Helping in Teams

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We study how help can be fostered under relative rewards by means of a team bonus and corporate value statements. A simple model analysis combines elements of relative rewards and team bonus and studies their effect on effort, help and sabotage. The theoretical solution suggests that team members help less as relative rewards increase. This problem can be sufficiently mitigated by a team bonus that is determined by the output of the whole team. This theoretical benchmark is tested in a one-shot experiment. In a second experiment, we investigate the effectiveness of corporate value statements in encouraging help. At the very beginning of the experiment, two corporate value statements are presented. One promotes individual excellence, the other team cooperation. We observe that the cooperative mission statement encourages significantly more help. However, there is no difference in behavior between the conditions where the statement was assigned by chance or chosen by agents themselves. The individual excellence statement, however, encourages far more sabotage when it has been assigned to the subject by computer. Overall, we do not observe any effect of endogenous sorting under different corporate value statements. However, the exogenously assigned individual guideline seems to provide a certain entitlement to agents to sabotage their peers.

Key words: help, relative rewards, team incentives, corporate value statements, experiment
JEL Codes: M52, J33, J41, L23, C72, C91

1 Introduction

The performance of modern organizations increasingly depends on well-functioning teams, since many organizational processes are highly interconnected and cannot be performed by a single individual, but rather need joint engagement by a whole group of employees. In such work environments, it is essential that team members are willing to provide help to each other, like sharing information and knowledge with colleagues, giving a hand, or discussing solutions to coworkers' problems. Helping, however, is costly in terms of time and action, and in general does not improve the helper's own performance but only the performance of those who receive the help. This might result in a limited willingness to provide help. The problem is particularly severe in the presence of individual incentives such as relative rewards, i.e., when it is beneficial to be more productive in comparison to other coworkers. In such situations, providing help can be considered as supporting one's own (team-internal) competitors, and therefore employees might help less, particularly when the benefit of the relative reward at stake is high.

Recognizing the importance of a collaborative working climate, organizations look for relevant approaches that could encourage collegial team spirit (e.g., Katz 1964; Brief and Motowidlo 1986). Two of such organizational approaches are investigated in this paper: (*i*) monetary incentives and (*ii*) corporate value statements.

Indeed, employees are typically exposed to incentives based on the success of team (or department, business unit etc.). At the same time, relative rewards based on individual performance are virtually omnipresent in modern organizations. They come, for example, in the form of promotions or monetary bonuses for an extraordinarily well performing team member. In other words, team incentives are often combined with individual relative rewards. We investigate in a simple model the effectiveness of such a reward structure as an instrument to encourage help.

Agents work in teams of three and face a combination of team reward, i.e. a *team bonus*, and relative reward, i.e. an *individual bonus*. While the team bonus rests on the joint absolute team output and is assumed to be the same for all team members, the individual bonus rests on the relative individual output and is only awarded to the agent with the highest output. Each team member can choose levels of two activities: *help* that affects the outputs of the two other team members (and thus the team output) and *effort* that increases one's own output. Both activities thereby affect the total output of the team, which is simply the sum of individual outputs. Individual output, however, is affected by the agent's effort and the help provided by the other two team members

We start our analysis by deriving symmetric-equilibrium behavior. Additionally, we set up a one-shot lab experiment where decision situations tailor our model. To our best knowledge, this is the first experiment that tests the Lazear and Rosen (1981) tournament model in a clean one-shot setting. In this experiment, we vary the size of the team and individual bonus and investigate their influence on help and effort provision. It turns out that our experimental findings are generally well in line with the equilibrium benchmark: First, a team bonus significantly fosters help activities even in the presence of an individual relative reward. Second, helping decreases gradually with an increasing individual bonus.

In a second step, we explore how corporate value statements impact help. Corporate value statements are increasingly employed by organizations to establish and communicate behavioral norms at a workplace (e.g., Mossholder et al. 2011). Ideally, the focus of value statements supports company's strategic objective and practices. In particular, they set moral standards, emphasize how employees should act and describe the expected behavior towards different stakeholders such as colleagues, suppliers, and customers (e.g., Robinson and O`Leary-Kelly 1998). Corporate value statements thereby are intended to shape the corporate culture (Schein 2004).

In this paper, we focus on two particular kinds of corporate value statements: encouraging either collaborative or individual working climate. Indeed, some organizations precisely emphasize the desirability of individual excellence (with statements like 'Creating opportunities for the best people', General Electric 2001), while others stress the importance of cooperation among employees (with statements like 'Accomplish more by working together', E.ON 2014). Based on these observations, we compose value statements that we ask participants to follow at the beginning of the experiment. One statement focuses on individual performance (*individual guideline*) and another emphasizes cooperation in teams (*cooperative guideline*).

Treatments vary in whether each subject can *endogenously* choose her preferred value statement or whether the computer *exogenously* and randomly assigns one of them. After the statement is set, we ask participants to follow it during the experiment.

The two settings reflect different manners in which corporate values can be introduced. On the one hand, organizations can select employees that believe in congruent values. Likewise, the employees may have a choice between different companies with different values while looking for a job (this assumes that a company's values are transparent to applicants). On the other hand, little choice remains if corporate value statements are introduced when employees already work for a company (e.g., as a result of a corporate culture change or

merger). In this case, it might feel like the corporate values are exogenously imposed. This is also true when the values are largely non-transparent to applicants.

Again, the experiment is based on our setting described above. We find a strongly positive effect of the cooperative statement on help, as compared with individual or no statement treatments.

The novelty of our study lies in the focus on individual behavior in situations where help is encouraged by means of team bonus and corporate value statements. Empirical evidence on help is rare in economic literature.[1] Indeed, in the field both are difficult to observe, to measure and to quantify. The few existing empirical studies on help mostly employ survey data. For example, Drago and Garvey (1998) and Brown and Heywood (2009) find indications that helping is negatively correlated with individual relative rewards. An experimental study by Brandts et al. (2013) employs repeated coordination games to study how commitment to help can contribute to solving performance traps. Among others, Falk, Fehr and Huffman (2008), Carpenter, Matthews and Schirm (2010) and Harbring and Irlenbusch (2011) provide experimental evidence on sabotage (i.e., negative help). Several studies on tournaments in sport also provide empirical evidence on increased sabotage between competitors when high relative rewards are in place (e.g., Garicano and Palacios-Huerta 2006; Balafoutas et al. 2012; Deutscher et al. 2013). For reviews of studies on sabotage in tournaments, see Harbring and Irlenbusch (2005), Charness and Kuhn (2011), and Chowdhury and Gürtler (2013). These studies, however, focus on sabotage (as the opposite of help) in rank-order tournaments but not in a context where tournament incentives are combined with team bonus.[2]

The effect of corporate value statements might be similar to that of framing, i.e., different descriptions of an identical decision situation (Kahneman and Tversky 1984). In other words, the statements might generate a cooperative or a competitive context, which can alter agents' perceptions of appropriate behavior and/or shift preferences towards a mindset of team reasoning (e.g., Bacharach 1999; Sugden 2003; Irlenbusch and Sliwka 2005; Bicchieri and Chavez 2010; Huck et al. 2012). Statements (as well as frames) may modify first-order

[1] Several other studies provide theoretical frameworks that investigate employees' willingness to engage in sabotage in tournaments (what can be interpreted as reluctance to help) (e.g., Lazear and Rosen 1981; Lazear 1989; Kräkel 2005; Gürtler and Münster 2013).

[2] The motivating effects of the combination of relative rewards and team incentives are studied in Irlenbusch and Ruchala (2008) but they do not consider possibilities to help. Nalbantian and Schotter (1997) investigate group incentives, such as gain sharing and profit sharing and tournaments between teams. They, however, do not look at the combination of individual relative rewards and team incentives. Garvey and Swan (1992) analyze a theoretical model, where a manager designs a hybrid incentive scheme combining relative reward and group piece rate. Similar to our model, in their setup the agents exhibit effort and help or sabotage that has an equal influence on the other team members. Assuming that the total group output is not verifiable, they show that hybrid incentive schemes resulting from flattening tournament prize and offering a group piece rate might be optimal when sabotage can occur.

and/or second-order beliefs and thus motivate conditional cooperators to contribute (e.g., Fischbacher and Gächter 2010; Dufwenberg et al. 2011; Dreber et al. 2012; Ellingsen et al. 2012).

Nevertheless, the experimental literature on the effects of corporate value statements is more than thin. Elliott et al. (1998) provide subjects with a strategy statement (either an 'entrepreneurial' one with an emphasis on individual achievement or a 'cooperative' one with an emphasis on group achievement) and ask them to adhere to the respective strategy. In the subsequent binary public good game, they observe significantly higher contributions among subjects who are exposed to the cooperative business strategy as compared to those who are exposed to an entrepreneurial one. Lauer et al. (2008) observe a significant increase in contributions to a multi-round public goods game when a normative code of conduct is introduced to promote teamwork spirit.

Some other studies find indications that moral appeals might increase cooperation. Dal Bó and Dal Bó (2009) investigate moral suasion and find that moral appeals in the form of the Golden Rule or Utilitarian Argument result in a significant but transitory increase in public good provision. Mazar et al. (2008) find that asking participants to recall the Ten Commandments before a task makes them less likely to engage in dishonest behavior. However, none of these studies look at situations of help provision in work settings where agents are exposed to a combination of individual bonuses and team bonuses.

The current paper is organized as follows: In section 2, we provide a model-theoretical analysis of the effect of a compensation scheme that combines individual bonuses and team bonuses on help. In section 3, we employ this model in a series of lab experiments. Section 4 investigates the impact of corporate value statements on decision-making. Section 5 presents conclusions.

2 A Simple Model on Helping in Teams

We consider a team of three agents who act simultaneously. Agent $i \in \{1;2;3\}$ chooses an activity t_i from an interval $[-\bar{t};\bar{t}]$ that equally affects the output of the other two agents in a productive way (when t_i is positive) or in a destructive way (when t_i is negative). Thus, $t_i > 0$ can be interpreted as *help* and $t_i < 0$ as *sabotage*.[3] In addition, the agent chooses individual *effort* e_i from an interval $[0;\bar{e}]$ that raises her individual output y_i.

[3] See also Harbring et al. (2007) for settings in which players can individually sabotage each other.

An output y_i of an agent i is determined by the following function

$$y_i = \sum_{j \neq i} t_j + e_i + \varepsilon_i \tag{1}$$

where ε_i is a stochastic variable, independent and uniformly distributed over an interval $[-\bar{\varepsilon}; \bar{\varepsilon}]$ and resembles randomness in the production technology or a performance measurement error.

The costs of each activity are assumed to be convex and to follow the functions $C_t(t_i) = 25t_i^2 / 3$ and $C_e(e_i) = 25e_i^2 / 4$. Note, that hereby we assume that exerting effort is less costly than help (and sabotage).[4]

The compensation of an agent *i* consists of a *fixed payment* m, a *team bonus* $k \sum_{j=1}^{3} y_j$ and a potential *individual bonus* Δ paid only to the one team member with the highest individual output.[5] The team bonus is the same for all three agents. It is proportional to the total team output, i.e., the sum of the outputs of all three agents, multiplied with a marginal per capita return $k \geq 0$ (henceforth referred to as *team bonus factor*). The probability $\varphi_i(t_i, t_{-i}, e_i, e_{-i})$ for an agent *i* to obtain the individual bonus depends on the received and exerted help (or sabotage), as well as her own and the other team members' effort. The expected payoff function of an agent *i* is given by

$$\Pi_i = m + k \cdot \sum_{j=1}^{n} \left(2t_j + e_j + \varepsilon_j \right) + \Delta \cdot \varphi_i(t_i, t_{-i}, e_i, e_{-i}) - C_t(t_i) - C_e(e_i) \tag{2}$$

As a benchmark, we derive the symmetric Nash-equilibrium prediction assuming that all agents are risk neutral and aim to maximize their own expected monetary payoffs. We obtain the following first-order conditions from maximizing the payoff described in (2) with respect to t_i and e_i:

$$2k + \frac{\partial \varphi_i(t_i, t_{-i}, e_i, e_{-i})}{\partial t_i} \Delta = \frac{50 t_i}{3} \text{ and } k + \frac{\partial \phi_i(t_i, t_{-i}, e_i, e_{-i})}{\partial e_i} \Delta = \frac{50 e_i}{4} \tag{3}$$

Assuming uniformly distributed random components, one can show that the marginal probabilities of receiving the individual bonus Δ depend only on the size of the interval from

[4] We have situations in mind where it is relatively cumbersome to provide help, e.g., because one has to familiarize oneself with the tasks of those whom one tries to help. Of course, different ways of modeling would be feasible.

[5] We assume that in the case of a tie the individual bonus Δ is allocated by a fair random draw.

which the random components are drawn (Orrison et al. 2004; Harbring and Irlenbusch 2005). In particular, it follows that

$$\frac{\partial \varphi_i(t_i, t_{-i}, e_i, e_{-i})}{\partial t_i} = -\frac{1}{2\bar{\varepsilon}} \text{ and } \frac{\partial \varphi_i(t_i, t_{-i}, e_i, e_{-i})}{\partial e_i} = \frac{1}{2\bar{\varepsilon}} \tag{4}$$

Hence, the marginal effect of devoted help on the chance to receive the individual bonus Δ is exactly the opposite of the marginal effect of effort. This is quite intuitive since one additional unit of an agent's *i* effort, *ceteris paribus,* improves her relative standing to the same extent as helping lowers it.

By using the result (4) and assuming $\bar{\varepsilon} = 30$ (as it will be used in the experiments), the first-order conditions in (3) is reduced to

$$t^* = \frac{3k}{25} - \frac{\Delta}{1000} \text{ and } e^* = \frac{2k}{25} + \frac{\Delta}{750} \tag{5}$$

Result (5) constitutes the benchmark levels of help and effort in a symmetric Nash-equilibrium.[6] As we see, both activities are increasing in the team bonus factor k. The impact of the individual bonus Δ on help and effort is, however, different: Although Δ has a positive impact on effort, it has a negative impact on help. In particular, one main effect of individual bonus and team bonus factor can be characterized as follows: In equilibrium the activity t^* becomes negative for $\Delta > 120k$, i.e., help turns into sabotage.

3 Helping and Team Incentives

3.1 Experimental Design

We employed the model described in section 2 to investigate helping and team incentives by means of an experiment. Subjects were randomly allocated to different treatments and matched in groups of three. Each agent chose the amount of help t_i from the integer interval [−40; 40] and the amount of effort e_i from the integer interval [0; 40]. When subjects made their decisions, they were informed about the team bonus factor, the size of fixed payment and the individual bonus, and the cost functions.

[6] The efficient behavior (maximizing the total payoff of all team members) provides a second benchmark. The total marginal revenue of the team from help is $6k$ and the marginal revenue from effort is $3k$. Equalizing the marginal revenues and the respective marginal costs of help (i.e., $50t_i/3$) and of effort (i.e., $50e_i/4$) one obtains: $t^{eff} = 9k/25$ and $e^{eff} = 6k/25$. Note, that the efficiency benchmark does not vary with the amount of the individual bonus since ex-ante the expected sum of the individual bonus and the fixed payment is constant.

Each participant had to decide on the levels of effort and help (either positive or negative) for five scenarios with different individual bonus sizes Δ. To keep the wage costs comparable, we held the sum of the individual payments (i.e., the sum of the fixed individual payments $m \times n$ and the individual bonus Δ) constant. Since the individual bonus differs across scenarios, the fixed payment m also varies. We varied the team bonus factor $k \in \{€0; €0.05; €0.10\}$ across treatments. Table 1 summarizes our treatments, our scenarios in each treatment and our benchmark predictions.

TABLE 1 – PARAMETERS, TREATMENTS AND BENCHMARK

Treatments and team bonus factor	Benchmark help (t^*) and effort (e^*)	Individual bonus scenarios				
		Δ = €0	Δ = €3	Δ = €6	Δ = €9	Δ = €12
k = €0	t^*	0	–3	–6	–9	–12
	e^*	0	4	8	12	16
k = €0.05	t^*	6	3	0	–3	–6
	e^*	4	8	12	16	20
k = €0.10	t^*	12	9	6	3	0
	e^*	8	12	16	20	24
	Fixed payment in €(m)	14	13	12	11	10
	Team fixed and individual payment in €($3m$ + Δ)	42	42	42	42	42

Note: Each subject takes part in exactly one treatment and decides on help and effort for each of five scenarios, i.e., combinations of fixed payment and individual bonus. Afterwards one scenario (i.e., an individual bonus Δ with the respective fixed payment) is randomly chosen and implemented.

According to the benchmark analysis in section 2, in all three treatments, the amount of help is decreasing in Δ while individual effort is increasing in both Δ and k. In the treatment with k = €0 an agent's earnings are only a function of her individual relative performance. In other words, in this treatment the incentive scheme resembles a situation with a pure tournament incentive. Thus, no positive help should be observed in this treatment. In the treatment k = €0.05 each group member receives €0.05 per unit of the produced team output. In this treatment, help should be observed in the scenarios with a low individual reward of Δ = €0 and Δ = €3 and sabotage when Δ = €9 or higher. In the treatment k = €0.10 the team bonus factor is relatively large, and thus our benchmark suggests help to be observed in all bonus scenarios except Δ = €12, for which the help equals 0.

3.2 Procedures

The experiment was conducted in the Laboratory for Experimental Research at the University of Cologne.[7] We ran 6 sessions with 18 subjects each, i.e., in total, 108 students of different disciplines were involved (36 subjects per treatment).[8] Each subject was allowed to participate only in a single session. To avoid session effects, in each session we had teams in all three treatments, i.e., teams with each of the three team bonus factors. In order to make the treatments as comparable as possible, all participants were provided with exactly the same instructions, which differed only in the team bonus factor k. We implemented a mild work context frame by using the terms 'help' and 'sabotage' and by calling effort 'work'. All payoff relevant parameters (bonuses, payments, costs) were expressed during the experiment in Experimental Currency Units (€1 equivalent to ECU 1,000), in order to avoid decimal numbers and make calculations for participants easy.

To keep the experimental setting close to the model and to avoid strategic play in repeated interactions, we conducted the experiment in a 'one-shot' setting. Since participants had no chance to learn over rounds, we took great care that they had the opportunity to familiarize themselves with the setting and that it was sufficiently well understood. Therefore, each participant had to go through three stages of a learning phase for the five individual bonus scenarios: (*i*) during the *calculation stage* subjects practiced calculation of payoffs for decisions chosen by themselves, (*ii*) during the *quiz stage* they answered questions regarding the relationship between decisions and payoffs, and (*iii*) during the *practice stage* they were provided with an automatic payoff calculation mask and could gain experience by simulating the behavior of all three agents in a group.

After the learning phase, a message on the screen informed the participants about the start of the decision phase. As mentioned above, the subjects made decisions for each of the five bonus scenarios. After the decisions, the experiment continued with belief elicitation about the average effort and help provided by the other team members.[9] At the end of the experiment, one bonus scenario was randomly selected and implemented, i.e., this scenario became payoff-relevant. Before the subjects learned their earnings, they were asked to complete a questionnaire including demographic variables and a 20-item competitiveness

[7] Recruitment was done with the help of ORSEE (Greiner 2004). The experimental software was developed by using zTree (Fischbacher 2007). For the instructions and screenshots employed in the experiment see Appendix B. Original screens and instructions were in German. They are available from the authors on request.

[8] One participant was excluded from the data analysis, as he had insufficient German skills and could not read the instructions.

[9] Also here subjects had to state their beliefs for five different individual bonus scenarios. They received €0.10 for every correct guess and €0.05 for every guess deviating by not more than 5 from the actual decision of fellow players.

survey (Smither and Houston 1992). Outputs were then computed and payoffs determined. The subjects were paid privately. The average earnings were €18.16 plus the show-up fee of €4.50 (according to the lab rules, participants had to receive €2.50 show-up fee on top of their earnings; we rewarded them with additional €2 for filling in the post-experimental survey). Each session lasted about 2.5 hours.

3.3 Results

Figure 1 shows the average help and effort and compares it to the benchmark. Each panel corresponds to one treatment and the team bonus factor increases from the left panel to the right panel. Overall, the figure shows that help increases with an increasing team bonus factor. A Jonckheere-Terpstra test of ascending ordered alternatives applied separately for each Δ scenario delivers at the 1% and 5% level significant *p*-values (for details see Table 6 in Appendix A).

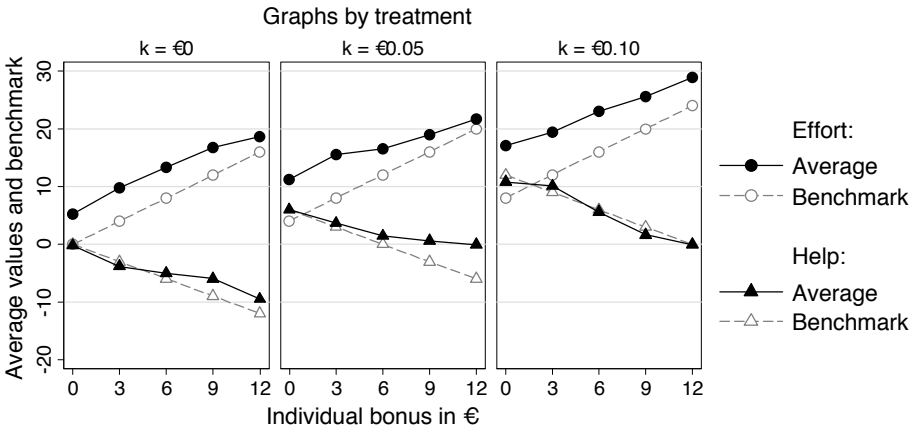

FIGURE 1 – AVERAGE EFFORT AND HELP

Note: Each panel represents one of the three treatments where the team bonus factor *k* increases over the panels from left to right. The horizontal axis shows the individual bonus Δ and the vertical axis shows the average amounts of help and effort. Black lines exhibit the observed average values and dashed lines depict benchmark from the equilibrium analysis in section 2.

Table 2 shows the effect of incentive schemes manipulations on in a format of a GLS regression with individual clusters. In model (1) the dependent variable is help. With treatment $k = €0.05$ being a reference group, the treatment dummy $k = €0$ has a highly significant and substantially negative impact on help ($\beta = -7.24$, p-value < 0.001). In particular, subjects in the treatment $k = €0.05$ exerted 7.24 units more help than in the treatment where the team bonus factor is €0, ceteris paribus. The regression coefficient for

the dummy $k = €0.10$ is positive, but not significant ($\beta = 3.28$, p-value = 0.245).[10] When we control for gender and competitiveness score in model (2), our results remain virtually unchanged.[11]

TABLE 2 – EFFECT OF INCENTIVES ON HELP AND EFFORT

Dependent variable:	Help				Effort			
	(1)		(2)		(3)		(4)	
Independent variables	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Treatment $k = €0$	-7.24***	(2.04)	-7.08***	(1.93)	-4.04*	(2.24)	-4.07*	(2.25)
Treatment $k = €0.10$	3.28	(2.82)	3.74	(2.77)	6.01***	(2.181)	6.02***	(2.23)
$\Delta = €0$	4.85***	(0.93)	4.85***	(0.94)	-6.40***	(0.96)	-6.40***	(0.96)
$\Delta = €3$	2.65***	(0.74)	2.64***	(0.74)	-2.72***	(0.69)	-2.72***	(0.69)
$\Delta = €9$	-1.94**	(0.78)	-1.93**	(0.79)	2.80***	(0.56)	2.80***	(0.56)
$\Delta = €12$	-3.86***	(0.91)	-3.86***	(0.92)	5.47***	(0.80)	5.47***	(0.81)
Competitiveness			-1.17	(0.98)			0.40	(0.81)
Dummy 'Female'			2.03	(1.91)			0.87	(1.83)
Intercept	2.00	(1.79)	0.81	(1.91)	16.97***	(1.76)	16.55***	(2.01)
N of subjects	107		535		107		535	
R^2within	0.23		0.23		0.34		0.34	

Note: GLS regressions with individual random effects and robust standard errors clustered on individuals in parentheses. The reference treatment is $k = €0.05$. The reference group for individual bonus is $\Delta = €6$. The competitiveness measure ($M = 11.26$, $\sigma = 4.34$) is standardized. The stars indicate significance levels: * p-value < 0.1, ** p-value < 0.05, *** p-value < 0.01. In both models, the coefficient of $\Delta = €0$ is significantly larger than the coefficient $\Delta = €3$, and the coefficient $\Delta = €9$ than $\Delta = €12$ (p-values ≤ 0.004, two-sided Wald test).

The impact of the individual bonus on help goes, as expected, in the opposite direction. As tested with the two-sided Wilcoxon signed-rank test, in each of the three treatments the help under Δ_{i+3} bonus scenario is lower than in Δ_i scenario for $i \in \{€0; €3; €6; €9\}$ (virtually all p-values ≤ 0.048, for details see Table 6 in Appendix A). Also the regression analysis from Table 2 where $\Delta = €6$ is a reference group provides evidence for the negative effect of the individual bonus on help: All individual bonus dummy coefficients are significant (all p-values ≤ 0.014) and their coefficient size decreases with increasing Δ (all p-values ≤ 0.004, pairwise two-sided Wald tests).

OBSERVATION 1: *Help increases with the team bonus factor and decreases with the individual bonus.*

Now let us look at the effort provision. As seen in Figure 1, effort provision also tends to be in line with our benchmark prediction: Effort increases with the individual bonus and

[10] The fact that the difference in help is not significant between the treatments $k = €0.05$ and $k = €0.10$ in the regression analysis may be explained by inefficiently high help that subjects provided in the treatment $k = €0.05$, when $\Delta = €9$ and €12. Indeed, when we run five separate regressions (one for each Δ), the $k = €0.10$ dummy is significant when $\Delta \leq €3$ (all p-values ≤ 0.07) but statistically insignificant when $\Delta \geq €6$ (all p-values ≥ 0.202).

[11] We use the competitiveness index developed by Smither and Houston (1992) that includes 20 'yes/no' items such as for example 'I like competition' or 'I try to avoid competing with others'. The aggregated index measures the number of the affirmative answers in favor of competition.

team bonus factor. The effort increases are highly significant (virtually all p-values < 0.01, two-sided WSR and Jonckheere-Terpstra tests, for more details see Table 7 in Appendix A).

Model (3) reports the regression analysis in support of this observation: Effort in the treatment $k = €0$ is approximately 4 units lower than in the $k = €0.05$ treatment ($\beta = -4.04$, p-value $= 0.072$). In the $k = €0.10$, effort is approximately 6 units higher than in $k = €0.05$ ($\beta = 6.01$, p-value $= 0.006$). With respect to the variation in Δ, we observe significantly higher effort when the individual bonus increases (all p-values < 0.001).

Effort levels are, however, significantly higher than the benchmark in the scenarios when $\Delta \leq €9$ (virtually all p-values < 0.01, two-sided WSR test, see Table 7 for an overview). This might be partially driven by risk aversion, since risk averse subjects might provide excessive effort in order to increase the likelihood that they receive the individual bonus. Indeed, when running a regression analysis similar to the one in Table 2, with the difference between chosen effort and benchmark effort as the dependent variable, we observe positive but rather small coefficient for risk aversion ($\beta = 1.49$, p-value $= 0.021$).[12]

The beliefs about the help and effort exerted by the other two team members are highly correlated with the actual individual decisions. In general, the same effects of individual and team incentives are evident in beliefs.

In sum, our results show that the team incentives and the individual bonus tend to have a positive effect on effort. While an individual bonus seems to harm the provision of help, team incentives successfully mitigate this problem. This means that the team bonus should raise the output produced by the agents, since on the one hand, they forgo the sabotage, and on the other hand, they exert help and high effort.

Figure 3 in Appendix A plots production output per *wage* costs (i.e., agents productivity per Euro received as wage). As can be seen, wage efficiency increases with k. The increase is significant for all Δ (all p–values ≤ 0.0476, Jonckheere-Terpstra test of ascending ordered alternatives). Model (1) in Table 8 in Appendix A confirms this result with regression analysis. Thus, agents' production output per received wage unit grows with the team bonus factor k. When looking at the total efficiency by computing the production output per unit of *agents'* costs, we do not observe any significant difference between treatments (see model (2) in Table 8 in Appendix A).[13]

[12] Risk aversion was measured on the scale 1 to 6 by a hypothetical question 'Imagine you won in a lottery €100,000. You can invest some of this money into a well-known bank for two years. There is a chance that your investment will be doubled, but there is also the same high chance that you will lose half of your investment. How much of the €100,000 would you like to invest?' Answer options: €100,000; €80,000; €60,000; €40,000; €20,000; €0. We don't observe any significant relationship between the risk-aversion and help.

[13] As our model does not specify the value of produced output, the total welfare as the difference between the output and agents' costs cannot be computed.

4 Helping and Corporate Value Statements

'In the context of the organization, culture substitutes for compensation schemes or other direct motivators in inducing desired behavior.'

Lazear (1995: 90)

As suggested above, a team bonus may already encourage help among individuals, but there is still room for improvement. Since refraining from help might cause significantly low team outputs, it is important to investigate how other organizational tools can foster help. In this respect, many organizations pay close attention to corporate climate and culture.[14] They compose value statements, codes of business conduct, and organizational guidelines to manifest desired the corporate culture by drawing employees' attention to specific behavioral norms (Schein 2004). Indeed, by altering the contextual framing, corporate value statements may signal an appropriateness or desirability of behavior and even provide justifications for decisions that would be considered unjustifiable in a context without such statements.

Empirical evidence on the effect of corporate culture (or corporate value statements) on employees' behavior in organizations remains extremely limited for at least two reasons. First, it is very difficult to find or implement a clean exogenous manipulation of corporate values in the business context both within and between companies. Second, the effect of the corporate culture on the dependent variable cannot be fully isolated from the organizational strategy and other company characteristics.[15] Therefore, in this study we rely on experimental evidence to derive clean causal inferences about the effects of corporate value statements.

The following experiment is specifically designed to investigate the impact of corporate value statements on the provision of help in teams. In new one-shot treatments, we modify the previously described treatments by introducing value statements in form of *guidelines* representing two different approaches that are generally emphasized in corporate value statements: One guideline focuses on cooperative teamwork (cooperative guideline) and another one focuses on employees' individual excellence (individual guideline). The agents saw both guidelines at the very beginning of the experiment, before they were exposed to any further instructions. Then one of the two guidelines was selected to become the relevant one. In treatment EXO, the relevant guideline was randomly selected by the computer. In

[14] Schwartz and Davis (1981: 33) define corporate culture as 'a pattern of beliefs and expectations shared by the organization's members.' From these beliefs and expectations, evolve norms shaping the behavior in organizations.

[15] Weber and Camerer (2003) experimentally study the impact of corporate culture (implemented by shared experience in describing pictures) on coordination failure in mergers. Stahl and Voigt (2008) provide a meta-analysis from 46 field studies on the role of corporate culture on shareholder value in mergers and acquisitions. They observe 'different and sometimes opposing' effects (Stahl and Voigt 2008: 160).

another treatment ENDO each subject could choose one of the guidelines. After a guideline was selected, participants were asked (via message on the computer screen) to follow the selected guideline during the experiment.

This experimental design allows us to shed light on at least two questions: How do value statements influence helping behavior? Does sorting into different value statements have an impact on behavior?

4.1 Behavioral Hypotheses

This section develops behavioral predictions on how guidelines and their assignment procedure might affect helping and effort. When facing the cooperative guideline, agents' attention might be explicitly focused on the overall team performance. If subjects follow this guideline, they might wish to increase the team welfare while providing high levels of help and effort. Hence, we expect the cooperative guideline to spur subjects to contribute more than under no guideline. On the contrary, the individual guideline might allow the subjects focus more on the individual bonus. As help reduces and effort increases an agent's relative rank and thereby the chance of receiving the individual bonus, we expect agents to provide less help but more effort under the individual guideline than under no guideline.

Regarding the assignment procedure of the guidelines, we expect subjects to follow the endogenous guideline to an even larger extent than the exogenous one. By the same token, the agents in the treatment ENDO might show a larger willingness to cooperate by providing more help and effort than the subjects in the treatment EXO under the cooperative guideline. The subjects with the individual guideline in the treatment ENDO might have a stronger desire to receive the individual bonus (i.e., provide less help and more effort) than agents in EXO. Our reasoning behind this conjecture rests on following arguments: First, the subjects might comply with the self-selected guideline more than the externally assigned one as it has been argued that employees' motivation increases when they are provided with the freedom of choice (e.g., Child 1984). Recent experimental studies report higher contributions to a public good game when punishment and reward rules are endogenously determined rather than exogenously imposed (e.g., Gürerk et al. 2006; Tyran and Feld 2006; Kosfeld et al. 2009; Gürerk et al. 2009; Sutter et al. 2010).[16] Second, the guidelines might drive selection of individuals holding certain preferences into the respective environment.[17] For example,

[16] Theory of delegation provides additional arguments why subjects work harder when they have decision power over the contract conditions. The theoretical framework on delegation has been discussed, e.g. by Aghion and Tirole (1997) and Sliwka (2001). For experimental evidence, see recent works by Charness et al. (2012) and Fehr et al. (2013).

[17] Van den Steen (2010) investigates in a theoretical framework how corporate culture develops into homogeneous system of shared values and beliefs as a result of employees' selection and change in managerial experience and shared beliefs. Kosfeld

subjects with a strong competitive inclination might enjoy the competition and prefer the guideline with the focus on individual performance. Thus, the guideline conditions in the treatment ENDO might include a larger fraction of agents with the respective preferences than in the treatment EXO. Third, in both treatments agents know that the whole team shares the same corporate values. Thus, the probability to be matched with other individuals who share the respective preferences is higher in the EXO treatment compared to the ENDO treatment. This can in turn affect the beliefs about other agents' behavior and trigger positive as well as negative reciprocity (Rabin 1993).

4.2 Experimental Design and Procedure

As a baseline setting we use the treatment $k = €0.05$ from our first experiment (henceforth referred to as BASE). In separate treatments with new subjects we replicated this treatment with one modification: At the very beginning – before communicating any further information about the experiment – all subjects were confronted with two short, stylized guidelines (see Table 3). These guidelines were derived from actual corporate values statements that we collected from a variety of companies reported in Table 9 in Appendix A.

TABLE 3 – EXPERIMENTAL GUIDELINES AND SAMPLE SIZE

Label	Guidelines	Treatment	
		EXO	ENDO
Individual	'Striving for individual top performance drives our actions.'	N = 36	N = 25
Cooperative	'Striving for cooperative team performance drives our actions.'	N = 36	N = 46

Note: The guidelines were presented to the subjects in random order. The guideline labels were not shown to the subjects.

As mentioned above, in the treatment EXO guidelines were exogenously and randomly assigned to subjects. In the treatment ENDO the subjects were asked to choose one of the guidelines that they wanted to follow in course of the experiment. To avoid strategic considerations, in the treatment ENDO the guideline choice had to be made *before* subjects received any instructions on the subsequent decision situation experiment. The subjects were explicitly asked (via text on the screen) to follow the guideline during the experiment.[18] After the guidelines were set, the subjects followed the same experimental instructions and procedures as described in Section 2.

and von Siemens (2011) develop a model where workers sort into different corporate cultures based on their cooperation preferences. Lazear et al. (2012) show that agents sort into different sharing environments based on their social preferences.

[18] We decided to inform all subjects about both guidelines even in the EXO treatment. The reason for this decision was to keep EXO and ENDO comparable. Thus, similar to the real world, agents are aware of different corporate value systems even if those are implemented exogenously.

Before making the payoff relevant decisions, the subjects were reminded of their guideline and that all members in their group had chosen (ENDO treatment) or were assigned to (EXO treatment) the same guideline.

Note that in the new treatments the monetary incentives remained the same as in the treatment BASE. In total, 143 subjects participated (72 in the treatment EXO and 71 in ENDO). None of the subjects took part in the former experiment. The average payoff amounted to €17.60 plus the show-up fee of €4.50.

4.3 Results

In the treatment ENDO, 64.79% of the participants chose the cooperative guideline. Subjects who chose the individual guideline achieved significantly higher scores in the competitive inclination survey (p-value < 0.001, two-sided Mann-Whitney U test). Controlling for gender, a Probit estimation reported in Table 10 in Appendix A supports this observation. As expected in the EXO treatment, we do not observe any difference in the distribution of the competitiveness score between subjects who were confronted with the cooperative and the individual guideline (p-value = 0.464, two-sided MWU test). Thus, we conclude that the observed correlation between the competitiveness score and the choice of the guideline is mainly due to the selection effect.

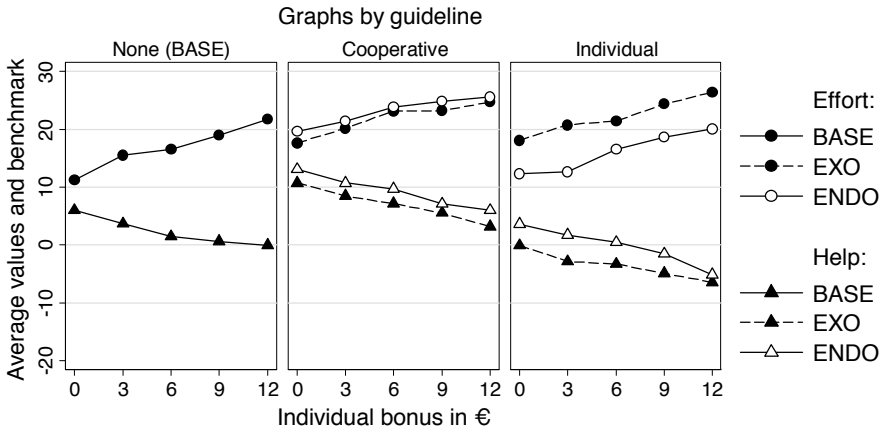

FIGURE 2 – AVERAGE EFFORT AND HELP IN THE GUIDELINE EXPERIMENT

Note: Each panel corresponds to one guideline. The left panel depicts the results of the treatment BASE (k = €0.05) without the guidelines, already discussed in section 3. Also in the other settings the team bonus factors is k = €0.05. The middle panel shows the average behavior under the cooperative guideline in the treatments EXO and ENDO. The right panel presents behavior of subjects who followed the individual guideline.

The left panel in Figure 2 shows the average help levels in the condition with no guideline (treatment BASE), the middle one shows the behavior of subjects who face the cooperative guideline and, the third panel displays the behavior of those individuals who followed the

individual guideline. Subjects with the cooperative guideline exerted more help than in the treatment BASE (virtually all p-values ≤ 0.038, two-sided MWU test) and also more than the subjects with the individual guideline (all p-values < 0.001, two-sided MWU test). See panel (A) in Table 11 in Appendix A for more details.

TABLE 4 – EFFECT OF GUIDELINES ON HELP AND EFFORT

Dependent variable:	Help				Effort			
	(1)		(2)		(3)		(4)	
Independent variables	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
CoopEXO	4.66**	(2.33)	4.59**	(2.31)	4.99**	(2.30)	4.95**	(2.29)
CoopENDO	6.98***	(2.18)	6.78***	(2.20)	6.27***	(2.30)	6.08***	(2.29)
IndEXO	-5.87***	(2.18)	-5.92**	(2.17)	5.42**	(2.28)	5.36**	(2.23)
IndENDO	-2.52	(1.99)	-2.14	(1.98)	-0.73	(2.45)	-0.01	(2.44)
Δ = €0	3.58***	(0.67)	3.58***	(0.67)	-4.53***	(0.63)	-4.53***	(0.63)
Δ = €3	1.24**	(0.57)	1.23**	(0.57)	-2.13***	(0.44)	-2.13***	(0.44)
Δ = €9	-1.75***	(0.50)	-1.75***	(0.50)	1.63***	(0.46)	1.63***	(0.46)
Δ = €12	-3.48***	(0.63)	-3.47***	(0.63)	3.27***	(0.57)	3.27***	(0.57)
Competitiveness			-0.70	(0.62)			-0.85	(0.75)
Dummy 'Female'			-0.13	(1.42)			1.39	(1.51)
Intercept	2.43	(1.75)	2.51	(1.86)	17.15***	(1.72)	16.43***	(1.87)
N of subjects	179		179		179		179	
R^2 within	0.16		0.16		0.23		0.23	

Note: GLS regressions with individual random effects and robust standard errors in parentheses. The reference guideline condition is the treatment BASE. The reference individual bonus is Δ = €6. The variable Competitiveness is standardized (M = 10.72, σ = 4.2). The stars indicate significance levels: * p-value < 0.1, ** p-value < 0.05, *** p-value < 0.01. In all four models, the coefficient of Δ = €0 is significantly different from the coefficient Δ = €3, and the coefficient Δ = €9 from Δ = €12 (all p-values < 0.001, two-sided Wald test). Two-sided Wald test does not reject the hypothesis that coefficients CoopENDO and CoopEXO are the same (all p-values ≥ 0.284). The coefficients IndENDO and IndEXO are significantly different from each other in all specifications (all p-values ≤ 0.04, two-sided Wald test).

Table 4 reports regression results with the treatment BASE and Δ = €6 as reference groups. In models (1), the dependent variable is help. Both dummies CoopEXO and CoopENDO are positive and significant ($\beta_{\text{CoopEXO}} = 4.66$ and $\beta_{\text{CoopENDO}} = 6.98$, p-values are 0.045 and 0.001). Although the coefficient CoopENDO is about 50% higher than the CoopEXO, the difference between these two coefficients is not significant (p-value = 0.256, two-sided Wald test).

OBSERVATION 2: *Help is higher under the cooperative guideline than under no guideline as well as under the individual guideline.*

In model (2), we control for competitiveness inclination and gender. The regression results remain unchanged. The fact that the dummy CoopENDO still remains highly significant and sizable suggests that the positive impact of the cooperative guideline in the treatment ENDO cannot be exclusively explained by the selection of less competitive individuals into the cooperative guideline.

Somewhat surprisingly, the effect of the individual guideline on helping behavior strongly differs between EXO and ENDO treatments. The exogenously imposed individual guideline has a significant negative impact on help compared to the treatment BASE (β_{IndEXO} = -5.87, p-value = 0.007) and also when compared to each of the other three guideline conditions (model (1) in Table 4). The coefficient of the individual ENDO guideline is, however, not significant ($\beta_{IndENDO}$ = -2.52, p-value = 0.205). Thus, helping behavior under the self-chosen individual guideline does not differ from that in the treatment BASE. Also the non-parametric analysis supports these results (for details see panel (A) of Table 11 in Appendix A).

As for the effort, subjects exerted significantly higher effort when facing any of the guidelines compared to the BASE treatment. The only exception is the endogenously chosen individual guideline: Here effort does not significantly differ from the BASE treatment. The details of non-parametric statistics for effort can be found in panel (B) of Table 11 in Appendix A.

The dependent variable 'effort' in regression models (3) and (4) of Table 4 is positively correlated with the dummy variables CoopEXO, CoopENDO, and IndEXO ($\beta_{CoopEXO}$ = 4.99, $\beta_{CoopENDO}$ = 6.27, β_{IndEXO} = 5.42, all p-values $\leq$ 0.031). The magnitude of the effect of these three guidelines is not significantly different from each other (all p-values $\geq$ 0.5657, pairwise comparison with two-sided Wald test).

Table 5 presents the regression estimations similar to those in Table 4, with beliefs as dependent variable. Model (1) shows that the results on helping behavior are reflected in the beliefs about the average help provided by two other team members. Subjects under the cooperative guideline reported that they expect to receive significantly more help than subjects in the treatment BASE ($\beta_{CoopEXO}$ = 10.18, $\beta_{CoopENDO}$ = 9.88, p-values < 0.001) and, thus, subjects under the individual guideline. Individuals exposed to the exogenous individual guideline expected to receive significantly less help as compared with the individuals in other guideline conditions (β_{IndEXO} = -5.38, p-value = 0.01). The dummy IndENDO is negative, but not significant (p-value = 0.349).

In model (2), the dependent variable is belief about average effort exerted by other team members. Although the CoopEXO and CoopENDO coefficients are positive, they are not significant ($\beta_{CoopEXO}$ = 3.26, $\beta_{CoopEXO}$ = 2.46, p-values $\geq$ 0.103). The coefficient IndEXO is positive and marginally significant (β_{IndEXO} = 3.89, p-value = 0.059) indicating that especially those subjects who face the exogenously assigned guideline expect other subjects to provide relatively high effort.

TABLE 5 – EFFECT OF GUIDELINES ON BELIEFS

Dependent variable:	Beliefs: Help (1)		Beliefs: Effort (2)	
Independent variables	Coef.	SE	Coef.	SE
CoopEXO	10.18***	(2.13)	3.26	(2.00)
CoopENDO	9.88***	(1.97)	2.46	(2.16)
IndEXO	-5.38**	(2.09)	3.89*	(2.06)
IndENDO	-1.90	(2.02)	-0.97	(1.97)
Δ = €0	4.21***	(0.79)	-4.56***	(0.57)
Δ = €3	1.46***	(0.53)	-2.02***	(0.33)
Δ = €9	-1.84***	(0.52)	2.07***	(0.31)
Δ = €12	-4.24***	(0.61)	3.87***	(0.47)
Competitiveness	0.29	(0.65)	-0.63	(0.68)
Dummy 'Female'	-1.01	(1.43)	0.29	(1.39)
Intercept	0.10	(1.66)	20.25***	(1.71)
N of subjects	179		179	
R^2 within	0.18		0.31	

Note: GLS regressions with individual random effects and robust standard errors in parentheses. The reference guideline condition is the treatment BASE. The reference individual bonus is Δ = €6. The variable Competitiveness is standardized ($M = 10.72$, $\sigma = 4.2$). The stars indicate significance levels: * p-value < 0.1, ** p-value < 0.05, *** p-value < 0.01.

The positive impact of the cooperative guideline on help and effort results in a considerable increase of wage efficiency, measured as output per wage costs. As shown in Figure 4 in Appendix A, the ratio between the production output and incurred wage costs is higher under the cooperative guideline compared to the treatment BASE or to the individual guideline conditions. First column in Table 12 in Appendix A confirms the results presented in the graph ($\beta_{\text{CoopEXO}} = 0.79$, $\beta_{\text{CoopEXO}} = 0.96$, p-values ≤ 0.002). In line with the observation of a strongly negative impact of the exogenous individual guideline on help, the ratio between the production output and agents' costs is significantly lower in IndEXO than in the treatment BASE, as well as in conditions IndENDO or CoopEXO ($\beta_{\text{IndEXO}} = -13.38$, p-value = 0.065, see model (2) in Table 9).

5 Conclusion

As has been shown in previous works on tournament theory, we find clear evidence of relative rewards reducing help. Team incentives indeed encourage subjects to support their team members with helping activities even if they are combined with relative rewards. Our results also clearly show that helping behavior can be changed by means of corporate value statements that emphasize either cooperation or individual performance.

Help and effort can be considerably enhanced by a value statement promoting teamwork but we do not observe a difference between settings where a guideline is exogenously imposed or participants deliberately sort into its regime. This is somewhat surprising because we had conjectured that self-selection might even increase the effectiveness of the

cooperative guideline. The fact that we do not observe significantly more help under the cooperative ENDO guideline compared to the cooperative EXO guideline might be explained by the nature of the cooperative guideline: It might already express a sufficiently strong mission 'to increase team performance'. Indeed, under both conditions subjects expected that team members would be relatively more helpful. This might have motivated participants to accept the cost of high effort and help to increase the team output and thereby the team bonus. A potential additional effect resulting from self-selection into the cooperative guideline could be masked up with the strong mission such that it is hardly measurable.

The way that the *individual* guideline – promoting a focus on individual performance – is implemented, however, seems to play a major role in its effectiveness. The self-chosen individual guideline changes neither help nor effort compared to the baseline setting without a guideline. The exogenously assigned individual guideline, however, results in a substantial decrease in help and in an increase in effort. Under the exogenous individual guideline, participants also expected other agents to decrease the level of help and to increase the effort exerted. This difference in the impact of the guideline assignment procedure indicates that our results cannot be fully attributed to the framing effect.

We can think of two potential explanations for this result. Our first argument relies on the social distance paradigm. In both treatments EXO and ENDO, the subjects had a common mission to follow a particular guideline.[19] In addition, the subjects in the ENDO treatment expressed similar preferences for a particular guideline. All team members knew that this attitude is shared among all team members. Hence, agents may perceive their fellow group members as being more like themselves. This might create a stronger sense of group identity, and agents therefore assign more importance to the well-being of the team (Bacharach 1999; Sugden 2003; Akerlof and Kranton 2010).[20] This in turn may lead to the higher help that we observe under the individual guideline in the ENDO treatment as compared to EXO. An alternative explanation is that the exogenous assignment of the individual guideline might provide a kind of justification or excuse not to help others. After all, one could argue that opting to withhold help was simply following the imposed guideline, which asks participants

[19] As the choice of the guideline is highly linked to the decision-maker's interests, our design does not fully satisfy all conditions of the minimal group paradigm as suggested by Tajfel et al. (1971). According to the minimal group paradigm, an arbitrary in-group labeling already results into the in-group favoring behavior. This is not the case in our study: One might consider our group assignment procedure based on the random guideline allocation as labeling. The minimal group paradigm would suggest that a group assignment should already increase help, irrespective of whether the group is formed with the individual EXO guideline or the individual ENDO guideline. Other experimental studies on group identity and minimal group paradigm include Charness et al. (2007) and Chen and Li (2009).

[20] On similarity and increased prosocial behavior, see, e.g., Mussweiler (2003) and Mussweiler and Damisch (2008).

to pursue their own interests. Such an excuse is not easily available when the choice of the guideline lies in ones' own responsibility (Charness 2000).[21]

Our findings have three immediate implications for organizations. First, when help among employees is vital (in areas such as engineering, scientific research, innovation, or product development), relative rewards should be reduced and/or be accompanied by a sufficiently high team bonus. Second, organizations should be careful when promoting individual performance within their corporate value statements, as it may result in a significant drop in help among employees. Third, corporate value statements encouraging cooperation are likely to have a beneficial impact on individual effort and help, both of which are essential for an organization's effectiveness. Thus, our results may shed light on why team bonus schemes seem to work better in some firms but not in others.

Acknowledgments

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[21] We find, however, little support for this hypothesis in our data: In the post-experimental questionnaire we asked subjects how unfair they considered it to sabotage: Among the subjects with the individual guideline the perceived unfairness of sabotage was significantly higher in the EXO treatment than in the ENDO treatment (p-value = 0.018, two-sided MWU test).

Appendix A. Statistical Analysis

TABLE 6 – COMPARISON OF AVERAGE HELP

	Treatment			Jonckheere-Terpstra test
Individual bonus	k = €0	k = €0.05	k = €0.10	of ascending ordered alternatives
Δ = €0	-0.17	5.97	10.81	$p < 0.001$
WSR test 0 vs. 3	$p = 0.003$	$p = 0.048$	$p = 0.044$	
Δ = €3	-3.8	3.67	10.08	$p < 0.001$
WSR test 3 vs. 6	$p = 0.008$	$p = 0.03$	$p = 0.003$	
Δ = €6	-5.03°	1.47	5.61	$p < 0.001$
WSR test 6 vs. 9	$p = 0.014$	$p = 0.019$	$p = 0.007$	
Δ = €9	-6	0.64	1.64	$p = 0.025$
WSR test 9 vs. 12	$p < 0.001$	$p = 0.313$	$p = 0.003$	
Δ = €12	-9.49	-0.03°°	-0.03	$p = 0.012$

Note: All tests are two-sided unless noted otherwise. ° (°°, °°°) at the 10% (5%, 1%) level significantly above the benchmark level (two-sided Wilcoxon signed-rank test).

TABLE 7 – COMPARISON OF AVERAGE EFFORT

	Treatment			Jonckheere-Terpstra test
Individual bonus	k = €0	k = €0.05	k = €0.10	of ascending ordered alternatives
Δ = €0	5.29°°°	11.25°°°	17.08°°°	$p < 0.001$
WSR test 0 vs. 3	$p < 0.001$	$p < 0.001$	$p = 0.019$	
Δ = €3	9.8°°°	15.5°°°	19.39°°°	$p < 0.001$
WSR test 3 vs. 6	$p < 0.001$	$p = 0.0831$	$p < 0.001$	
Δ = €6	13.34°°°	16.53°	23°°°	$p < 0.001$
WSR test 6 vs. 9	$p < 0.001$	$p = 0.002$	$p = 0.002$	
Δ = €9	16.74°°	18.94	25.61°°°	$p < 0.001$
WSR test 9 vs. 12	$p < 0.001$	$p = 0.007$	$p < 0.001$	
Δ = €12	18.6	21.75	28.92°°°	$p < 0.001$

Note: All tests are two-sided unless noted otherwise. ° (°°, °°°) at the 10% (5%, 1%) level significantly above the benchmark level (two-sided Wilcoxon signed-rank test).

TABLE 8 – EFFICIENCY MEASURES

Dependent variable:	Production output / Wage (1)		Production output / Agents' costs (2)	
Independent variables	Coef.	SE	Coef.	SE
Treatment k = €0	-0.66**	(0.27)	1.27	(10.02)
Treatment k = €0.10	0.25	(0.26)	-7.54	(6.54)
Δ = €0	0.20*	(0.11)	6.47**	(2.93)
Δ = €3	0.12	(0.09)	3.05	(2.30)
Δ = €9	-0.03	(0.10)	-2.22**	(0.92)
Δ = €12	-0.18*	(0.10)	-4.76***	(1.31)
Competitiveness	-0.16*	(0.10)	0.15	(2.29)
Dummy 'Female'	0.36*	(0.20)	2.55	(7.14)
Intercept	0.66**	(0.27)	14.05	(8.58)
N of subjects	107		102	
R^2within	0.04		0.08	

Note: GLS regressions with individual random effects and robust standard errors clustered on individuals in parentheses. The reference group for individual bonus is Δ = €6. The reference treatment is k = €0.05. The competitiveness measure (M = 11.26, σ = 4.34) is standardized. The stars indicate significance levels: * p-value < 0.1, ** p-value < 0.05, *** p-value < 0.01. In both models, the coefficient of Δ = €0 is significantly larger than the coefficient Δ = €3, and the coefficient Δ = €9 than Δ = €12 (p-values < 0.01, two-sided Wald test).

TABLE 9 – EXAMPLES OF CORPORATE VALUES STATEMENTS

Panel (A): Examples of corporate statements emphasizing teamwork	
	Quotation from the corporate website
Boeing	**People working together:** We will continually learn, and share ideas and knowledge. We will encourage cooperative efforts at every level and across all activities in our company.
BP	**One team:** Whatever the strength of the individual, we will accomplish more together. We put the team ahead of our personal success and commit to building its capability. We trust each other to deliver on our respective obligations.
E.On	**Teamwork:** We accomplish more by working together. We value one another's insight and cooperation. We trust one another's good intentions. The group optimum is 'a win for all is a win for each of us.' Good teamwork requires our active participation, sharing of our talents and resources and sensitivity for how our actions may impact others.
Hewlett-Packard	**Results through teamwork**: We effectively collaborate, always looking for more efficient ways to serve our customers.
Merck Group	**Make great things happen:** When great minds get together, they inspire each other. Our collaborative culture proves it. By working a better way – sharing ideas, voicing opinions, giving feedback and lending support – we get better results.
Panel (B):Examples of corporate statements emphasizing individual accomplishments	
	Quotation from the corporate website
Credit Suisse	**Rewarding excellence:** We are committed to employing a compensation approach that rewards excellence, encourages personal contribution and professional growth and aligns the employees' interests with those of Credit Suisse, thus motivating the creation of shareholder value.
General Electric	**Meritocracy:** Creating opportunities for the best people from around the world to grow and live their dreams
Hewlett-Packard	**Achievement and contribution:** We strive for excellence in all we do; each person's contribution is critical to our success.
Metro Group	**Performance-oriented leadership:** Our management style is characterized by mutual respect and fairness. Managers are responsible for creating a working atmosphere that motivates employees to perform at their best; this also includes enabling the personal and professional development of each individual. METRO GROUP places transparent requirements on its managers, who are rated and evaluated by way of continuous assessments.
Telekom	**Best place to perform and grow:** For Telekom to become the most highly regarded company in the industry, it needs good, motivated employees. Therefore, this Guiding Principle is an obligation for all managers to recognize individual commitment and success and to offer a positive environment with opportunities for professional development.

Source: Corporate websites from 19 March 2013.

TABLE 10 – COMPETITIVENESS AND INDIVIDUAL GUIDELINE CHOICE IN TREATMENT ENDO

Dependent variable:	Dummy 'Choice of individual guideline'	
Independent variables	Coef.	SE
Competitiveness	0.21***	(0.07)
Dummy 'Female'	-0.02	(0.12)
N of subjects	71	
Pseudo R^2	0.14	

Note: Probit regression with marginal effects. Robust standard errors in parentheses. The dependent variable is equal to 1 if the individual guideline is selected and to 0 otherwise. The competitiveness measure is standardized in order to control for different measure scales and to allow the comparability of results ($M = 10.93$, $\sigma = 4.1$). The stars indicate significance levels: * p-value < 0.1, ** p-value < 0.05, *** p-value < 0.01.

TABLE 11 –NON-PARAMETRIC COMPARISON OF HELP AND EFFORT IN GUIDELINES CONDITIONS

Panel (A): Help				Individual bonus				
	Observed difference			Δ = €0	Δ = €3	Δ = €6	Δ = €9	Δ = €12
(1)	BASE	<	CoopEXO	0.055	0.061	0.033	0.075	0.271
(2)	BASE	<	CoopENDO	0.030	0.005	<0.001	0.014	0.042
(3)	BASE	>	IndEXO	0.004	0.007	0.051	0.059	0.076
(4)	BASE	=	IndENDO	0.145	0.399	0.580	0.498	0.166
(5)	CoopEXO	>	IndEXO	<0.001	<0.001	<0.001	<0.001	<0.001
(6)	CoopENDO	>	IndENDO	<0.001	<0.001	<0.001	<0.001	<0.001
(7)	CoopEXO	=	CoopENDO	0.810	0.432	0.286	0.538	0.361
(8)	IndEXO	≤	IndENDO	0.070	0.011	0.152	0.151	0.634
Panel (B): Effort				Individual bonus				
	Observed difference			Δ = €0	Δ = €3	Δ = €6	Δ = €9	Δ = €12
(1)	BASE	<	CoopEXO	0.007	0.071	0.015	0.126	0.270
(2)	BASE	<	CoopENDO	0.011	0.026	0.005	0.017	0.132
(3)	BASE	<	IndEXO	0.011	0.053	0.074	0.036	0.094
(4)	BASE	=	IndENDO	0.889	0.527	0.843	0.936	0.741
(5)	CoopEXO	=	IndEXO	0.905	0.856	0.269	0.812	0.529
(6)	CoopENDO	>	IndENDO	0.034	0.004	0.006	0.026	0.087
(7)	CoopEXO	=	CoopENDO	0.652	0.683	0.899	0.746	0.785
(8)	IndEXO	>	IndENDO	0.046	0.009	0.155	0.051	0.065

Note: All reported *p*-values are from two-sided Mann-Whitney U test with null hypothesis 'There is no difference in distribution of help (effort) between treatments'.

TABLE 12 – EFFICIENCY MEASURES AND GUIDELINES

Dependent variable:	Production output / Wage (1)		Production output / Agents' costs (2)	
Independent variables	Coef.	SE	Coef.	SE
CoopEXO	0.79***	(0.26)	0.00	(8.11)
CoopENDO	0.96***	(0.26)	-2.59	(6.49)
IndEXO	-0.18	(0.27)	-13.38*	(7.25)
IndENDO	0.02	(0.27)	-0.54	(8.04)
Δ = €0	0.05	(0.10)	2.90***	(0.99)
Δ = €3	0.03	(0.06)	1.02	(1.62)
Δ = €9	-0.08	(0.06)	-2.65***	(0.80)
Δ = €12	-0.20***	(0.07)	-3.53**	(1.56)
Competitiveness	-0.10	(0.07)	1.37	(1.62)
Dummy 'Female'	0.11	(0.15)	-3.21	(4.05)
Intercept	0.87***	(0.25)	17.86**	(7.34)
N of subjects	179		177	
R^2within	0.04		0.08	

Note: GLS regressions with individual random effects and robust standard errors clustered on individuals in parentheses. The reference guideline condition is the treatment BASE. The reference group for individual bonus is Δ = €6. The competitiveness measure (M = 10.72, σ = 4.21) is standardized. The stars indicate significance levels: * p-value < 0.1, ** p-value < 0.05, *** p-value < 0.01. In both models, the coefficient of Δ = €0 is significantly larger than the coefficient Δ = €3, and the coefficient Δ = €9 than Δ = €12 (p-values < 0.01, two-sided Wald test).

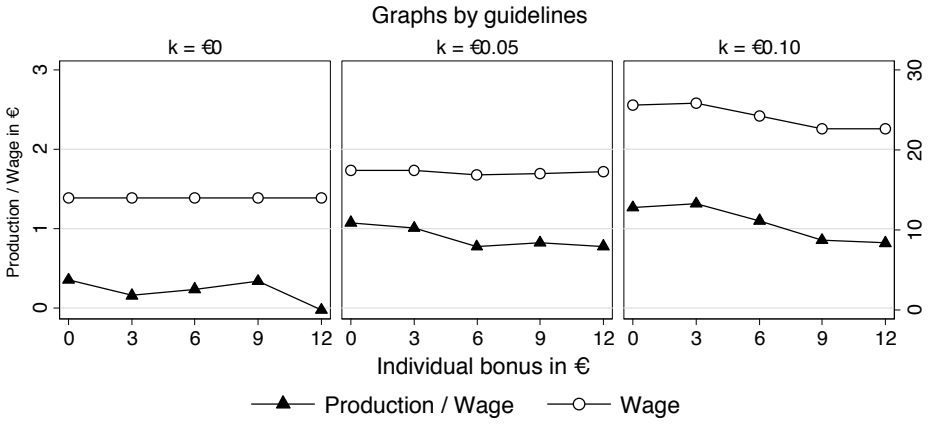

FIGURE 3 – WAGE AND PRODUCTION

Note: Each panel represents one treatment where the team bonus factor k increases over the panels from left to right. The horizontal axis is the individual bonus (Δ) in €. Average wage was computed as $\left(42/3 + 3k(2t_i + e_i)\right)$. Production / wage in € is computed as $(2t_i + e_i)/(42/3 + 3k(2t_i + e_i))$.

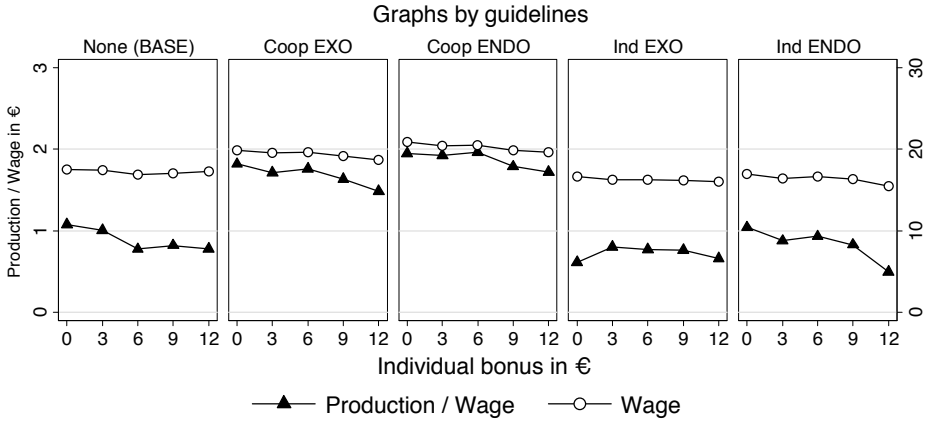

FIGURE 4 – WAGE AND PRODUCTION IN EXPERIMENT WITH GUIDELINE

Note: Each panel represents one treatment where the team bonus factor k increases over the panels from left to right. The horizontal axis is the individual bonus (Δ) in €. Average wage was computed as $\left(42/3 + 3k(2t_i + e_i)\right)$. Production / wage in € is computed as $(2t_i + e_i)/(42/3 + 3k(2t_i + e_i))$.

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