless, we find largely similar results and report them in supplementary materials C.4.

A.2. The belief about the other manager is also highly correlated with the number of friendly messages chosen by managers for their own contracts ($p < 0.01$, see model (2) of the same table).

In general, the managers hold quite similar beliefs about workers' reactions to leadership styles in the ELS and the ELD treatment: they expect workers to be approximately three percentage points less likely to accept contracts containing one additional unfriendly message and approximately three percentage points more likely to accept contracts with one additional friendly message ($p < 0.01$), but there is no treatment difference (see models (1) to (3) in table A7 in the appendix A.2).

Similarly, managers expect workers to decrease effort with a higher degree of unfriendliness and to increase effort with a higher degree of friendliness ($p < 0.01$, models (4) to (6) in table A7). These observations provide a potential explanation for why the managers in the second experiment mostly adopt friendly leadership: They expect it to be more efficient than unfriendly leadership. Again, we do not find any differences between treatments. Figure A4 in the appendix A.2 presents a graphical illustration of the beliefs.

7.2 Gender differences

As shown in our first experiment, the managers engage in unfriendly leadership more frequently and intensely in the ELS treatment than in the ELD treatment. Table 8 reports the regression analysis where we explore potential gender differences in leadership styles by adding an interaction of the treatment and gender dummy variables. The interaction term $ELS \times Male$ is positive and statistically significant ($p < 0.1$ in model (1) and $p < 0.05$ in models (2) to (4)), whereas the coefficient of the treatment dummy is not statistically significant anymore.[28] This gender difference also persists when we control for various personality measures (see table A8 in the appendix A.2). These results suggest that, in the first experiment, labor market competition primarily affects the leadership style of male managers, but has no effect on non-male managers.

We do not detect any statistically significant gender differences regarding the use of leadership styles in the second experiment. The coefficients of $ELS \times Male$ are not statistically significant (see model (3) of table 5 for the adoption of leadership styles and model (3) of A5 in the appendix A.2 for the degree of friendliness). Male managers are, *ceteris paribus*, more optimistic about the contract acceptance in the ELS treatment ($p < 0.10$), while non-male managers hold similar beliefs in both treatments (model (3) of table A7 in the appendix A.2). The interaction term $ELS \times Male$ is not statistically

[28] Since we are interested in the interaction of two dummy variables, we use the linear probability model (OLS) for this estimation, which provides directly interpretable coefficients (Gomila, 2021). Probit model delivers similar results with a higher probability of adopting unfriendly leadership by approximately 30 percentage points for male managers in the ELD treatment than in the ELS treatment ($p < 0.01$) and no treatment difference for non-male managers.

Table 8: Gender differences in the use of unfriendly leadership style in the first experiment

Dependent variable	Adoption of unfriendly leadership (0/1)		Number of unfriendly messages	
	(1)	(2)	(3)	(4)
ELS	-0.065	-0.062	-0.145	-0.092
	(0.101)	(0.101)	(0.419)	(0.433)
Male	0.010	0.026	-0.200	-0.139
	(0.118)	(0.120)	(0.434)	(0.453)
ELS × Male	0.362*	0.378**	1.935**	1.868**
	(0.170)	(0.164)	(0.836)	(0.862)
Constant	0.385***	0.450***	1.385***	1.421***
	(0.098)	(0.119)	(0.351)	(0.404)
Controls	No	Yes	No	Yes
Observations	128	128	128	128
R^2	0.091	0.117	0.114	0.118

Notes: All columns report OLS regression results. For columns (1) and (2), the dependent variable is set to one if a manager incorporates at least one unfriendly message into her contract and zero otherwise. For columns (3) and (4), the dependent variable is the number of unfriendly messages included in the contract. *ELS* is a treatment dummy that equals one in the ELS treatment and zero in the ELD treatment. *Male* equals one if the subject's gender is male and zero otherwise. The results remain similar when pooling together the gender categories 'male,' 'diverse,' and 'prefer not to say,' and comparing them with 'female.' Specifications for columns (2) and (4) include demographics such as age, education, years of work experience, and experience in management positions as covariates. The standard errors are clustered at the session level and are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

significant in the regressions of other beliefs (see model (5) of table A5 for beliefs about other managers' contract choice and model (6) of table A7 for beliefs about workers effort, both in the appendix A.2).

We do not observe any gender difference in workers' contract acceptance or effort toward the leadership styles. The regression analysis for the first and second experiments is reported in tables A9 and A10 (respectively) in the appendix A.2.

Due to the lack of an initial hypothesis regarding gender effects, we suggest that our observations on gender differences should be taken with caution and that their robustness should be explored in future research.

8 Discussion and Conclusion

In this study, we examine managers' strategic use of unfriendly leadership as a motivational tool under different states of labor market competition. We hypothesize that managers adopt an unfriendly leadership style more frequently and with greater intensity when there is an excess supply of labor compared to when there is an excess demand for labor. To investigate this hypothesis, we conduct two laboratory experiments. In our first experiment, we investigate a situation where praise is not common due to, e.g., a workplace culture where exceptional performance is considered the norm. The results of the experiment demonstrate that managers scold poor performance, i.e., adopt an unfriendly leadership style more often and more intensively when there is an excess labor supply compared to an excess labor demand. This effect is especially prominent among male managers.

We also investigate workers' reactions toward an unfriendly leadership style. We find that, independent of the state of labor market competition, workers are less willing to enter employment and to exert effort when a manager is more unfriendly, implying that unfriendly leadership is costly. Workers' adverse responses to unfriendly leadership are, however, less pronounced under excess labor supply than under excess labor demand, which suggests that workers find unfriendly leadership more acceptable when they are on the short side of the market.

In our second experiment, managers can choose between an unfriendly and a friendly leadership style. We find that the vast majority of the managers choose the friendly style. The balance between labor supply and labor demand has no effect on managers' choices. Workers positively reciprocate friendliness in terms of higher contract acceptance rates and higher effort, whereas their negative responses to unfriendly leadership persist. In line with the first experiment, workers' negative reciprocal reactions toward an unfriendly leadership style are especially pronounced when the labor demand exceeds the labor supply.

An unfriendly leadership style has been typically regarded as ineffective and detri-

mental not only in terms of workers' psychological distress but also of organizational outcomes, such as task performance, counterproductive work behavior, absenteeism, and turnover (Mackey et al., 2021). Our results corroborate this perception with evidence that workers react negatively to the excessive unfriendliness of managers by reducing their effort and their willingness to work for such managers. Our study demonstrates the role of labor market competition as an important institutional factor that affects the use of an unfriendly leadership style. This, in turn, provides several managerial implications. Firms operating in markets with excess labor supply should be particularly concerned about the occurrence and intensity of unfriendly leadership. Remedies that prevent unfriendly leadership styles may be especially needed among male managers. Moreover, firms should build up a workplace environment where recognition and acknowledgement are meaningful leadership instruments, as a friendly leadership style leads to an increase in workers' effort and willingness to accept job offers. The intensive use of friendly leadership is particularly valuable under excess labor demand where the effects of unfriendly leadership are especially detrimental.

Future research would be valuable for better understanding the role of unfriendly leadership in conjunction with other factors such as monetary incentives, organizational culture, social norms, or gender.

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A Appendix: Data Analysis

A.1 Manipulation check

Our experimental design relies on the assumption that unfriendly messages trigger disutility among individuals who receive them. We pre-tested this assumption in a separate online survey with a Prolific sample. We checked individuals' perception of candidate statements for the unfriendly leadership style on a 5-point scale in terms of four evaluation criteria (N=141): interesting/boring, hostile/friendly, pleasant/unpleasant, and socially acceptable. The statements are evaluated as 'moderately interesting,' 'not pleasant at all,' 'extremely hostile,' and 'not socially acceptable at all' on average ($p < 0.001$ for all criteria respectively, one sample t-test against the midpoint of each criterion).

Moreover, we test whether the participants are willing to avoid reading and typing unfriendly statements at a small material cost. The participants were given a simple task of reading and typing 10 unfriendly statements at a fixed compensation of GBP 1.50. Before they worked on the typing task, we let them swap between zero and 10 unfriendly statements for neutral ones at the cost of GBP 0.03 per swap. Among the 71 participants who encountered this swap decision, 26.76% chose to substitute at least one unfriendly statement for a neutral one. On average, they swapped 1.53 unfriendly statements. This result supports our assumption on the disutility of reading and typing unfriendly statements; the typing task can be perceived as a non-monetary punishment, and the task may motivate at least some workers to exert costly effort.[29]

We also find support that our main sample workers in the first experiment dislike reading and typing unfriendly messages. Conditional on acceptance, the workers prefer contracts with a lower number of unfriendly messages: models (1) to (3) in table A1 indicate that this preference is stable across different model specifications. We do not detect statistically significant differences in this negative relationship across the treatments.

[29] As a control treatment, we asked 70 participants to type 10 neutral statements as default and let them swap the statements for unfriendly ones at the cost of GBP 0.03 per swap. In this treatment, we observe that only 15.71% of them choose to swap at least one statement. This is statistically significantly different from the proportion of participants who swap at least one unfriendly statement for a neutral one ($p = 0.042$, binomial proportion test). On average, the number of swapped statements from neutral to unfriendly ones was 0.69, which differs from 1.53, the average number of swaps from unfriendly to neutral statements, at 10% significance level ($p = 0.053$, unequal variance t-test, $p = 0.082$, Brunner-Munzel test).

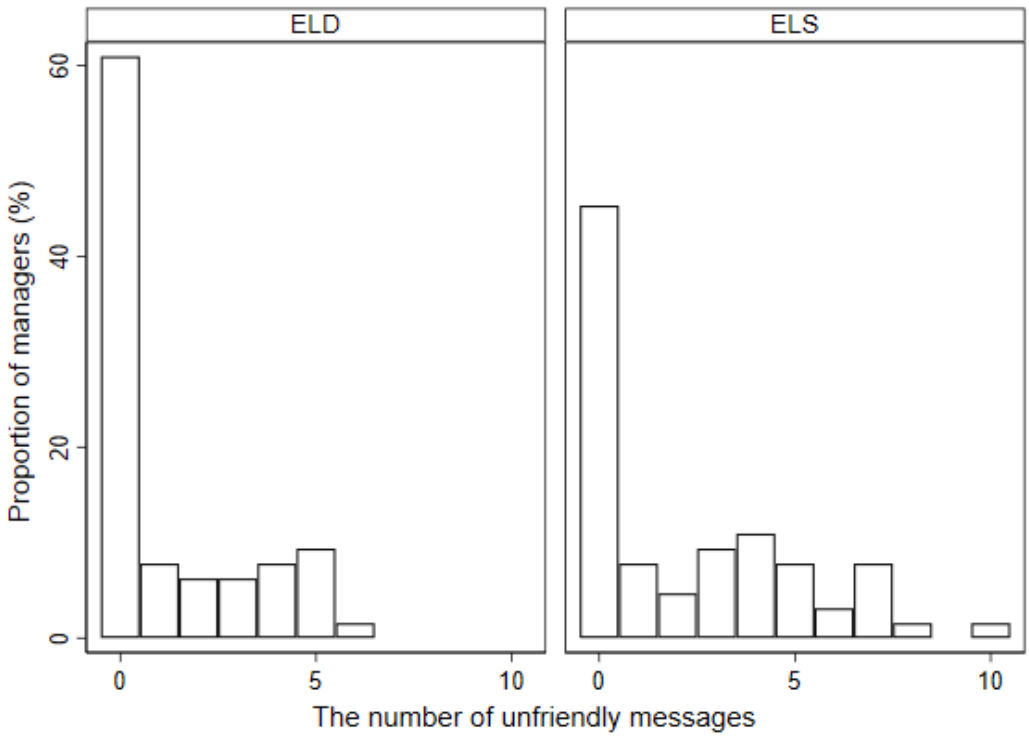
Table A1: Workers' preference

	(1)	(2)	(3)
ELS		-0.320	-0.647
		(0.508)	(0.747)
Number of unfriendly messages (m)	-0.581***	-0.581***	-0.638***
	(0.081)	(0.081)	(0.150)
ELS $\times$ m			0.073
			(0.185)
Constant	9.317***	9.566***	9.820***
	(0.364)	(0.520)	(0.572)
Observations	1073	1073	1073
Pseudo R^2	0.045	0.046	0.046

Notes: Tobit regression results, conditional on contract acceptance. The dependent variable is the reverse preference rank with a lower limit of zero (least preferred) and an upper limit of 10 (most preferred). *ELS* is a treatment dummy that equals one in the ELS treatment and zero in the ELD treatment. The degree of unfriendliness, captured by the number of unfriendly messages, is denoted with m. Clustered standard errors at the subject level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

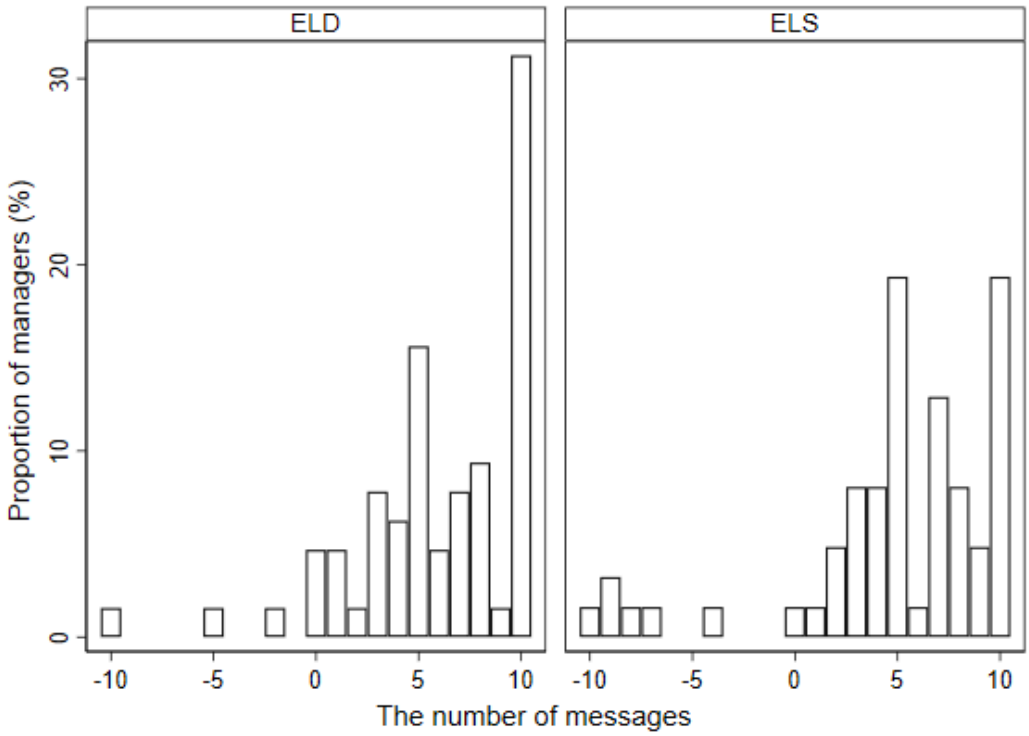
A.2 Supplementary tables and figures

Figure A1: Distribution of the number of unfriendly messages, first experiment



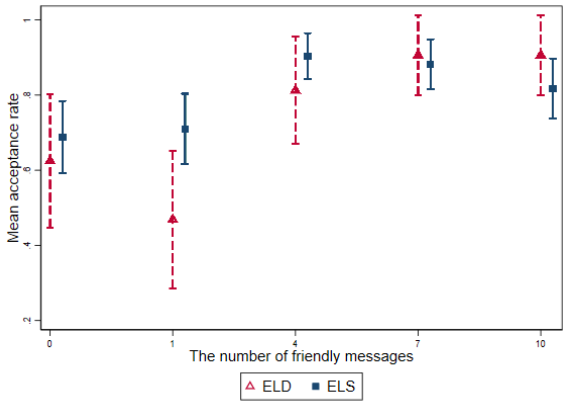
Notes: Histogram of the number of unfriendly messages chosen by the managers in the first experiment

Figure A2: Distribution of the number of messages, second experiment

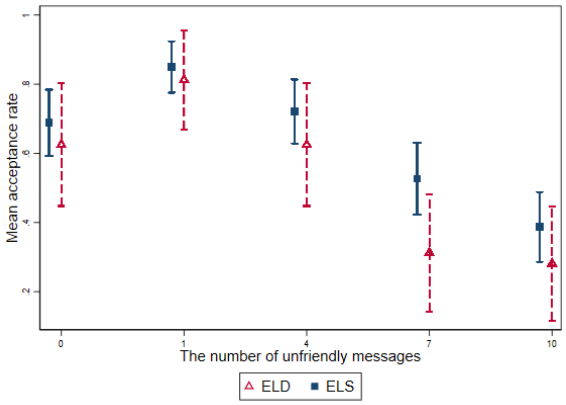


Notes: Histogram of the number of messages chosen by the managers in the second experiment, where the numbers are coded as negative numbers (-10 to -1) for the unfriendly leadership style, as positive numbers (1 to 10) for the friendly leadership style, and as zero for no leadership style.

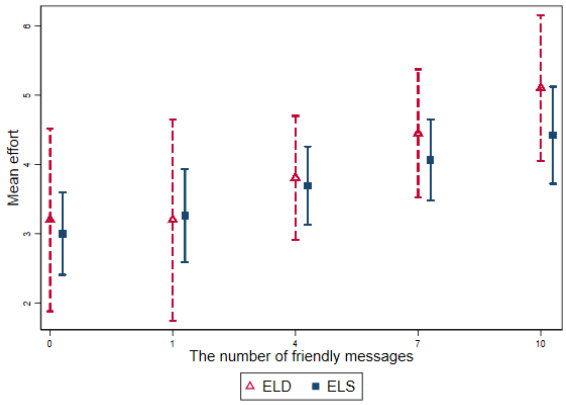
Figure A3: Workers' contract acceptance and effort, second experiment



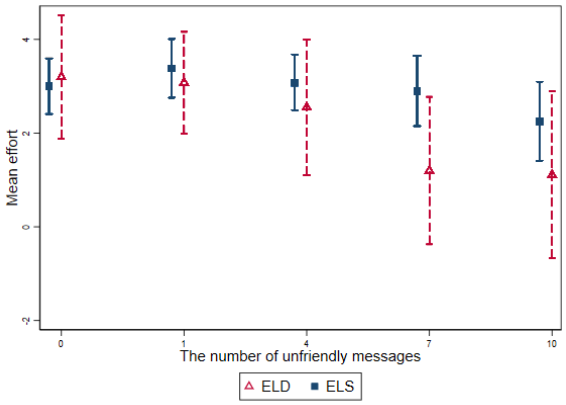
(a) Acceptance, friendly leadership style



(b) Acceptance, unfriendly leadership style



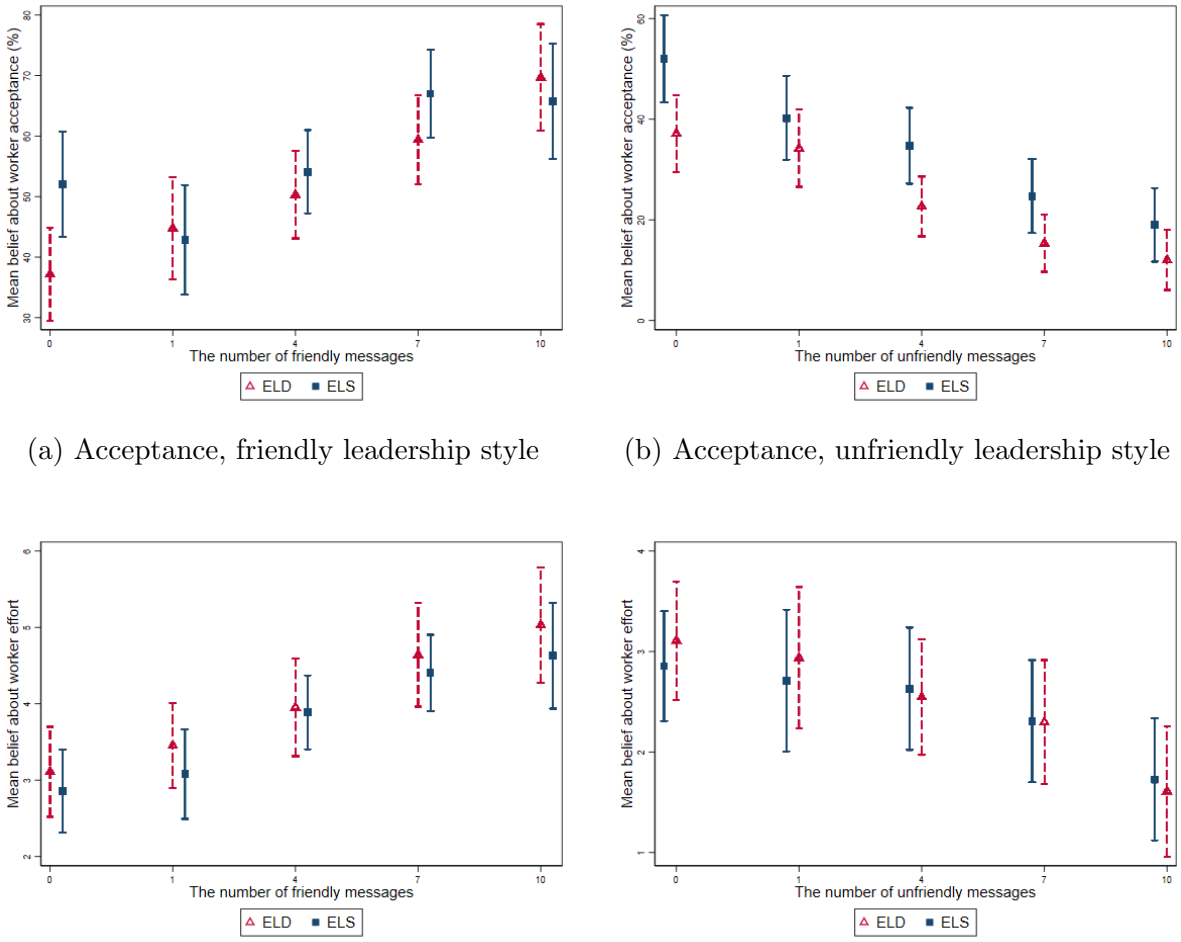
(c) Effort, friendly leadership style



(d) Effort, unfriendly leadership style

Notes: Data from the second experiment. Figure A3a plots mean acceptance rates and 95% confidence intervals for each contract by treatment and by the number of friendly messages. Figure A3b plots mean acceptance rates and 95% confidence intervals for each contract by treatment and by the number of unfriendly messages. Figure A3c plots mean effort levels conditional on contract and 95% confidence intervals for each contract by treatment and by the number of friendly messages. Figure A3d plots mean effort levels conditional on contract and 95% confidence intervals for each contract by treatment and by the number of unfriendly messages.

Figure A4: Manager's beliefs about workers' contract acceptance and effort, second experiment



(a) Acceptance, friendly leadership style

(b) Acceptance, unfriendly leadership style

(c) Effort, friendly leadership style

(d) Effort, unfriendly leadership style

Notes: Data from the second experiment. Figure A4a and A4b plot mean beliefs about workers' acceptance rate with 95% confidence intervals by treatment and by the number of friendly and unfriendly messages, respectively. Figure A4c and A4d plot mean beliefs about workers' effort with 95% confidence intervals by treatment and by the number of friendly and unfriendly messages, respectively.

Table A2: Demographics by treatments and experiments

	First experiment			Second experiment		
Treatment	ELD	ELS	Test	ELD	ELS	Test
Gender			$\chi^2 = 0.530$			$\chi^2 = 2.330$
Male	54%	59%		61%	69%	
Female	41%	37%		39%	30%	
Diverse or rather not say	5%	4%		0%	1%	
Education			$\chi^2 = 6.068$			$\chi^2 = 9.435$
Some high school or no diploma	0%	1%		1%	0%	
High school graduate	39%	36%		42%	39%	
Some college or no degree	4%	8%		2%	8%	
Associate degree	3%	1%		2%	3%	
Bachelor's degree	45%	45%		43%	43%	
Master's degree	6%	9%		8%	6%	
Professional degree	2%	1%		0%	0%	
Doctorate degree	1%	0%		2%	0%	
Experience in management position			$\chi^2 = 0.007$			$\chi^2 = 5.392$**
No	82%	82%		71%	83%	
Yes	18%	18%		29%	17%	
Age (years)			$t = 0.984$			$t = 2.130$**
	27.44	26.45		25.84	24.48	
	(9.99)	(6.06)		(5.66)	(4.39)	
Work Experience (years)			$t = 1.483$			$t = 0.122$
	5.54	4.18		3.18	3.12	
	(9.88)	(4.73)		(3.74)	(3.22)	
Observations			Total			Total
Manager	64	64	128	64	62	126
Worker	32	96	128	32	93	125
Subtotal	96	160	256	96	155	251

Notes: Descriptive statistics for demographic variables. Proportion (%) of each category within each treatment for gender, education, and experience in management position. Mean and standard deviations (in parentheses below means) for age and years of work experience. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A3: Personality traits by treatments and experiments

Treatment	First experiment			Second experiment		
	ELD	ELS	P-value (t-test)	ELD	ELS	P-value (t-test)
Negative reciprocity	3.07	2.84	0.526	3.15	3.32	0.607
	(2.81)	(2.79)		(2.50)	(2.73)	
Positive reciprocity	8.98	9.19	0.197	9.00	8.88	0.472
	(1.41)	(1.20)		(1.28)	(1.33)	
Trust	6.32	5.72	0.004***	5.93	6.04	0.593
	(1.37)	(1.74)		(1.62)	(1.56)	
Risk taking	5.55	5.01	0.074*	5.48	5.75	0.389
	(2.41)	(2.33)		(2.58)	(2.38)	
Agreeableness	3.43	3.42	0.960	3.48	3.57	0.386
	(0.69)	(0.86)		(0.76)	(0.73)	
Extraversion	3.03	3.05	0.884	3.34	3.35	0.956
	(0.97)	(1.01)		(0.91)	(0.93)	
Conscientiousness	3.26	3.36	0.370	3.31	3.29	0.896
	(0.89)	(0.86)		(0.78)	(0.82)	
Neuroticism	2.80	2.96	0.219	2.77	2.73	0.767
	(1.08)	(0.98)		(1.01)	(0.99)	
Openness	3.49	3.72	0.045**	3.41	3.45	0.672
	(0.89)	(0.84)		(0.78)	(0.79)	
Machiavellianism	2.93	3.02	0.309	3.08	3.08	0.952
	(0.71)	(0.66)		(0.64)	(0.65)	
Psychopathy	2.17	2.24	0.380	2.25	2.29	0.611
	(0.54)	(0.59)		(0.54)	(0.60)	

Notes: Mean and standard deviations (in parentheses below means) by treatments and experiments for perosnality measures. See supplementary materials C.8 for details. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A4: Workers' reaction to the number of unfriendly messages, first experiment

Dependent variable	Acceptance	Effort
	(1)	(2)
ELS	0.105*	2.074**
	(0.055)	(0.895)
$m = 1$	0.001	-0.343**
	(0.022)	(0.158)
$m = 2$	-0.007	-0.503**
	(0.026)	(0.212)
$m = 3$	-0.010	-0.492**
	(0.032)	(0.233)
$m = 4$	-0.041	-0.705***
	(0.037)	(0.272)
$m = 5$	-0.111***	-1.060***
	(0.040)	(0.298)
$m = 6$	-0.190***	-1.594***
	(0.044)	(0.355)
$m = 7$	-0.243***	-1.834***
	(0.044)	(0.397)
$m = 8$	-0.322***	-2.299***
	(0.048)	(0.474)
$m = 9$	-0.416***	-2.661***
	(0.048)	(0.565)
$m = 10$	-0.431***	-2.948***
	(0.049)	(0.602)
Constant		2.108**
		(0.872)
Observations	1408	1073
Pseudo R^2	0.143	0.021

Notes: Data from the first experiment. Model (1) reports marginal effects from Probit estimations. The dependent variable is the contract acceptance (equal to one if a contract with m unfriendly statements is accepted and zero otherwise). Model (2) reports tobit regression results, conditional on contract acceptance. The dependent variable is the effort choice with a lower limit of zero and an upper limit of 10. *ELS* is a treatment dummy that equals one in the ELS treatment and zero in the ELD treatment. The level of unfriendliness, captured by the number of unfriendly messages, is denoted with m. The explanatory variables $m = 1$ to $m = 10$ are dummy variables that indicate each case with one to 10 unfriendly messages. The standard errors are clustered at the subject level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A5: Managers' choice on the number of friendly messages and belief about the other manager's choice, second experiment

Dependent variable	Number of friendly messages			Belief about other manager's decision	
	(1)	(2)	(3)	(4)	(5)
ELS	-0.728	1.188	0.445	-2.024***	-1.949**
	(0.734)	(1.336)	(1.166)	(0.692)	(0.933)
Belief about other manager's decision		0.641***			
		(0.192)			
ELS × Belief about other manager's decision		-0.271			
		(0.185)			
Male			0.528		1.549
			(0.923)		(1.370)
ELS × Male			-1.683		0.403
			(1.550)		(1.367)
Constant	7.554***	4.090***	6.151***	6.072***	5.631***
	(0.712)	(1.221)	(0.863)	(0.554)	(1.572)
Demographic controls	No	No	Yes	No	Yes
Observations	113	113	113	126	126
Sample	Friendly	Friendly	Friendly	All	All
Pseudo R^2	0.002	0.079	0.014	0.006	0.013

Notes: Data from the second experiment. Models (1) to (3) report tobit regression results estimated on the subgroup of the sample, who adopt friendly leadership (89.7% of the whole sample). The dependent variable for (1) to (3) is the number of friendly messages with a lower limit of one and an upper limit of 10. The dependent variable for models (4) and (5) is the belief about the other manager's decision, where different degrees of (un)friendliness are coded as negative numbers (-10 to -1) for unfriendly leadership style, as positive numbers (1 to 10) for friendly leadership style, and as zero for no leadership style. Accordingly, models (4) and (5) report tobit regressions of the dependent variable censored with a lower limit of -10 and upper limit of 10. *ELS* is a treatment dummy that equals one in the ELS treatment and zero in the ELD treatment. *Male* equals one if the subject's gender is male and zero otherwise. Model (2) reports the effect of belief about the other manager's decision on one's own choice for the number of friendly messages, interacted with the treatment. Specifications for columns (3) and (5) include demographics such as gender, age, education, years of work experience, and experience in management positions as covariates. The standard errors are clustered at the session level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A6: Workers' reaction to the number of friendly and unfriendly messages, second experiment

Dependent variable	Acceptance	Effort
	(1)	(2)
ELS	0.079*	0.205
	(0.045)	(0.717)
$m_f = 1$	-0.023	0.257
	(0.039)	(0.295)
$m_f = 4$	0.213***	0.933***
	(0.042)	(0.267)
$m_f = 7$	0.220***	1.367***
	(0.045)	(0.301)
$m_f = 10$	0.168***	1.858***
	(0.047)	(0.335)
$m_u = 1$	0.141***	0.326
	(0.035)	(0.293)
$m_u = 4$	0.021	-0.094
	(0.045)	(0.314)
$m_u = 7$	-0.180***	-0.648
	(0.052)	(0.430)
$m_u = 10$	-0.289***	-1.508***
	(0.054)	(0.538)
Constant		2.369***
		(0.693)
Observations	1125	787
Pseudo R^2	0.126	0.014

Notes: Data from the second experiment. Model (1) reports marginal effects from Probit estimations. The dependent variable is the contract acceptance (equal to one if a contract with m unfriendly statements is accepted and zero otherwise). Model (2) reports tobit regression results, conditional on contract acceptance. The dependent variable is the effort choice with a lower limit of zero and an upper limit of 10. *ELS* is a treatment dummy that equals one in the ELS treatment and zero in the ELD treatment. The level of friendliness and unfriendliness, captured by the number of messages, are denoted with m_f and m_u, respectively. The explanatory variables $m_f = 1$ to $m_u = 10$ are dummy variables that indicate each case. The standard errors are clustered at the subject level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A7: Managers' beliefs about workers' responses, second experiment

Dependent variable	Belief about acceptance			Belief about effort		
	(1)	(2)	(3)	(4)	(5)	(6)
ELS	6.093	8.230	0.719	-0.150	-0.218	-0.375
	(3.766)	(5.061)	(5.613)	(0.312)	(0.389)	(0.524)
Number of friendly messages (m_f)	2.759***	3.215***	3.215***	0.190***	0.195***	0.195***
	(0.379)	(0.484)	(0.485)	(0.026)	(0.032)	(0.032)
Number of unfriendly messages (m_u)	-2.820***	-2.846***	-2.846***	-0.129***	-0.147***	-0.147***
	(0.252)	(0.347)	(0.348)	(0.025)	(0.035)	(0.035)
ELS × m_f		-0.926	-0.926		-0.009	-0.009
		(0.756)	(0.757)		(0.052)	(0.052)
ELS × m_u		0.053	0.053		0.037	0.037
		(0.504)	(0.505)		(0.050)	(0.051)
Male			2.063			-0.456
			(4.638)			(0.455)
ELS × Male			11.777*			0.213
			(6.824)			(0.620)
Constant	38.545***	37.494***	36.076***	3.138***	3.171***	3.485***
	(2.886)	(3.226)	(3.930)	(0.257)	(0.267)	(0.372)
Observations	1134	1134	1134	1134	1134	1134
R^2	0.244	0.246	0.264	0.137	0.138	0.142

Notes: Data from the second experiment. Results from OLS regressions with robust standard errors clustered at subject level in parentheses. The dependent variable is managers' beliefs about the workers contract acceptance scaled from 0 to 100 percent (as a probability of acceptance) for models (1) to (3) and managers' beliefs about effort for models (4) to (6). *ELS* is a treatment dummy that equals one in the ELS treatment and zero in the ELD treatment. The variable *Number of friendly messages (m_f)* equals one, four, seven, or 10 for the respective contract with friendly leadership style, and equals zero otherwise. The variable *Number of friendly messages (m_u)* equals one, four, seven, or 10 for the respective contract with unfriendly leadership style, and equals zero otherwise. *Male* equals one if the subject's gender is male and zero otherwise. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A8: Managers' use of unfriendly leadership, first experiment

Dependent variable	Adoption of unfriendly leadership (0/1)		Number of unfriendly messages	
	(1)	(2)	(3)	(4)
ELS	-0.065	-0.074	-0.529	-0.558
	(0.101)	(0.129)	(1.026)	(1.305)
Male	0.010	0.086	-0.219	-0.059
	(0.118)	(0.165)	(1.106)	(1.424)
ELS × Male	0.362*	0.321	3.789**	3.255*
	(0.170)	(0.202)	(1.733)	(1.900)
Positive reciprocity		0.184		3.970
		(0.391)		(5.035)
Negative reciprocity		0.352*		3.081*
		(0.199)		(1.845)
Trust		-0.091		-0.261
		(0.235)		(2.632)
Risk taking		-0.423**		-4.329**
		(0.183)		(2.067)
Agreeableness		0.017		-0.462
		(0.289)		(2.791)
Extraversion		0.150		0.200
		(0.209)		(1.753)
Conscientiousness		0.043		0.519
		(0.200)		(1.974)
Neuroticism		-0.142		-2.279*
		(0.174)		(1.300)
Openness		0.120		0.653
		(0.213)		(1.969)
Machiavellianism		0.135		4.259*
		(0.221)		(2.527)
Psychopathy		-0.428		-4.264
		(0.378)		(4.354)
Age		-1.109		-12.892
		(1.092)		(8.622)
Education		-0.262		-1.022
		(0.227)		(1.889)
Work experience (years)		1.677		17.432*
		(1.233)		(9.723)
Experience in management position		-0.007		0.466
		(0.144)		(1.141)
Constant	0.385***	0.437	-0.819	-2.414
	(0.098)	(0.496)	(0.934)	(4.657)
Observations	128	128	128	128
R^2	0.091	0.199		
Pseudo R^2			0.033	0.069

Notes: Data from the first experiment. Models (1) and (2) present OLS regression results. The dependent variable is set to one if a manager incorporates at least one unfriendly message into her contract and zero otherwise. Models (3) and (4) report Tobit estimations. The dependent variable is the number of unfriendly messages included in the contract, and is left-censored at zero and right-censored at 10. *ELS* is a treatment dummy that equals one in the ELS treatment and zero in the ELD treatment. *Male* equals one if the subject's gender is male and zero otherwise. Measures of personality traits and demographic information are re-scaled to be within the interval from zero to one. The standard errors are clustered at the session level and reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A9: Gender differences in workers' responses, first experiment

Dependent variable	Acceptance			Effort		
	(1)	(2)	(3)	(4)	(5)	(6)
ELS	0.087	0.157**	0.157**	1.364	1.213	1.188
	(0.075)	(0.068)	(0.068)	(1.287)	(1.063)	(1.052)
Number of unfriendly messages (m)	-0.040***	-0.043***	-0.039**	-0.455***	-0.452***	-0.520***
	(0.014)	(0.014)	(0.017)	(0.152)	(0.149)	(0.185)
ELS $\times$ m	-0.011	-0.012	-0.018	0.207	0.202	0.291
	(0.015)	(0.015)	(0.019)	(0.162)	(0.168)	(0.220)
Male	-0.091	-0.011	-0.011	0.315	-0.009	-0.012
	(0.103)	(0.045)	(0.045)	(1.646)	(0.721)	(0.718)
ELS $\times$ Male	0.141			-0.387		
	(0.116)			(1.825)		
m $\times$ Male		0.005			0.004	
		(0.011)			(0.116)	
ELS $\times$ m $\times$ Male			0.008			-0.031
			(0.012)			(0.133)
Constant	0.929***	0.894***	0.894***	2.839**	2.953***	2.981***
	(0.065)	(0.061)	(0.061)	(1.143)	(0.976)	(0.971)
Observations	1408	1408	1408	1073	1073	1073
R^2	0.148	0.143	0.144			
Pseudo R^2				0.021	0.021	0.022

Notes: Data from the first experiment. Models (1) to (3) report OLS regression results. The dependent variable is the contract acceptance (equal to one if a contract with m unfriendly messages is accepted and zero otherwise). Models (4) to (6) report Tobit regression results, conditional on contract acceptance. The dependent variable is the effort choice with a lower limit of zero and an upper limit of 10. *ELS* is a treatment dummy that equals one in the ELS treatment and zero in the ELD treatment. The degree of unfriendliness, captured by the number of unfriendly messages, is denoted with m. *Male* equals one if the subject's gender is male and zero otherwise. Clustered standard errors at the subject level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A10: Gender differences in workers' responses, second experiment

Dependent variable	Acceptance			Effort		
	(1)	(2)	(3)	(4)	(5)	(6)
ELS	0.135*	0.141*	0.131*	0.592	0.037	-0.032
	(0.079)	(0.074)	(0.074)	(1.090)	(0.770)	(0.777)
Number of friendly messages (m_f)	0.027***	0.024**	0.027***	0.204***	0.207***	0.208***
	(0.009)	(0.010)	(0.009)	(0.049)	(0.059)	(0.049)
Number of unfriendly messages (m_u)	-0.038***	-0.045***	-0.038***	-0.380***	-0.355***	-0.377***
	(0.010)	(0.011)	(0.010)	(0.133)	(0.134)	(0.134)
ELS × m_f	-0.019*	-0.021**	-0.014	-0.069	-0.077	-0.027
	(0.010)	(0.010)	(0.014)	(0.061)	(0.060)	(0.101)
ELS × m_u	0.001	-0.002	-0.008	0.283**	0.291*	0.388**
	(0.012)	(0.012)	(0.016)	(0.140)	(0.150)	(0.151)
Male	-0.003	-0.060	-0.018	0.879	0.148	0.419
	(0.079)	(0.062)	(0.053)	(1.241)	(0.644)	(0.718)
ELS × Male	-0.011			-1.065		
	(0.094)			(1.440)		
m_f × Male		0.005			0.006	
		(0.010)			(0.059)	
m_u × Male		0.015			-0.047	
		(0.011)			(0.094)	
ELS × m_f × Male			-0.008			-0.066
			(0.010)			(0.114)
ELS × m_u × Male			0.012			-0.151
			(0.014)			(0.139)
Constant	0.669***	0.695***	0.676***	2.372**	2.691***	2.571***
	(0.064)	(0.064)	(0.062)	(0.931)	(0.773)	(0.790)
Observations	1125	1125	1125	787	787	787
R^2	0.129	0.131	0.132			
Pseudo R^2				0.017	0.016	0.016

Notes: Data from the second experiment. Models (1) to (3) report OLS regression results. The dependent variable is the contract acceptance (equal to one if a contract with m_u unfriendly or m_f friendly messages is accepted and zero otherwise). Models (4) to (6) report Tobit regression results, conditional on contract acceptance. The dependent variable is the effort choice with a lower limit of zero and an upper limit of 10. *ELS* is a treatment dummy that equals one in the ELS treatment and zero in the ELD treatment. The variable *Number of friendly messages (m_f)* equals one, four, seven, or 10 for the respective contract with friendly leadership style, and equals zero otherwise. The variable *Number of unfriendly messages (m_u)* equals one, four, seven, or 10 for the respective contract with unfriendly leadership style, and equals zero otherwise. *Male* equals one if the subject's gender is male and zero otherwise. Clustered standard errors at the subject level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

B Appendix: Theoretical Analysis

B.1 The degree of unfriendliness and the worker's utility

Proposition 1. *The utility of a hired worker, $U_W(e^*(m_i), m_i)$, strictly decreases in m_i.*

Proof. The workers' optimal effort, $e^*(m_i)$, is given by equation (1). The worker's utility anticipating his optimal effort choice can be written as:

$$U_W(e^*(m_i), m_i) = X_W(e^*(m_i)) - \left(1 - \frac{e^*(m_i)}{10}\right) sm_i + (\rho + \theta(m_i))X_M(e^*(m_i))$$
$$= w - c(e^*(m_i)) - \left(1 - \frac{e^*(m_i)}{10}\right) sm_i + (\rho + \theta(m_i)) \left(\frac{e^*(m_i)}{10}\Delta\pi + \pi_L - w\right).$$

First suppose that m_i is such that the worker's utility $U_W(e, m_i)$ is strictly decreasing in e for all $e \geq 0$, i.e., we have a corner solution where $e^*(m_i) = 0$. A marginal increase of m_i will not affect $e^*(m_i)$. Thus, because $s > 0$, $\theta'(m_i) < 0$, and $\pi_L - w > 0$, we obtain that $U_W(e^*(m_i), m_i)$ is strictly decreasing in m_i.

Now suppose that we have an interior solution regarding $e^*(m_i)$. By the envelope theorem,

$$\frac{\partial U_W(e^*(m_i), m_i)}{\partial m_i} = -s\left(1 - \frac{e^*(m_i)}{10}\right) + \theta'(m_i)X_M(e^*(m_i)),$$

which is strictly smaller than zero. ■

B.2 The leadership style choice in the ELD market

We regard the first decision stage described in section 4.3 as a two-player game between $Manager_1$ and $Manager_2$ with the strategy space $S_i = [0, 10]$ for $i \in \{1, 2\}$. A strategy $m_i \in S_i$ specifies the unfriendliness of $Manager_i$'s leadership style. The utility of $Manager_i$ is given by U_{M_i} for $j \neq i$:

$$U_{M_i} = \begin{cases} \frac{e^*(m_i)}{10}\Delta\pi + \pi_L - w - I(m_i)\left(1 - \frac{e^*(m_i)}{10}\right)k & \text{if } m_i < m_j, \\ \frac{1}{2}\left\{\frac{e^*(m_i)}{10}\Delta\pi + \pi_L - w - I(m_i)\left(1 - \frac{e^*(m_i)}{10}\right)k\right\} & \text{if } m_i = m_j, \\ 0 & \text{if } m_i > m_j. \end{cases}$$

We refer to our assumption of a strictly positive utility of the manager who hires a worker as assumption (B1):

$$\frac{e^*(m_i)}{10}\Delta\pi + \pi_L - w - I(m_i)\left(1 - \frac{e^*(m_i)}{10}\right)k > 0, \ \forall m_i. \tag{B1}$$

Proposition 2. *Suppose Assumption (B1) holds. There is a unique pure strategy Nash*

equilibrium $(m_1^*, m_2^*) = (0, 0)$ *of the game, where both* $Manager_1$ *and* $Manager_2$ *choose not to adopt the unfriendly leadership style.*

Proof. In the game $\{S_1, S_2; U_{M_1}, U_{M_2}\}$, the strategy pair (m_1^*, m_2^*) is a pure strategy Nash equilibrium if, for each $Manager_i$, m_i^* is a best response to $Manager_j$'s strategy m_j^*. For $m_1^* = 0$, a best response of $Manager_2$ is to set $m_2 = 0$ and get the utility $\frac{1}{2}\left\{\frac{e^*(0)}{10}\Delta\pi + \pi_L - w\right\}$, which is strictly positive given assumption (B1). Any $m_2 > 0$ cannot be a best response since it means that $Manager_2$ will not be able to hire the worker and hence earn zero utility. Similarly, $Manager_1$'s best response to $m_2^* = 0$ is $m_1 = 0$.

We now discuss the uniqueness of the equilibrium $(m_1^*, m_2^*) = (0, 0)$ by considering all other equilibrium candidates. The two remaining candidate cases are the case where $m_j > m_i \geq 0$ and the case where $m_i = m_j > 0$.

In the former case, where $Manager_j$'s unfriendliness is strictly higher than $Manager_i$'s, $m_j > m_i \geq 0$, $Manager_j$ can deviate by setting m_j equal to m_i and get the utility

$$\frac{1}{2}\left\{\frac{e^*(m_i)}{10}\Delta\pi + \pi_L - w - I(m_i)\left(1 - \frac{e^*(m_i)}{10}\right)k\right\}.$$

$Manager_j$ is better off with this deviation due to Assumption (B1). Thus, the strategy pairs with $m_j > m_i \geq 0$ cannot be an equilibrium candidate.

The latter case refers to a situation where both managers adopt the unfriendly leadership style, with the same degree of unfriendliness, $m_i = m_j > 0$. $Manager_j$ earns the utility

$$\frac{1}{2}\left\{\frac{e^*(m_i)}{10}\Delta\pi + \pi_L - w - I(m_i)\left(1 - \frac{e^*(m_i)}{10}\right)k\right\}$$

in this case. By deviating to a leadership style, $m_i - \epsilon$ for $\epsilon > 0$, $Manager_j$ can make sure she hires the worker and earn

$$\frac{e^*(m_i - \epsilon)}{10}\Delta\pi + \pi_L - w - I(m_i)\left(1 - \frac{e^*(m_i - \epsilon)}{10}\right)k.$$

This deviation is profitable for $Manager_j$ for small enough ϵ. Thus, the leadership style choices with $m_i = m_j > 0$ cannot be an equilibrium. ■

B.3 The model with friendly and unfriendly leadership styles

We modify the model in section 4 to include the friendly leadership style in managers' choice sets. The monetary payoffs for managers $(X_M(e))$ and workers $(X_W(e))$ remain the same as stated in section 4. A manager can adopt one of three possible options: Style u ('unfriendly leadership'), Style f ('friendly leadership'), and Style n ('no leadership'). We introduce a new variable $m_f \in [1, 10]$ to denote the intensity of the friendly leadership

style. The variable $m_u \in [1, 10]$ denotes the intensity of the unfriendly leadership style.

When the manager adopts no leadership, her utility from hiring a worker is the same as the expected monetary payoff: $U_M^n(e, 0) = X_M(e)$. When the manager adopts Style f and the project succeeds, she bears a non-monetary cost of leadership style implementation, $k_f > 0$. The utility for this case is given by:

$$U_M^f(e, m_f) = X_M(e) - \frac{e}{10} k_f.$$

Likewise, the manager bears a non-monetary leadership style cost $k_u > 0$ if she adopts Style u and the project fails. Thus, the utility of the manager who adopts Style f is given by:

$$U_M^u(e, m_u) = X_M(e) - \left(1 - \frac{e}{10}\right) k_u.$$

We keep the assumption that a worker has other-regarding preferences, with ρ indicating his baseline distributional preferences. The worker's utility under no leadership is $U_W^n(e, 0) = X_W(e) + \rho X_M(e)$. We also keep the assumption that being exposed to Style u decreases the utility with the sensitivity $s > 0$. As specified in section 4, $\theta(m_u) < 0$ captures the worker's negative reciprocity. Accordingly, the worker's utility under Style u is given by:

$$U_W^u(e, m_u) = X_W(e) - \left(1 - \frac{e}{10}\right) s m_u + (\rho + \theta(m_u)) X_M(e),$$

which is maximized by the effort choice

$$e_u^*(m_u) = \max\left\{0, \frac{a}{10}[(\rho + \theta(m_u))\Delta\pi + s m_u]\right\}.$$

We assume that exposure to Style f increases the worker's utility and denote the worker's sensitivity to the intensity of the friendly leadership style by $r > 0$. We further assume the worker exhibits positive reciprocity in response to the manager's friendly leadership style adoption, captured by $\gamma(m_f) > 0$, and that the strength of this reciprocity increases in the friendliness, $\gamma'(m_f) > 0$. The worker's utility under Style f is

$$U_W^f(e, m_f) = X_W(e) + \frac{e}{10} r m_f + (\rho + \gamma(m_f)) X_M(e),$$

which is maximized by the effort choice

$$e_f^*(m_f) = \max\left\{0, \frac{a}{10}[(\rho + \gamma(m_f))\Delta\pi + r m_f]\right\}.$$

B.3.1 Predictions for the ELS market

When there is excess labor supply, a manager's choice of leadership style and its intensity is independent of the leadership style chosen by the other manager, as we discussed in

section 4.4. Since both the incentive effect of friendly leadership, rm_f, and the positive reciprocity, $\gamma(m_f)$, increase the effort, there is no trade-off for the manager to consider in determining the intensity of friendly leadership, m_f. Thus, conditional on the adoption of Style f, the optimal intensity is $m_f^* = 10$. A manager prefers Style f to Style n if $U_M^f(e_f^*(10), 10) > X_M(e_n^*)$, with $e_n^* = \max\left\{0, \frac{a}{10}\rho\Delta\pi\right\}$. This condition holds if the non-monetary cost of friendly leadership, k_f, is not high and if $e_f^*(10) > 0$ as the latter implies $e_f^*(10) > e_n^*$.

We next discuss the conditions for the manager to choose Style u over Style f, assuming that Style f dominates Style n (i.e., the leadership style cost k_f is not high and $e_f^*(10) > 0$). Letting m_u^* denote the optimal intensity of Style u, a manager prefers Style u to Style f if and only if:

$$\frac{\Delta\pi}{10}(e_u^*(m_u^*) - e_f^*(10)) - \left(1 - \frac{e_u^*(m_u^*)}{10}\right) k_u + \frac{e_f^*(10)}{10} k_f > 0, \tag{B2}$$

i.e., a potential gain from increased effort under Style u compared to the effort under Style f should exceed the changes in expected leadership style cost. If the cost of unfriendly leadership, k_u, is not prohibitively high as we have assumed in section 4, the opposing reciprocity toward Style u and f becomes a key element in satisfying the condition. Since $\gamma(m_f) > 0 > \theta(m_u)$ for all m_f and m_u, the manager can benefit from choosing Style u over Style f only if there exists sizable enough asymmetry in the worker's sensitivity to each style to compensate for the detrimental effect of negative reciprocity under Style u. That is, s should be much larger than r, meaning that the worker is much more sensitive to unfriendliness than he is to friendliness.

In summary, if Style f dominates Style n and condition (B2) holds, the optimal choice of unfriendliness, m_u^*, follows from our analysis in section 4.4. Otherwise, the manager chooses to adopt Style f over Style u and the optimal intensity is $m_f^* = 10$ as discussed above.

B.3.2 Predictions for the ELD market

We now consider the managers' choice of leadership under excess labor demand. Given Style f, the worker's utility increases in m_f as $\gamma'(m_f) > 0$. Given Style u, the worker's utility decreases in m_u as $\theta'(m_u) < 0$ (see the appendix B.1). Thus, the worker prefers Style f to both Style u and Style n and, given Style f, prefers contracts with higher intensity of friendliness. Following similar arguments as in the appendix B.2, competition between managers makes them choose Style f with the highest intensity of friendliness, $m_f^* = 10$.

C Supplementary Materials

C.1 Instructions for the first experiment

Welcome to our experiment!

During the experiment, you are not allowed to use electronic devices or to communicate with other participants. Please use only the programs and functions intended for the experiment. Please do not talk to the other participants. If you have a question, please raise your hand. We will then come to you and answer your question in silence. Please do not ask your questions out loud. If the question is relevant for all participants, we will repeat it loudly and answer it. If you violate these rules, we must exclude you from the experiment and the payout.

You will receive a show-up fee of 5€ and an additional participation fee of 2€.

During the experiment, you can earn an additional amount of money depending on your decisions and the decisions of other participants. The currency of your earnings in this experiment is called ECU (Experimental Currency Unit). Each participant has an individual account with their earned amount of the ECU. Upon completion of the experiment, the earned amount will be converted into Euros at the rate of 1€ for 2 ECU and paid to you individually in cash.

Roles and groups

All participants (including you) will be randomly split into groups of [ELD: three / ELS: five]. Two randomly selected participants of each group will be assigned to the role of managers, and the other group [ELD: member / ELS: members] will be assigned to the role of [ELD: a worker. / ELS: workers.]

You will learn your role after the beginning of the experiment. Everyone will keep the same group membership and the same role during the whole experiment. Everyone will interact only with participants from their group. No one will learn the identities of their group members. The experiment will last only one round (i.e., it will have no repetition).

Manager-worker interaction

A manager can hire [ELD: the worker / ELS: a worker] in his/her group on a fixed-term contract. If a manager hires [ELD: the worker / ELS: a worker], the manager pays a wage of 20 ECU to the hired worker. The task of the hired worker will be to complete a project. To do so, the worker chooses an effort level to put into the project, as a number from 0 to 10. The project can succeed or fail depending on this choice of effort level;

the higher the effort level, the more likely the project is to succeed. However, choosing a higher effort level is more costly to the worker. Table 1 illustrates how the effort level determines the chances of project success and failure, as well as the worker's effort cost.

Effort level	0	1	2	3	4	5	6	7	8	9	10
Chances of project success	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Chances of project failure	100%	90%	80%	70%	60%	50%	40%	30%	20%	10%	0%
Cost (in ECU)	0	0.2	0.7	1.6	2.9	4.5	6.5	8.9	11.6	14.7	18.2

Table 1: The chances of project success or failure and effort cost for each effort level

The hired worker receives the wage of 20 ECU regardless of the success or failure of the project. On the contrary, the manager earns additional profit from a successful project. The manager will naturally learn about the success or failure of the project but not the exact effort level chosen by the worker.

To hire [ELD: the worker / ELS: a worker], every manager offers a contract, where he/she can stipulate how many messages he/she wants to send to the worker from a given list ('Style B' list presented below) in case of project failure.

The manager's messages in case of project failure

At the end of the experiment, [ELD: the worker / ELS: every worker] will have to read and replicate (by typing) ten statements. The statements can be either of Style A or Style B. The lists of Style A and Style B statements are given below:

Style A:

The four seasons, spring, summer, autumn, and winter, follow one another.
Easter can be in March or April. April, June, and September have thirty days.
The month of February consists of either twenty-eight or twenty-nine days.
March, May, July, August, October, and December have thirty-one days.
Tuesday is always preceded by Monday and followed by Wednesday.
A week has seven days. Every day begins with a morning and ends with an evening.
March is the third month of a year. March is followed by April, May, and June.
A day has twenty-four hours. An hour has sixty minutes and lots of seconds.
Saturday comes before Sunday. Wednesday is the third day of the week.
Thursday is the fourth day of the week. Thanksgiving is in November.

Style B:

You are clumsy and incompetent. It's unfortunate that I am working with you.
If there were only employees like you, every company would go bankrupt!

You have just totally failed me! How can you still look at yourself in the mirror?!.
Thank you for nothing! Hope I'll never have to work with you sluggard again!
What do you think I have hired you for? Being the greatest shirker on earth?!
Money rules! Because of you, I go bust! You feel good now, at my expense?
Always exploit others for your own benefit. That's your attitude, right?
How selfish you are! Have you ever thought about someone besides yourself?
Poor performance! One really cannot rely on anybody, especially you!
You want some feedback? I have only two words for you: selfish and unreliable.

As you can infer, the statements of Style A are emotionally neutral, whereas the statements of Style B are very emotional, expressing a manager's dissatisfaction. One can think of these Style B statements as messages that a manager wants to send to his or her worker who failed on a project. The messages are sent in the following way: Each manager chooses a number, and this number of statements will be from the list of Style B for the worker he or she hires in case of project failure.

Thus, If [ELD: the worker / ELS: a worker] is hired and the project fails, the composition of the statements will be as specified in the contract closed between this worker and his/her manager (Style A and/or Style B). Otherwise, all the statements that [ELD: the worker / ELS: a worker] has to read and replicate are neutral (Style A). The number of statements is always ten in total, regardless of being hired or not, project success or failure.

Contract offer and earnings

As described above, in their contract offers, each manager decides how many out of the ten statements should come from the list of Style B if the project fails. The decision is to choose a number from 0 to 10. For example, if a manager chooses a number 'x' and the project fails, x statements from the list of Style B will be randomly chosen for the hired worker to read and replicate. The remaining statements (10 minus x) will be of Style A.

Each manager makes only one contract offer (individually and independently from the other manager). The wage of a hired worker is always the same. Thus, the contract offers can differ only by the number of Style B statements that the hired worker will need to replicate if the project fails.

[ELD: The contract between a manager and a worker is one-on-one; the worker can work for only one manager. As stated earlier, there are two managers and one worker in each group. Therefore, at least one manager in each group will remain without a worker. / ELS: The contract between a manager and a worker is one-on-one; each worker can

work for only one manager, and each manager can hire only one worker. As stated earlier, there are two managers and three workers in each group. Therefore, at least one worker in each group will remain unhired.]

By hiring a worker, a manager can obtain earnings from the project. The earnings are 40 ECU in case of project success and 25 ECU in case of project failure. The wage of 20 ECU will be transferred to the hired worker from the manager's earnings account. Managers have no discretion over the wage level, and this amount is paid to the worker even if the project fails.

All managers who do not hire a worker earn 0 ECU. Also, workers who are not hired by any manager earn 0 ECU.

Hiring process

[ELD: The worker / ELS: Every worker] sees the list of all 11 possible contract offers with zero to ten statements of Style B. (At this point, the [ELD: worker does not / ELS: workers do not] know which of them are the contract offers made by the managers.). For each of the contract offers on this list, [ELD: the worker / ELS: every worker] decides
(i) whether to accept the contract offer (by clicking Yes or No for the question "Would you like to accept this contract when offered by the manager?"),
(ii) which effort level to provide if hired under the contract offer (by choosing a number from 0 to 10),
(iii) and the preference ranking of all contract offers (by allocating a number starting from 1 for the most preferred contract offer, up to 11, the least preferred).
Only the decisions made for the actual contract offers from the managers are relevant. Based on his/her acceptance and preference rankings of these contract offers, [ELD: the worker / ELS: a worker] may be hired by one of the managers.

[ELD: Conditional on the worker's willingness to accept the contracts offered by the two managers, the worker can either be hired or not. Here are the details of the hiring process:

- If the worker has accepted both contract offers, the worker will be hired for the contract he/she prefers more. If the worker is indifferent between both contracts, one contract will be randomly selected for hire.
- If the worker accepts only one of the two managers' contract offers, the manager who offered this contract will hire the worker, and the other manager will remain without a worker.
- If the worker has rejected both managers' contract offers, the worker will not be

hired.

/ ELS: Conditional on the workers' willingness to accept the contracts offered by the two managers, a worker can either be hired or not. Not every worker can be hired for his/her first choice because there are more workers than managers in one group. Here are the details of the hiring process:

- For each of the two managers' contract offers, one worker will be randomly selected for hire from those workers in the group who have accepted the contract offer.
- If one worker is selected for more than one contract offer, then the worker will be hired for the contract he/she prefers more. If this worker is indifferent between both contracts, one contract will be randomly selected for hire. The remaining contract will be given to another worker who has accepted the contract offer, who will be randomly selected if two other workers have accepted the contract offer.

] Please note that [ELD: the worker's /ELS: the workers'] effort level is not relevant to the hiring process. The hiring process takes only the acceptance decisions and preferences of [ELD: the worker / ELS: the workers] into account. [ELD: The /ELS: A] worker's effort level becomes relevant and determines his/her earnings and the chances of project success and failure only when the worker is actually hired under a contract offer.

How the earnings (ECU) of workers and managers are calculated

A worker who is hired by a manager gets the 20 ECU wage from the manager. The final earnings of the worker depend on the effort level he/she chose. Table 2 summarizes the worker's costs for each particular effort level and the corresponding final earnings.

Table 2 also informs you how the project success depends on the worker's effort level. As stated earlier, a manager earns 40 ECU from a successful project and 25 ECU from a failed project. After paying the 20 ECU wage to the worker, a manager is left with a profit of 20 ECU (success) or 5 ECU (failure).

Here are some example cases:

Effort level	0	1	2	3	4	5	6	7	8	9	10
Chances of project success	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Effort cost (in ECU)	0	0.2	0.7	1.6	2.9	4.5	6.5	8.9	11.6	14.7	18.2
Worker earnings (ECU)	20	19.8	19.3	18.4	17.1	15.5	13.5	11.1	8.4	5.3	1.8

Table 2: The chances of project success and earnings for a worker

- If the worker chooses effort level 0, the project will definitely fail. The worker's effort cost is 0 ECU. The manager's profit is 5 ECU, and the worker earns 20 ECU.

- If the worker chooses effort level 3, then the chance of project success is 30%, and the chance of project failure is 70%. The worker bears the cost of 1.6 ECU. The manager has a 70% chance of earning 5 ECU profit and a 30% chance of earning 20 ECU profit. The worker earns 18.4 ECU for sure.
- If the worker chooses effort level 10, the project success is certain. The worker bears the effort cost of 18.2 ECU. The manager earns 20 ECU profit, and the worker earns 1.8 ECU.

Each manager and worker learn the outcomes of the hiring process (whether they were hired or not) and the project outcome in case of hire (whether the project was successful or not). [ELD: The worker /ELS: Each worker] reads and replicates ten statements of Style A and/or Style B depending on the manager's contract offer, hiring and project outcome:

- Ten Style A statements if a worker remained unhired or if a worker was hired and the project succeeded.
- Some Style A statements and/or some Style B statements, with the exact number of Style B statements as stipulated in the contract, if a worker was hired and the project failed.

Summary of earnings:
For a manager who hires a worker:

- If the project succeeds
  40 ECU – 20 ECU (wage)
- If the project fails
  25 ECU – 20 ECU (wage)

For a worker who is hired by a manager:
20 ECU (wage) – effort cost

Managers who do not hire a worker and workers who are not hired by a manager earn 0 ECU.

This is the end of the instructions. Please raise your hand if you have any questions.

C.2 Comprehension questions for the first experiment

1. Of which style is the following sentence?
   A decade is a period that comprises ten years. A year has twelve months. [Style A]

2. Of which style is the following sentence?
   How pathetic! I pity everyone who will have to work with you in the future. [Style B]
3. How many managers will be in each group? [2]
4. How many workers will be in each group? [ELD: 1 / ELS: 3]
5. Assume that you are a manager. How much ECU do you earn if you do not hire a worker? [0 ECU]
6. Assume that you are a worker who is not hired.
   - How much ECU do you earn? [0 ECU]
   - In which style will the ten statements be for you to read and replicate? [Style A]
7. Assume that you are a worker who has been hired.
   - When your choice of effort level is 1, what are the chances of project success? [10%]
     How much is the cost of effort? [0.2 ECU]
   - When your choice of effort level is 5, what are the chances of project success? [50%]
     How much is the cost of effort? [4.5 ECU]
   - When your choice of effort level is 9, what are the chances of project success? [90%]
     How much is the cost of effort? [14.7 ECU]
8. Assume that you are a manager and you hired a worker who accepted your contract offer.
   - How much ECU do you earn when the project succeeds? [20 ECU]
   - How much ECU do you earn when the project fails? [5 ECU]
   - Assume that you have included 0 Style B statements in your contract offer. How many statements of Style B will there be for your worker if the project fails? [0]
   - Assume that you have included 7 Style B statements in your contract offer. How many statements of Style B will there be for your worker if the project succeeds? [0]

C.3 Belief and social norms elicitation in the first experiment

Belief about workers' acceptance

In the following, we ask for your estimates of 10 other participants' decisions of this ex-

periment. You can answer the questions by typing a number from 0 to 10 in the input field for each question. You will earn an additional bonus of 25 Cent for each of your estimates which is exactly the actual value or deviates from the actual value by no more than one unit.
Out of 10 randomly selected workers in this experiment, how many workers do you think have accepted a contract offer with [3, 7] Style B statements?

Belief about workers' effort
In the following, we ask for your estimates of 5 other participants' decisions of this experiment. You can answer the questions by typing a number from 0 to 10 in the input field for each question. You will earn an additional bonus of 25 Cent for each of your estimates which is exactly the actual value or deviates from the actual value by no more than one unit.
For 5 randomly selected workers who have accepted a contract offer with [3, 7] Style B statements, what do you think the average effort level was?

Social norms
How socially appropriate do you consider sending [0, 1, 10] statements of Style B to a worker who fails on a project? By socially appropriate, we mean being consistent with moral or proper social behavior.
[very socially inappropriate / somewhat socially inappropriate / somewhat socially appropriate / very socially appropriate]

What do you think was the most common response to the same question as above among 10 randomly selected managers in this experiment? If you give the same response as the most frequently chosen one by the 10 managers, you will receive an additional 25 Cent.
[very socially inappropriate / somewhat socially inappropriate / somewhat socially appropriate / very socially appropriate]

How fair do you consider sending [0, 1, 10] statements of Style B to a worker who fails on a project? By fair, we mean sending such messages as being a deserved treatment to deal with the situation.

What do you think was the most common response to the same question as above among 10 randomly selected managers in this experiment? If you give the same response as the most frequently chosen one by the 10 managers, you will receive an additional 25 Cent.
[very unfair / somewhat unfair / somewhat fair / very fair]

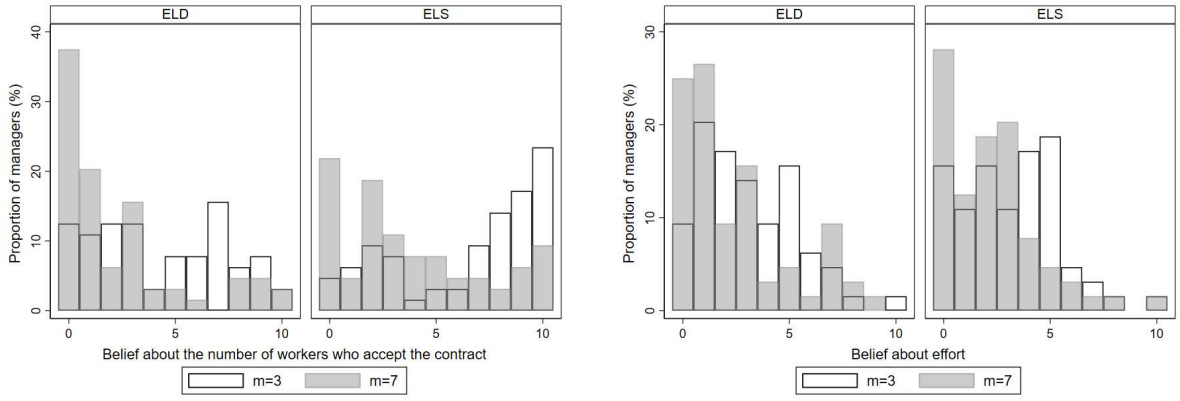
C.4 Analysis of beliefs, first experiment

In this section, we analyze managers' beliefs elicited in the first experiment, where managers were asked about workers' contract acceptance and efforts for two contracts: with three and seven unfriendly messages. The belief questions were included in the exit questionnaire, which was presented after managers learned about the employment and project outcome. This is in contrast to the timing of belief elicitation in the second experiment, where we asked belief questions to managers while workers were making decisions, hence before learning about any outcomes. Figure C1a and C1b display the distribution of beliefs by treatment. Table C1 reports means, standard deviations, and test results for the treatment comparison. The managers believe that workers are more likely to accept contracts in the ELS treatment than in the ELD treatment, *ceteris paribus* ($p < 0.01$, two-sided Wilcoxon rank-sum tests, see table C1). The expected effect of the increased degree of unfriendliness on workers is negative (all $p < 0.06$, two-sided Wilcoxon signed-rank test) but does not differ statistically significantly between treatments (all $p > 0.24$ for between-contract differences in the expected contract acceptance likelihood and efforts).

Regression analysis reported in table C2 supports these findings. Models (1) and (2) show that managers expect approximately 2.4 fewer workers out of 10 to accept the contract with seven unfriendly messages compared to the contract with three unfriendly messages (see the coefficient estimations for the dummy variable *Number of unfriendly messages,* $m = 7$, all $p < 0.01$). Managers also expect workers to choose lower effort for the contracts with seven messages than three messages by around 0.7 to 0.8 effort units, as reported in models (3) and (4) ($p < 0.01$ in model (3), $p = 0.034$ in model (4)).

On average, managers expect 1.9 to 2.3 more workers to accept contracts in the ELS treatment compared to the ELD treatment ($p < 0.01$), but no treatment effect is observed for the beliefs about effort. Moreover, the reaction to the increased degree of unfriendliness is not statistically different between treatments: estimated coefficients for the interaction term $ELS \times m = 7$ in models (2) and (4) in table C2 are not statistically significantly different from zero.

Figure C1: Manager's beliefs about workers' contract acceptance and effort, first experiment



(a) Distribution of beliefs about acceptance

(b) Distribution of beliefs about effort

Notes: Data from the first experiment. Figure C1a plots the distribution of beliefs about the number of workers who accept the contracts by treatment, for the contracts with three and seven unfriendly messages. Figure C1b plots the distribution of beliefs about workers' effort by treatment, for the contracts with three and seven unfriendly messages.

Table C1: Descriptive statistics for beliefs about workers' responses, first experiment

	Belief about acceptance			Belief about effort		
Treatment	ELD	ELS	Test	ELD	ELS	Test
Contract with three unfriendly messages	4.33	6.56	$z = -3.956^{***}$	3.11	3.16	$z = -0.173$
	(3.09)	(3.37)		(2.25)	(2.25)	
Contract with seven unfriendly messages	2.28	3.81	$z = -2.913^{***}$	2.42	2.23	$z = 0.017$
	(2.92)	(3.32)		(2.52)	(2.16)	
Between-contract difference	-2.05***	-2.75***	$z = 0.930$	-0.69*	-0.92***	$z = 1.161$
	(3.12)	(2.92)		(2.56)	(2.67)	

Notes: Mean and standard deviations (in parentheses below means) of the beliefs reported for the two contracts with three and seven unfriendly messages, by treatments. The treatment differences are tested by two-sided Wilcoxon rank-sum test. The within-subject differences are tested with two-sided Wilcoxon signed-rank test and are indicated if statistically significant according to the legend. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table C2: Managers' beliefs about workers' responses, first experiment

Dependent variable	Belief about acceptance		Belief about effort	
	(1)	(2)	(3)	(4)
ELS	1.883***	2.234***	-0.070	0.047
	(0.495)	(0.572)	(0.335)	(0.399)
Number of unfriendly messages, m=7	-2.398***	-2.047***	-0.805***	-0.688**
	(0.269)	(0.391)	(0.231)	(0.320)
ELS × m=7		-0.703		-0.234
		(0.535)		(0.462)
Constant	4.504***	4.328***	3.168***	3.109***
	(0.354)	(0.387)	(0.269)	(0.282)
Observations	256	256	256	256
R^2	0.189	0.191	0.030	0.031

Notes: Data from the first experiment. Results from OLS regressions with robust standard errors clustered at subject level in parentheses. The dependent variable is managers' beliefs about the number of workers who accept contracts for models (1) and (2). The dependent variable and managers' beliefs about effort for models (3) and (4). *ELS* is a treatment dummy that equals one in the ELS treatment and zero in the ELD treatment. The dummy variable *Number of unfriendly messages,* $m = 7$ equals one if the belief elicitation is about the contract with *seven* messages and zero if the belief is about the contract with *three* messages. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

C.5 Instructions for the second experiment

Welcome to our experiment!

During the experiment, you are not allowed to use electronic devices or to communicate with other participants. Please use only the programs and functions intended for the experiment. Please do not talk to the other participants. If you have a question, please raise your hand. We will then come to you and answer your question quietly. Please do not ask your questions out loud. If the question is relevant for all participants, we will repeat it loudly and answer it. If you violate these rules, we must exclude you from the experiment and the payout.

You will receive a show-up fee of 5€ and an additional participation fee of 2€.

In the experiment, you can earn an additional amount of money depending on your decisions and the decisions of other participants. The currency of your earnings in this experiment is called ECU (Experimental Currency Unit). Each participant has an individual account with their earned amount of the ECU. Upon completion of the experiment, the earned amount will be converted into Euros at the rate of 1€ for 2 ECU and paid to you individually in cash.

Roles and groups

All participants (including you) will be randomly split into groups of [ELD: three / ELS: five]. Two randomly selected participants of each group will be assigned to the role of managers, and the other group [ELD: member / ELS: members] will be assigned to the role of [ELD: a worker. / ELS: workers.]

You will learn your role after the beginning of the experiment. Everyone will keep the same group membership and the same role during the whole experiment. Everyone will interact only with participants from their group. No one will learn the identities of their group members. The experiment will last only one round (i.e., it will have no repetition).

Manager-worker interaction

A manager can hire [ELD: the worker / ELS: a worker] in his/her group on a fixed-term contract. The task of the hired worker will be to complete a project. To do so, the worker chooses an effort level to put into the project, as a number from 0 to 10. The project can succeed or fail depending on this choice of effort level; the higher the effort level, the more likely the project is to succeed. However, choosing a higher effort level is more costly to the worker. Table 1 illustrates how the effort level determines the chances of project success and failure, as well as the worker's effort cost.

Effort level	0	1	2	3	4	5	6	7	8	9	10
Chances of project success	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Chances of project failure	100%	90%	80%	70%	60%	50%	40%	30%	20%	10%	0%
Cost (in ECU)	0	0.2	0.7	1.6	2.9	4.5	6.5	8.9	11.6	14.7	18.2

Table 1: The chances of project success or failure and effort cost for each effort level

The manager pays a wage of 20 ECU to the hired worker. The wage is paid regardless of the success or failure of the project. On the contrary, the manager's profit depends on the project success or failure. The manager will learn about the success or failure of the project but not the effort level chosen by the worker.

To hire [ELD: the worker / ELS: a worker], every manager offers a contract, where he/she can stipulate the type of messages and how many messages he/she wants to send to the worker. The messages can be selected from a given list and made conditional on the project success or failure.

The manager's messages

At the end of the experiment, [ELD: the worker / ELS: every worker] will have to read and replicate (by typing) ten statements. These statements can be of Style A, or Style

B.

Style A statements are as follows:
The four seasons, spring, summer, autumn, and winter, follow one another.
Easter can be in March or April. April, June, and September have thirty days.
The month of February consists of either twenty-eight or twenty-nine days.
March, May, July, August, October, and December have thirty-one days.
Tuesday is always preceded by Monday and followed by Wednesday.
A week has seven days. Every day begins with a morning and ends with an evening.
March is the third month of a year. March is followed by April, May, and June.
A day has twenty-four hours. An hour has sixty minutes and lots of seconds.
Saturday comes before Sunday. Wednesday is the third day of the week.
Thursday is the fourth day of the week. Thanksgiving is in November.

Style B statements can be from one of these two sets:

Set 1

As a skillful and competent individual, you are a pleasure to work with for everybody.
It's amazing how well you performed. You were essential to the project success.
Other workers can learn a lot from you. You could be a great example to others.
I am fortunate to have you on my team. You make a huge difference to the project.
It's impressive that you manage to accomplish what you set out to do. Good job!
Your work is excellent. Honestly, without you, I would have been lost, no doubt.
Your contribution means a lot. I appreciate your hard work and commitment.
Being responsible is something you probably never shy away from, and I like that.
What a great job! I can see that you are a very reliable and trustworthy person!
The quality of your work is unmatched. You have cheered me up and made my day!

Set 2

You are clumsy and incompetent. It's unfortunate that I am working with you.
If there were only employees like you, every company would go bankrupt!
You have just totally failed me! How can you still look at yourself in the mirror?!.
Thank you for nothing! Hope I'll never have to work with you sluggard again!
What do you think I have hired you for? Being the greatest shirker on earth?!
Money rules! Because of you, I go bust! You feel good now, at my expense?
Always exploit others for your own benefit. That's your attitude, right?
How selfish you are! Have you ever thought about someone besides yourself?
Poor performance! One really cannot rely on anybody, especially you!
You want some feedback? I have only two words for you: selfish and unreliable.

As you can infer, the statements of Style A are emotionally neutral, whereas the statements of Style B are emotional, expressing the manager's satisfaction (Set 1) or dissatisfaction (Set 2). One can think of the Style B statements as a message that the manager wants to send to his/her worker after the end of the project. Accordingly, messages with statements from Set 1 will be sent only if the project succeeds. Messages with statements from Set 2 will be sent only if the project fails..

The manager decides whether he/she wants to send a message to the hired worker at the end of the project and the content of the message. If the manager sends no message, the hired worker will read and type ten (emotionally neutral) statements of Style A after the project ends.
If the manager wants to send a message, the manager first needs to decide for which project outcome he/she will send such messages by selecting the type of Style B statements. The statements can be either from Set 1 or from Set 2, but not both.

- When the manager wants to send a message to the worker in case of project success, he/she selects Set 1 (positive statements) as Style B. The manager then decides how many statements of Style A are to be replaced by statements of Style B.
- When the manager wants to send a message to the worker in case of project failure, he/she selects Set 2 (negative statements) as Style B. Then the manager decides how many statements of Style A are to be replaced by statements of Style B.

In other words, the manager can send a message either in case of success or in case of failure, but not in both cases.

Contract offers
As described above, in their contract offers, each manager decides (i) whether or not to send Style B statements, (ii) the type, and (iii) the number of statements of Style B that will replace 1 to 10 statements of Style A if the project outcome meets the corresponding condition (i.e., success or failure).

Each manager makes only one contract offer (without communicating with the other manager and without knowing the other manager's contract offer). The wage of a hired worker is always the same. Thus, the contract offers will differ only by the type and quantity of Style B statements that the hired worker will need to replicate.

[ELD: The contract between a manager and a worker is one-on-one; the worker can work for only one manager. As stated earlier, there are two managers and one worker in each group. Therefore, at least one manager in each group will remain without a worker. / ELS: The contract between a manager and a worker is one-on-one; each worker can

work for only one manager, and each manager can hire only one worker. As stated earlier, there are two managers and three workers in each group. Therefore, at least one worker in each group will remain unhired.]

Earnings of managers and workers

By hiring a worker, a manager can obtain earnings from the project. The earnings are 40 ECU in case of project success and 25 ECU in case of project failure.

The wage of 20 ECU will be transferred to the hired worker from the manager's earnings account. The hired worker earns the wage from which the effort cost is subtracted. Managers have no discretion over the wage level, and this amount is paid to the worker even if the project fails.

All managers who do not hire a worker earn 0 ECU. Also, workers who are not hired by any manager earn 0 ECU.

Hiring process

[ELD: The worker / ELS: Every worker] sees a list of several contract offers. Two of these offers will be the actual contract offers made by the managers. For each of the contract offers on this list, [ELD: the worker / ELS: every worker] decides
(i) whether to accept the contract offer (by clicking Yes or No for the question "Would you like to accept this contract if it is offered by a manager?"),
(ii) which effort level to provide if hired under the contract offer (by choosing a number from 0 to 10),
(iii) and the preference ranking of all contract offers (by allocating a number starting from 1 for the most preferred contract offer, 2 for the second most preferred offer, and so on up to the least preferred).
[ELD: The worker's / ELS: The workers'] decisions for the actual contract offers alone will be payoff relevant. Based on the acceptance and preference rankings of the contract offers, [ELD: the worker / ELS: a worker] may be hired by one of the managers. [ELD: Here are the details of the hiring process:

- If the worker has accepted the contract offers of both managers, the worker will be hired for the contract he/she prefers more. If the worker is indifferent between both contracts, one contract will be randomly selected for hire.
- If the worker accepts only one of the two managers' contract offers, the manager who offered this contract will hire the worker, and the other manager will remain without a worker.
- If the worker has rejected both managers' contract offers, the worker will not be

hired.

/ ELS: Not every worker can be hired for his/her first choice because there are more workers than managers in one group. Here are the details of the hiring process:

- For each of the two managers' contract offers, one worker will be randomly selected for hire from those workers in the group who have accepted the contract offer.
- If one worker is selected for more than one contract offer, then the worker will be hired for the contract he/she prefers more. If this worker is indifferent between both contracts, one contract will be randomly selected for hire. The remaining contract will be given to another worker who has accepted the contract offer, who will be randomly selected if two other workers have accepted the contract offer.

] Please note that [ELD: the worker's /ELS: the workers'] effort level is not relevant to the hiring process. The hiring process takes only the acceptance decisions and preferences of [ELD: the worker / ELS: the workers] into account. [ELD: The /ELS: A] worker's effort level becomes relevant and determines his/her earnings and the chances of project success and failure only when the worker is actually hired under a contract offer.

Each manager and worker learn the outcomes of the hiring process (whether the worker was hired or not) and the project outcome in case of hire (whether the project was successful or not). Then, [ELD: the worker /ELS: each worker] reads and replicates in total ten statements:

- Workers who were not hired read and replicate ten Style A statements.
- Workers who were hired replicate ten statements from the Style A and Style B lists as specified in the manager's contract offer, conditional on success or failure of the project.

How the earnings (ECU) of workers and managers are calculated

A worker who is hired by a manager gets the 20 ECU wage from the manager. The final earnings of the worker depend on the effort level he/she chose. Table 2 summarizes the worker's costs for each particular effort level and the corresponding final earnings.

Table 2 also informs you how the project success depends on the worker's effort level. As stated earlier, a manager earns 40 ECU from a successful project and 25 ECU from a failed project. After paying the 20 ECU wage to the worker, a manager is left with a profit of 20 ECU (success) or 5 ECU (failure).

Here are some example cases:

Effort level	0	1	2	3	4	5	6	7	8	9	10
Chances of project success	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Effort cost (in ECU)	0	0.2	0.7	1.6	2.9	4.5	6.5	8.9	11.6	14.7	18.2
Worker earnings (ECU)	20	19.8	19.3	18.4	17.1	15.5	13.5	11.1	8.4	5.3	1.8

Table 2: The chances of project success and earnings for a worker

- If the worker chooses effort level 0, the project will definitely fail. The worker's effort cost is 0 ECU. The manager's profit is 5 ECU, and the worker earns 20 ECU.
- If the worker chooses effort level 3, then the chance of project success is 30%, and the chance of project failure is 70%. The worker bears the cost of 1.6 ECU. The manager has a 70% chance of earning 5 ECU profit and a 30% chance of earning 20 ECU profit. The worker earns 18.4 ECU for sure.
- If the worker chooses effort level 10, the project success is certain. The worker bears the effort cost of 18.2 ECU. The manager earns 20 ECU profit, and the worker earns 1.8 ECU.

Summary of earnings:
For a manager who hires a worker:

- If the project succeeds 40 ECU – 20 ECU (wage)
- If the project fails 25 ECU – 20 ECU (wage)

For a worker who is hired by a manager: 20 ECU (wage) – effort cost

Managers who do not hire a worker and workers who are not hired by a manager earn 0 ECU.

This is the end of the instructions. Please raise your hand if you have any questions.

C.6 Comprehension questions for the second experiment

1. Of which style is the following sentence?
   A decade is a period that comprises ten years. A year has twelve months. [Style A]
2. Of which style is the following sentence?
   How pathetic! I pity everyone who will have to work with you in the future. [Style B, Set 2]
3. Of which style is the following sentence?
   What a great job! I can see that you are a very reliable and trustworthy person! [Style B, Set 1]

4. How many managers will be in each group? [2]
5. How many workers will be in each group? [ELD: 1 / ELS: 3]
6. Assume that you are a manager. How much ECU do you earn if you do not hire a worker? [0 ECU]
7. Assume that you are a worker who is not hired.
   - How much ECU do you earn? [0 ECU]
   - In which style will the ten statements be for you to read and replicate? [Style A]
8. Assume that you are a worker who has been hired.
   - When your choice of effort level is 1, what are the chances of project success? [10%]
     How much is the cost of effort? [0.2 ECU]
   - When your choice of effort level is 5, what are the chances of project success? [50%]
     How much is the cost of effort? [4.5 ECU]
   - When your choice of effort level is 9, what are the chances of project success? [90%]
     How much is the cost of effort? [14.7 ECU]
9. Assume that you are a manager and you hired a worker who accepted your contract offer.
   - How much ECU do you earn when the project succeeds? [20 ECU]
   - How much ECU do you earn when the project fails? [5 ECU]
   - Assume that you have chosen Set 1 for Style B list. You have included 5 statements from Style B, Set 1 in your contract offer.
     - How many Style B, Set 1 statements will the worker have to read and replicate if the project succeeds? [5]
     - How many Style B, Set 1 statements will the worker have to read and replicate if the project fails? [0]
   - Assume that you have chosen Set 2 for Style B list. You have included 5 statements from Style B, Set 2 in your contract offer.
     - How many Style B, Set 2 statements will the worker have to read and replicate if the project succeeds? [0]
     - How many Style B, Set 2 statements will the worker have to read and replicate if the project fails? [5]

C.7 Belief elicitation in the second experiment

Belief about the other manager's decision

In what follows, we ask you to estimate the decision of the other manager in your group. You will earn an additional bonus of 0.4 ECU if you guess correctly.

What was the other manager's contract offer? [Contract without any message from Style B / Contract with some message(s) from Style B]

(If " Contract with some message(s) from Style B" is chosen)

You think that the other manager sent some messages from Style B.

What was the other manager's choice of the type of Style B statements? [Set 1 (positive statements) / Set 2 (negative statements)]

How many Style A statements do you think the other manager chose to replace with Style B? (Select a number from 1 to 10)

Belief about workers' decisions

In what follows, we ask you to estimate the percentage of workers who agreed to accept different contract offers in the experiment today. You will earn an additional bonus of 0.4 ECU for each estimate that deviates by less than 10 percentage points from the actual value.

- What was the percentage of workers who accepted the contract offer with 0 Style B message? (Give your answer in percentage points, 0 to 100%.)
- What was the percentage of workers who accepted the contract offer with [1, 4, 7, 10] messages from Set 1 Style B (positive statements)?
- What was the percentage of workers who accepted the contract offer with [1, 4, 7, 10] messages from Set 2 Style B (negative statements)?

In what follows, we ask you to guess the average effort levels of workers who accepted different contract offers.

- What was the average effort level chosen by the workers who accepted the contract offer with 0 Style B message for this particular offer? (Give your answer as a number from 0 to 10.)
- What was the average effort level chosen by the workers who accepted the contract offer with [1, 4, 7, 10] messages from Set 1 Style B (positive statements) for this particular contract offer?
- What was the average effort level chosen by the workers who accepted the contract offer with [1, 4, 7, 10] messages from Set 2 Style B (negative statements) for this particular contract offer?

C.8 Questionnaire: preferences, personality measures, and demographics

Social preferences (Falk et al., 2018)
How well does each of the following statements describe you as a person? Please indicate your answer on a scale from 0 (does not describe me at all) to 10 (describes me perfectly).

- When someone does me a favor, I am willing to return it.
- If I am treated very unjustly, I will take revenge on the first occasion, even if there is a cost to do so.
- I assume that people have only the best intentions.

In the following, we are interested in your attitude towards other people. Please indicate the extent to which you agree or disagree with each of the statements below. [do not agree at all / hardly agree / somewhat agree / mostly agree / completely agree]

- You can't rely on anyone these days.
- In general, people can be trusted.

Risk attitude (Falk et al., 2018)
Are you generally a risk-taker, or do you try to avoid risks? Please select an answer on a scale from 0 (not at all willing to take risks) to 10 (very willing to take risks).

Big 5 (Rammstedt & John, 2007)

How well do the following statements describe your personality? "I see myself as someone who ... " [5 point Likert scale, from 1 (disagree strongly) to 5 (agree strongly)]

- is reserved
- is generally trusting
- tends to be lazy
- is relaxed, handles stress well
- has few artistic interests
- is outgoing, sociable
- tends to find fault with others
- does a thorough job
- gets nervous easily
- has an active imagination

Machiavellianism (Jones & Paulhus, 2014)
Please indicate how much you agree with each of the following statements. [5 point Likert scale, from 1 (disagree strongly) to 5 (agree strongly)]

- It's not wise to tell your secrets.
- I like to use clever manipulation to get my way.
- Whatever it takes, you must get the important people on your side.
- Avoid direct conflict with others because they may be useful in the future.
- It's wise to keep track of information that you can use against people later.
- You should wait for the right time to get back at people.
- There are things you should hide from other people to preserve your reputation.
- Make sure your plans benefit yourself, not others.
- Most people can be manipulated.

Psychopathy (Jones & Paulhus, 2014)
Please indicate how much you agree with each of the following statements. [5 point Likert scale, from 1 (disagree strongly) to 5 (agree strongly)]

- I like to get revenge on authorities.
- I avoid dangerous situations.
- Payback needs to be quick and nasty.
- People often say I'm out of control.
- It's true that I can be mean to others.
- People who mess with me always regret it.
- I have never gotten into trouble with the law.
- I'll say anything to get what I want.

Demographics
Please answer the following questions to complete the questionnaire.

- What is your gender? [Male/female/diverse/prefer not to say]
- How old are you? [Years]
- What is the highest degree or level of education you have completed? [Some high school, no diploma/High school graduate/Some college, no degree/Associate degree/Bachelor's degree/Master's degree/Professional degree/Doctorate degree]
- How many years of working experience do you have? [Years]
- Do you have any experience being in a management position? [Yes, No]