

Jeworrek, Sabrina; Mertins, Vanessa; Vlassopoulos, Michael

**Working Paper**

## "The good news about bad news": Feedback about past organisational failure and its impact on worker productivity

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Sabrina Jeworrek, Vanessa Mertins, Michael Vlassopoulos

## Authors

### **Sabrina Jeworrek**

Halle Institute for Economic Research (IWH) –  
Member of the Leibniz Association, Department  
Structural Change and Productivity,  
and Otto von Guericke University Magdeburg  
E-mail: [sabrina.jeworrek@iwh-halle.de](mailto:sabrina.jeworrek@iwh-halle.de)  
Tel +49 345 7753 730

### **Vanessa Mertins**

University of Vechta  
E-mail: [vanessa.mertins@uni-vechta.de](mailto:vanessa.mertins@uni-vechta.de)

### **Michael Vlassopoulos**

University of Southampton, and Institute of  
Labor Economics – IZA  
E-mail: [M.Vlassopoulos@soton.ac.uk](mailto:M.Vlassopoulos@soton.ac.uk)

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Halle Institute for Economic Research (IWH) –  
Member of the Leibniz Association

Address: Kleine Maerkerstrasse 8  
D-06108 Halle (Saale), Germany  
Postal Address: P.O. Box 11 03 61  
D-06017 Halle (Saale), Germany

Tel +49 345 7753 60  
Fax +49 345 7753 820

[www.iwh-halle.de](http://www.iwh-halle.de)

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# “The Good News about Bad News”: Feedback about Past Organisational Failure and its Impact on Worker Productivity

## Abstract

Failure in organisations is a very common phenomenon. Little is known about whether past failure affects workers’ subsequent performance. We conduct a field experiment in which we follow up a failed mail campaign to attract new volunteers with a phone campaign pursuing the same goal. We recruit temporary workers to carry out the phone campaign and randomly assign them to either receive or not receive information about the previous failure and measure their performance. We find that informed workers perform better – in terms of both numbers dialed (about 14% improvement) and completed interviews (about 20% improvement) – regardless of whether they had previously worked on the failed mail campaign. Evidence from a second experiment with student volunteers asked to support a campaign to reduce food waste suggests that the mechanism behind our finding relates to contextual inference: Informing workers/volunteers that they are pursuing a goal that is hard to attain seems to add meaning to the work involved, leading them to exert more effort.

*Keywords: contextual inference, feedback, failure, field experiment, meaning of work*

*JEL Classification: C93, J22, M50*

## 1. Introduction

The provision of feedback about workers' performance is a very common managerial practice aimed at improving workers' motivation. The previous literature has primarily focused on how personal feedback about relative performance affects performance (e.g. Eriksson, Poulsen, and Villeval, 2009; Blanes i Vidal and Nossol, 2011; Kuhnen and Tymula, 2012; Charness et al., 2013; Azmat and Iriberry, 2016; Gill et al., 2017). By appealing to workers' competitive, status-seeking or self-esteem-seeking preferences, it is expected that feedback about relative performance can boost worker productivity. Much less is known about how feedback about the performance of a team or of the organization as a whole affects individual performance. Firms would typically boast to employees about major achievements and successes to improve morale but are more ambivalent when performance has not been stellar. In particular, since failure in organizations, from small to large, is ubiquitous it is particularly interesting to examine whether bad news about how the organization has performed in the past impacts the future productivity of its employees. A second reason to focus on failure is that unlike feedback about previous success, which in most cases should have a non-negative effect on worker motivation, feedback about failure is likely to have an ambiguous effect on performance.

To fix ideas, consider the following motivating example: suppose that a manager of an organization is interested in increasing the sales of a new product. The manager puts together a team of employees to launch a marketing campaign to achieve this goal, but the campaign fails – it does not meet the target in terms of sales. A few months later, the manager is given a second chance to pursue the same goal as before – increase sales of the new product – only this time through restructuring the sales team. The manager is contemplating whether it is a good idea to inform the team that the previous attempt to increase sales through the marketing campaign was unsuccessful, a piece of information that may not be salient to the sales team. The above-described situation involves a trade-off for the manager: on the one hand, informing workers about past failure signals that the particular goal is hard to achieve and may thus have a discouraging effect on workers' motivation. On the other hand, the mere decision of the employer to follow-up the previous failure with a second attempt to achieve the goal, signals to the worker that the objective is particularly valuable for the organization. This information can enhance the meaningfulness of the job and may thus have an encouraging effect on workers' motivation. In which direction performance is affected is an empirical question that is addressed in this paper through a field experiment.<sup>1</sup>

Studying the impact of feedback about previous organizational failure on the subsequent performance of workers engaged in long-lived employment relationships is challenging because the negative feedback might affect workers' beliefs about their job security. If workers expect that they might lose their job (possibly due to an anticipated firm closure), they might increase their effort in an attempt to avoid being laid off. To circumvent this confounding factor and isolate the effect of feedback on workers' performance that is clean of career concerns, in this study we focus on temporary workers hired to perform a one-time job.

In particular, the current study builds on an on-going partnership with a local volunteering agency, which puts people interested in volunteering in contact with suitable charities and associations. Initially, temporary workers assisted in a letter campaign that aimed at attracting new volunteers. However, the campaign proved to be particularly unsuccessful: less than 0.01% of the letters that were sent resulted in a volunteer signing up with a local charity. In this paper, we exploit this

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<sup>1</sup> The effect of feedback on performance can also be couched in terms of opposing substitution and income effects (Bandiera et al., 2015). Negative feedback about past performance will on one hand induce a negative substitution effect away from exerting effort and into leisure and on the other hand will imply a positive income effect as now more effort will be needed to achieve a certain outcome.

unfortunate turn of events to study how the provision of information about past failure affects workers' performance on a different task aimed at achieving the same goal – without the use of deception. To this end, close on the heels of the previous failed campaign, we supported the agency's activities to attract new volunteers by conducting a phone survey aimed at raising the local population's awareness of volunteering opportunities. We recruited temporary workers to carry out the interviews and randomly assigned them to either receive (treatment group) or not receive (control group) information about the previous failed mail campaign. Subsequently, we measure their performance on the new phone campaign. We find that workers in the treatment group perform better at the phone campaign – in terms of both numbers dialed (about 14% improvement) and completed interviews (about 20% improvement) – regardless of whether they had previously worked on the failed mail campaign. This suggests that a sunk cost effect (Thaler, 1980) – raising effort because of previous investment of effort in the project – that would only be operating for workers previously engaged in the project cannot be the main motivational driver of our finding.

Why do workers react to news about past failure that has no financial implication for them (as they are fixed wage workers)? Our interpretation draws on the notion of contextual inference (Kamenica, 2012; pg. 13.3): "...people are often unsure about what the best course of action is and consequently seek clues from the environment". Contextual inference has been argued to explain behavior in many contexts in which agents are imperfectly informed about the environment in which they operate, from educational and workplace settings (Benabou and Tirole, 2003) to product markets (Kamenica, 2008). In our setting, workers might be uncertain about how important and valuable the project is and could infer, from the fact that the employer in the face of failure is not giving up and is devoting more resources to achieving the goal, that the job is more valuable than initially thought. This leads them to exert more effort than their counterparts in the control group who are unaware of the past failure and cannot, therefore, update their beliefs about the significance of the task. Thus, bad news about past failure can translate into good news about the meaning of work, which has been shown to act as a strong motivator for workers (Ariely, Kamenica and Prelec, 2008; Grant, 2008; Chandler and Kapelner, 2013; Kosfeld, Neckermann and Yang, 2017; Chadi, Jeworrek and Mertins, 2017). This is the key psychological mechanism that we believe gives rise to the behavioral responses we see in the treatment group.

We also consider alternative explanations for our main finding, by conducting a second field experiment in a different setting. In particular, a recent literature in management highlights that employers react positively to organizational transparency (e.g. Schnackenberg and Tomlinson, 2016), a mechanism that has more recently started receiving some attention in economics (Jehiel, 2015; Brandes and Darai, 2017). It is possible then that the elevated performance of workers in the information treatment follows from workers' appreciation of the fact that the employer shared information about past failure with them. To assess this possibility, we carried out a study with University students who were asked to voluntarily write petition letters in support of a campaign to reduce food waste. Similar to our main experiment, we randomly assigned participants into two groups: a treatment group that received information that the campaign had thus far failed to collect the targeted number of signatures by a large margin and a control group that did not receive such information. In this context, there is no employer-employee relationship between the organizer of the campaign and the volunteers who are asked to write the letters, so any treatment differences cannot be explained by the above-mentioned considerations. We find that in the treatment group a larger share of individuals writes a letter than in the control group (an increase of about 30%). The number of words written (conditional on writing one) is also somewhat higher in the treatment group, but this difference is statistically insignificant.

Since in this context there is no monetary incentive or an employment relationship to engender reciprocal concerns, the performance difference in this study is consistent with the explanation that feedback about past failure signals that the campaign is particularly valuable. Support for this interpretation is also offered in the end-of-study survey in which students in the treatment group reported to attach significantly more importance to the food waste campaign than those in the control group.

At a general level, this paper is related to a literature that examines the impact of feedback on worker productivity. The previous literature is primarily concerned with how personal feedback about relative performance affects individual performance (e.g. Azmat and Iriberry, 2010; Blanes i Vidal and Nossol, 2011; Tran and Zeckhauser, 2012; Charness et al., 2013), while a few recent studies have considered the impact of team relative performance feedback (Bandiera et al., 2013; Delfgaauw et al., 2013). In education settings, a handful of studies have examined the role of provision of absolute performance feedback on future exam performance or drop-out rates (Stinebrickner and Stinebrickner, 2012; Bandiera et al., 2015). This paper extends this literature by looking at how feedback about the performance of the organization as a whole affects individual performance.

This paper is also related to a literature (Benabou and Tirole, 2003; Ellingsen and Johannesson, 2008; Bremzen, et al., 2015) that studies environments in which there are informational asymmetries between the principal and the agent regarding aspects of the project (for instance, how difficult the task is), and the agent makes inferences about these from actions and signals of the principal (e.g. the principal's choice of compensation structure). By embedding our experiment into a setting involving a social mission, our study connects this literature to another strand that emphasizes the motivating role of a job's mission for worker productivity (e.g. Besley and Ghatak, 2005; Tonin and Vlassopoulos, 2010, 2015; Carpenter and Gong, 2016).

The rest of the paper is organized as follows: The next section describes the main field experiment of this study. Section 3 presents the main results and section 4 offers a discussion. Section 5 presents the second field experiment we ran to investigate alternative explanations for our main finding. Finally, section 6 offers some concluding remarks.

## **2. Field Experiment I: Experimental Design**

### **2.1 Background**

The current study was possible due to a collaboration with an advertising agency that carries out mailing campaigns for various organizations in the private and public sector, including charities. In the fall of 2014, one such mailing campaign was conducted on behalf of a volunteering agency that matches people interested in volunteering with suitable local charities in a medium-sized German city. Short-term workers assisted with this campaign by filling letters into envelopes.<sup>2</sup> The letters emphasized the importance of volunteer work for society and invited the recipients to become committed volunteers within their area. Due to being in contact with the head of the volunteering agency we learned that out of 12,500 letters that were sent out, reaching roughly 17% of all households within the city, less than 0.01% of the letters resulted in a volunteer signing up with a local charity.

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<sup>2</sup>Jeworrek and Mertins (2017) used this mailing campaign along with other mailing campaigns conducted by the advertising agency for different organizations to carry out a field experiment testing whether doing exactly the same task (enveloping and stamping letters) but for different purposes (involving either a social mission or not) affects worker motivation.

The failure of this campaign was not due to the poor performance of the temporary workers who enveloped and stamped the letters, it is rather likely that the agency's chosen way of attracting possible volunteers was simply not an effective one (unaddressed letters might not even be read by their recipients). Nevertheless, the failure of the first campaign's attempt to recruit new volunteers offered the opportunity to investigate the impact of an organizational failure on the subsequent effort of workers in a natural setting and without the use of deception. Therefore, in the spring of 2015, we supported the volunteering agency in carrying out a second volunteer recruitment campaign. This time temporary workers were hired to assist with a phone campaign aiming to raise the local population's awareness of the volunteering agency and to attract new volunteers.

## 2.2 Recruitment

Workers in this study were recruited from two different pools: "old" workers who were involved in the earlier letter campaign by stuffing the recruitment letters, and "new" workers, who were unaware of the previous letter campaign. Old workers received an invitation via email, while new workers were recruited via postings on notice boards (supermarkets, public libraries, university campus, etc.) and small ads in regional online platforms. Besides appropriate language skills to conduct phone interviews, the job had no further requirements so that everyone was able to apply and do the job.

Out of the 79 potential candidates among the old workers, we excluded 15 individuals who lacked the language skills to conduct phone interviews properly. Of the remaining 64 old workers, 34 agreed to participate in the phone campaign.<sup>3</sup> Additionally, we hired 37 new workers, for a total of 71 workers. New workers had to register via an online interface by providing basic socio-demographics and answering questions on volunteering in general and their own volunteering activities in particular, so that we collected exactly the same information on both groups, old and new workers. Whereas old workers were told that their job would be to conduct a phone survey following the previous letter campaign, new workers learned about the content of the survey when starting their shift. Both types of workers knew that the phone survey was a one-off job and, hence, that there were no further employment opportunities.

Due to the short-term nature of the job, 91.5 percent of all workers were students, covering a wide range of subjects studied. The average age was 24.4 years (max.: 57 years). The remaining workers were either part-time employed, housewives, or retirees. For summary statistics, see Appendix C1.

## 2.3 The Task

All workers were hired by a research institute that is affiliated with a local university and carried out the task in regular but specially prepared university offices. The task was to conduct a phone survey, which interviewed people about their previous volunteering activities and invited them to become new volunteers (see Appendix A1 for the questionnaire). In addition, interested individuals were offered the option to receive by mail a complimentary information package from the volunteering agency.

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<sup>3</sup> As regards observable characteristics (age, gender, being a student, being a volunteer, performance in the previous letter campaign), we do not find any statistically significant differences between workers who were willing to conduct the phone interviews and those who declined.



A single shift lasted for two hours —the total time which was at workers’ disposal for the phone calls— plus an approximately five-minute introduction, and was paid a fixed wage of 20 Euro. Workers were randomly allocated to one out of three shifts per day (morning, noon and afternoon). To prevent disturbing noises from other interviewers and peer effects on effort provision (see e.g. Falk and Ichino 2006), workers were seated in single offices, identically equipped with a phone, a clock to keep track of the time of an interview, a list of the phone numbers to call and a sufficient number of questionnaires (for a picture of a workplace station see Appendix A2).

We received a list of pseudo-randomly generated phone numbers according to the widespread and generally recognized Gabler-Häder method (see Häder and Gabler 2009) provided by the GESIS Institute Mannheim, which offers this service to parties interested in obtaining representative samples for phone surveys. Due to the randomness in the creation of the phone lists, a large fraction of numbers is non-existent. For each called phone number, we asked workers to indicate whether it does not exist (due to the random generation procedure), no one answered the phone after exactly 10 rings, a telephone answering device (tad) answered the call, the line was busy, the interviewers were asked to call back later on, an interview was denied or an interview was completed (see Appendix A3 for an exemplary list). To guarantee the greatest possible comparability, interviewers were told that interviews should not exceed 5 minutes (and interviews lasted on average for 3 minutes).

In total, the phone campaign reached 1918 citizens and 388 of these individuals agreed to be briefly interviewed. We focus on two outcome variables: the total number of dialed phone numbers as a pure quantitative measure of effort, and the number of completed interviews as a qualitative measure. Note that the latter is a small number and depends, to a certain extent, also on interviewers’ luck, so it is a rather noisy measure.

The particular work task made it easy for us to check workers’ stated output (number of dialed numbers and completed interviews): first, we dialed every third number that was declared to be non-existent. Second, all calls which have gone through —either to the tad or to a potential respondent— were registered with the day of the call, the exact starting time and length of the call. Hence, we were able to check whether a completed questionnaire matches a sufficiently lengthy call at the stated time.<sup>4</sup>

## 2.4 Treatments

Our experimental design consists of two groups that we created by randomly assigning workers (both old and new ones) to either receive feedback regarding the failure of the first campaign (treatment group) or not receive any feedback (control group). At the beginning of their shift, all workers received a welcome letter from the project coordinator that made it clear that the goal of this project is to recruit new volunteers (for the letters, see Appendix A4). Compared to the control group, the letters differed in that the treatment group received additional information on the failure of the previous campaign. The information was provided in written form to avoid the possibility that even minor differences in the mood of the deliverer of the bad news could affect individuals’ reaction. To guarantee that workers indeed noticed and read the message, they were asked to read and fill out a

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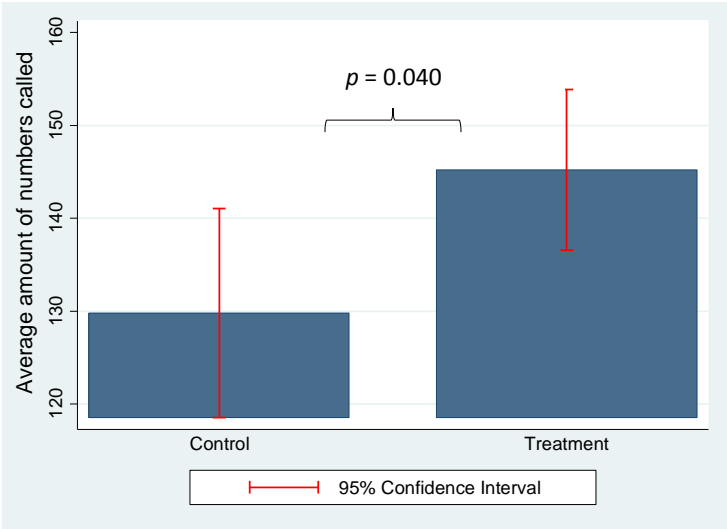
<sup>4</sup> We detected that one of the old workers from the control group declared that nonexistent numbers existed (and vice versa) and none of the reported interviews was actually conducted. This worker stated to have dialed 49 numbers, resulting in 10 interviews, which would be an exceptionally high success rate. To compare, the average number of dialed numbers is 127.5, resulting in 5.09 interviews. Hence, we excluded that worker from our analysis so that we end up with a total of 70 workers.

form at the bottom of the information letter. At the end of a shift, workers were paid and asked to fill out a short questionnaire on their work experience (see Appendix A5).

### 3. Results

We start by analyzing the number of calls made during a two-hour shift as a pure measure of performance. Figure 1 shows the average number of calls for the control ( $N=34$ ) and the treatment group ( $N=36$ ). On average, interviewers in the control group dialed 130 numbers, whereas those in the treatment group dialed a statistically significant larger amount of 145 numbers (Wilcoxon two-sided test;  $p=0.04$ ). These figures offer first evidence that providing negative organizational feedback increases work performance rather than dampening it.

**Figure 1: Average number of calls by control and treatment group**



*Wilcoxon rank-sum test, two-sided*

We next turn to regression analysis to check the robustness of this result and to analyze potential heterogeneous effects of the treatment. Since our effort measure is a count variable and its variance is much larger than its mean, we use negative binomial regressions.<sup>5</sup> Results in terms of incidence rate ratios are displayed in Table 1. The incidence rate ratio, e.g. for organizational feedback, gives the relative performance of those who have received the feedback compared to the control group.

For specification (1), we find that the treatment group performed 11.9 percent better than the control group ( $p=0.029$ ). Specification (2) contains organizational controls for the time of the day (morning, afternoon, evening) and the offices in which the interviews took place. In specification (3), we add controls for an individual’s age, gender, and volunteering activities. We find that the observed treatment effect is quite stable and remains statistically significant across these specifications: being informed about the failure of the previous campaign increases work effort by about 12 percent.

We next allow the treatment effect to differ, first, between high and less pro-social individuals (as indicated by their stated volunteering activities) and, second, between old and new workers by adding the corresponding interaction terms in specifications (4) and (5), respectively.

<sup>5</sup> Estimating OLS regressions delivers qualitatively and quantitatively comparable results (see Appendix C.2).

**Table 1: Main regression results**

	(1)	(2)	(3)	(4)	(5)
Feedback treatment	1.119** (0.058)	1.147*** (0.057)	1.123** (0.054)	1.138** (0.066)	1.146** (0.075)
Age			0.995 (0.003)	0.995 (0.003)	0.994* (0.003)
Female			1.011 (0.057)	1.013 (0.056)	1.009 (0.056)
Volunteers			0.958 (0.051)	0.973 (0.070)	0.960 (0.051)
Old workers			0.913* (0.044)	0.913* (0.043)	0.934 (0.070)
Information x Regular volunteers				0.972 (0.094)	
Information x Old workers					0.956 (0.095)
Constant	129.794*** (5.500)	142.825*** (10.553)	165.835*** (19.530)	162.794*** (19.220)	167.114*** (19.251)
<i>Further Controls:</i>					
Organizational controls	-	✓	✓	✓	✓
<b>Observations</b>	70	70	70	70	70
<b>Pseudo R<sup>2</sup></b>	0.007	0.019	0.028	0.028	0.029
<b>Prob &gt; <math>\chi^2</math></b>	0.029	0.025	0.001	0.001	0.000

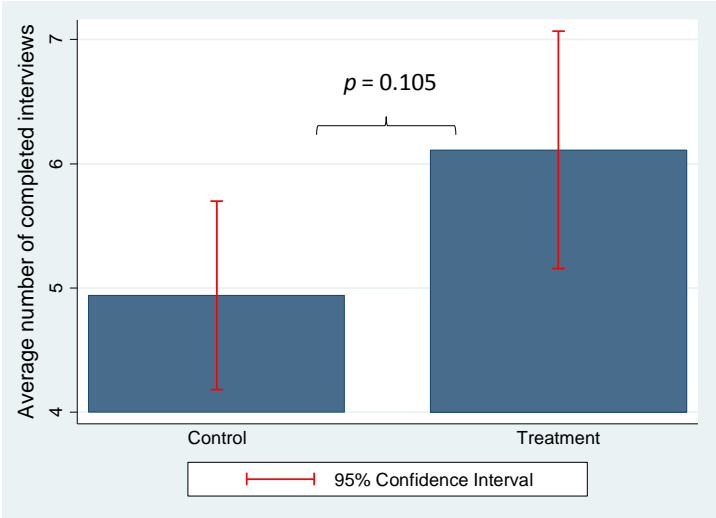
*Notes:* The dependent variable is the amount of numbers called. The table reports incidence rate ratios obtained from negative binomial regressions (robust standard errors in parentheses). Organizational controls include dummies for time of the day (morning, afternoon, evening) and the offices in which the interviews took place. Significance levels are denoted as follows: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Since the task has a pro-social orientation, one might expect that more pro-socially inclined workers (volunteers) might behave differently from other workers. In fact, we do not see any evidence of volunteers being different from non-volunteers in terms of productivity or their reaction to the treatment (column 4 of Table 1). Also, one might hypothesize that there could be a difference between old and new workers due to their previous work experience and the possibility of building up an employer-employee relationship. We observe a somewhat smaller number of calls dialed by old workers, but the data does not provide any evidence that old and new workers are heterogeneously affected by the treatment (column 5 of Table 1). However, it could be that the treatment response of old workers depends on their expectations of the success of the letter campaign, that is, workers with higher expectations might experience more disappointment from finding out the bad news. Since the number of observations gets very small when solely looking at old workers, we do not apply regression analysis to look into this issue. Instead, we look at the average performance of old workers separately for those having low and those having high

expectations. In both groups —workers with low and high expectations about the previous project’s success— we find that treated workers’ average performance is (at least descriptively) higher.<sup>6</sup>

In a next step, we look at the number of completed interviews, which can be perceived as an indicator of a worker’s quality of output. As shown in Figure 2, the treatment effect resembles the one regarding the number of calls. The treatment group completes on average 6.1 interviews, which is roughly one interview more than the number of interviews in the control group (on average 4.9 interviews). While this difference is borderline statistically insignificant at the conventional level of 10% (Wilcoxon two-sided test;  $p=0.105$ ), it does indicate that the higher performance in terms of dialed numbers in the treatment group did not come at the expense of lower quality in terms of completed interviews.

**Figure 2: Completed interviews by treatment group**



*Wilcoxon rank-sum test, two-sided*

To check whether this result also holds using regression analysis, we re-estimate our basic specifications (1) to (3) with the number of completed interviews as the dependent variable, employing Poisson regressions. Table 2 reports these results. The first two specifications confirm that there is also a positive treatment effect on work quality, whereas in specification (3) the effect is marginally insignificant ( $p=0.102$ ). Even though the statistical significance is not as robust as in Table 1, the economic significance of the treatment on worker performance is even more pronounced: the number of completed interviews is higher by almost 20 percent.

<sup>6</sup> Low expected success rate: 145.7 dialed numbers in the treatment group vs. 123.0 numbers in control. High expected success rate: 137.9 numbers in the treatment group vs. 109.5 numbers in control. These differences are statistically insignificant, but we note the limited sample size of these groups: for example, the smallest group has only four observations.

**Table 2: Treatment effect on work quality**

	(1)	(2)	(3)
Feedback treatment	1.237** (0.132)	1.223** (0.122)	1.192 (0.128)
Further Controls:			
Organizational controls	-	✓	✓
Socio-demographics	-	-	✓
<b>Observations</b>	70	70	70
<b>Pseudo R<sup>2</sup></b>	0.013	0.041	0.054

*Notes:* The dependent variable is the number of completed interviews. The table reports incidence rate ratios from Poisson regressions (robust standard errors in parentheses). The likelihood-ratio tests rejected the hypothesis that  $\alpha=0$  and, hence, the Poisson model is preferred over the negative binomial model. Significance levels are denoted as follows: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Note that an interviewer who completes many interviews will have less time left to dial numbers. To account for this, we also apply a time-adjusted measure for the number of calls to check the robustness of our previous results. We do this by calculating the average number of calls within one minute. Therefore, we subtract the time spent interviewing —obtained from official phone records. Subsequently, we divide the number of calls by this remaining time. In the control group, we find an average of 1.24 numbers per minute, while in the treatment group an average of 1.42 numbers, indicating a very similar pattern as above.<sup>7</sup> In fact, using the same basic specifications (1) to (3) as before, regression analysis reported in Table 4 again yields a highly stable and statistically significant positive treatment effect of the feedback on the time-adjusted measure of effort.

**Table 4: Time-adjusted effort measure**

	(1)	(2)	(3)
Feedback treatment	0.181** (0.069)	0.204*** (0.068)	0.188** (0.073)
Constant			
Further Controls:			
Organizational controls	-	✓	✓
Socio-demographics	-	-	✓
<b>Observations</b>	70	70	70
<b>Adjusted R<sup>2</sup></b>	0.080	0.145	0.115

*Notes:* The dependent variable is the number of dialed numbers per minute. Due to the calculation of the dependent variable, we do not have a count variable anymore. Consequently, the table reports OLS coefficient estimates (robust standard errors in parentheses). Significance levels are denoted as follows: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Recall that at the end of the shift, we asked workers to provide additional ideas of how to recruit new volunteers in the feedback sheet. What we find is that treated workers exert higher effort also on this voluntary activity. On average, workers in the treatment group provide 2.03 ideas, whereas

<sup>7</sup> The average of dialed numbers per minute is relatively low, since workers were told to ring ten times if the called number exists, and this takes about 40 to 45 seconds.

workers in the control group offer only 1.21 ideas (Wilcoxon rank-sum test, two-sided;  $p=0.017$ ). The same is true when we use the number of words written as a measure of performance.<sup>8</sup>

To sum up, we find no evidence of a negative, demotivating effect of bad news on work performance. On the contrary, we find a highly robust and economically significant positive impact of the feedback treatment on workers' performance, also on activities that take place beyond their paid working time. Even if workers, especially the old ones who might have firmly believed in the project's success, have good reasons for being disappointed when learning about the past failure, they perform better than workers in the control group.

## 4. Discussion

What might be the psychological mechanism(s) that drive(s) the observed treatment effects? One possibility is that workers are driven by a sunk cost effect (Thaler, 1980), that is, they raise effort in the second campaign to recoup the effort they invested in the first unsuccessful campaign. However, this mechanism would explain a treatment response only for old workers and the fact that we also find a treatment effect for new workers suggests that a sunk cost effect cannot be the main explanation for our finding.

In the context of our study, we believe that the information that previous campaign was unsuccessful and yet the agency is willing to carry out a second campaign signals to the worker that the campaign is particularly valuable. In other words, it acts as a task significance cue that assigns an enhanced value and meaningfulness to the job at hand, which has been shown to boost productivity (Ariely, Kamenica and Prelec, 2008; Grant, 2008; Chandler and Kapelner, 2013; Kosfeld, Neckermann and Yang, 2017; Chadi, Jeworrek, and Mertins, 2017). This interpretation is consistent with the concept of contextual inference that has been argued to explain behavior in many settings in which agents are imperfectly informed about the environment in which they operate (Kamenica, 2012).

With the data at hand, however, we cannot rule out the possibility that the treatment effect is due to other considerations salient at the workplace. For instance, previous literature suggests that employees honor open and transparent communication, even in the case of bad news, by exerting higher effort (Brandes and Darai, 2017). Alternatively, information about past failure might signal that the goal of the project is hard to achieve and the effort of a single employee contributes only marginally to goal achievement and to the surplus of the employer from the work relation. This could lead workers to perceive the paid wage (above minimum wage) as more generous and reciprocate their payment by exerting higher effort (Falk et al., 2006; Gneezy and List, 2006; Hennig-Schmidt, et al., 2010).

To examine the possibility that the results of Experiment 1 can be attributed to fairness concerns between employees and the employer, we ran a supplementary experiment, in which participants' performance was not compensated, so this type of motivations is not at play.

## 5. Field Experiment II

### 5.1. Experimental design

The context of the second experiment relates to a local student campaign to collect signatures in support of a citizens' initiative combatting food waste in another medium-sized city in Germany.<sup>9</sup> We

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<sup>8</sup> 18.42 words in the treatment group vs. 13.88 words in control,  $p=0.043$ , Wilcoxon rank-sum test, two-sided.

set the goal for the campaign to collect 12,500 signatures.<sup>10</sup> This had the advantage of maintaining comparability to the goal in the letter campaign of Experiment I, and was also deemed reasonable by the national campaign's initiator based on his previous experience. After the campaign came to its end, only 380 individuals signed the petition, which was 3% of the defined goal. In December of 2015, we followed up this campaign with a second drive to raise awareness about the cause and used this occasion to conduct a second field experiment about the impact of information on past failure.

The field experiment took place at the end of a compulsory lecture on social services management of the local university. In preparation of the next lecture which was supposed to deal, among other things, with the use and characteristics of petitions, students received written information about the food waste campaign. Depending on whether they were sitting on the left or on the right part of the large lecture hall with a broad corridor in between, students did (or did not) receive an additional piece of information about the missed signature collection target of the initial campaign (see Appendix B1). Then, people answered several survey questions (e.g., about their interest in the food waste topic and on petitions in general) and indicated their age and gender (see Appendix B2). This information was used to present some correlations as thematic introduction to the next lecture. Afterwards, we gave students the opportunity to voluntarily stay within the lecture hall (without the presence of the lecturer) and to write a petition letter (prepared forms were distributed, see Appendix B3), which would be sent to the European Commission in Brussels to impact decision-making, without informing them about the experimental conduct. Students were told to leave the material at their seat when leaving the lecture hall and an assistant collected everything after everyone had finished. This procedure enabled us to match the letters to the individual data collected in the survey.

## 5.2 Results

In total, 157 university students (76.2% female) with an average age of 20.9 years (max.: 36 years) took part in the study.<sup>11</sup> We analyze the treatment's impact on both the share of participants deciding to write a letter (extensive margin) and the number of words written, both unconditionally, and conditionally on writing a letter (intensive margin).

Given that writing a petition letter was done on a voluntary basis without any monetary incentives, it is perhaps not surprising that roughly one-third of individuals was not interested in writing a letter. In particular, while 58.2% of the students in the control group decided to write a letter, a substantially larger share in the treatment group 75.6% did so, the difference being statistically significant (Chi-square test,  $p=0.020$ ).

In terms of the number of words written, in the control group ( $N = 79$ ) the average (over all students) was 57, whereas this number was substantially higher at 83 words in the treatment group ( $N = 78$ ),

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<sup>9</sup> The local campaign was following a much larger Germany-wide campaign against the waste of food in supermarkets. Besides several locally managed initiatives, the national campaign's initiator also launched a petition on the internet portal [www.change.org](http://www.change.org) to collect a million signatures. Together with similar initiatives in a number of other European countries, the campaign's goal was to implement an EU-wide directive similar to a recent law implemented in France.

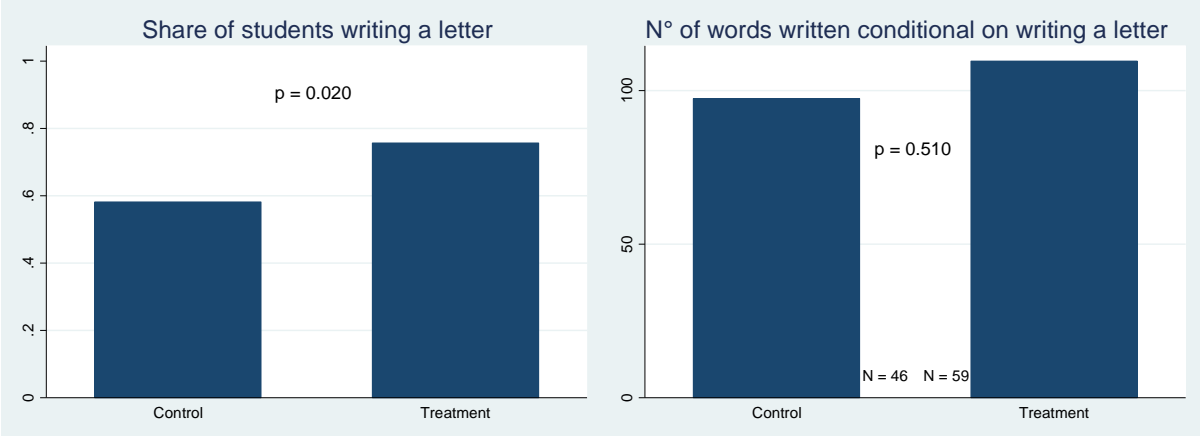
<sup>10</sup> The campaign was carried out in a local Christmas market. Visitors were informed about the background of the campaign, received promotion material provided by the Federal Ministry of Food and Agriculture (initiative "Zu gut für die Tonne"), and were subsequently asked for their signature. Supporters were also asked to take signature lists with them in order to collect further signatures among friends and family.

<sup>11</sup> Only one student left the lecture hall immediately and did not even answer the survey and, hence, is not in our sample.

an increase of 46.2%, which is statistically significant (Wilcoxon rank-sum test, two-sided;  $p=0.022$ ). Figure 3 shows that the positive treatment effect in terms of a higher number of words averaged over all individuals is due to a rise in the number of students who wrote a letter. In the intensive margin, we also observe a slightly higher number of words written in the treatment group (conditional on writing a letter), this difference, however, is not statistically significant (Wilcoxon rank-sum test, two-sided,  $p=0.51$ ).

Somewhat different to the main experiment, we find a specific subsample of students that drives these results: regular volunteers who seem to be highly intrinsically motivated to support the campaign independent of the treatment intervention. As can be seen in Table 5, for volunteers, both measures, the number of words and the share of participating students, are high in absolute terms and not different between treatment groups. On the contrary, for non-volunteers, there are significant treatment differences in the willingness to write a letter. In the control group, only a minority (about 48%) takes part, while in the treatment group, the share of supporting students increases to 78%, the difference being statistically significant (Chi-square test,  $p = 0.004$ ). Similar to what we observed previously for the whole sample, the number of words written, conditional on writing a letter is also somewhat higher in the treatment group, but statistically insignificant. It is worth highlighting that the share of non-volunteers in the treatment group writing a letter is comparable to the overall participation rate of volunteers (73.5%). Furthermore, they not only are more likely to write a letter but also write similarly long letters as the volunteers (intensive margin: 109.44 vs. 109.67 words).

**Figure 3: A rise in the participation rate as driver of the treatment effect**



*Wilcoxon rank-sum test, two-sided*

Finally, as a further outcome, we look at the number of additional ideas of how one could alternatively support the campaign, which we obtained in the end-of-study survey. Even though the difference between treatment and control group for non-volunteers in this dimension is only close to statistical significance (Wilcoxon rank sum test, two-sided,  $p=0.117$ ), we observe exactly the same pattern as before (see third row of Table 5).



**Table 5: Effort measures separated for volunteers and non-volunteers**

	Volunteers			Non-volunteers		
	Control	Treatment	<i>p</i> -value	Control	Treatment	<i>p</i> -value
N° of words written	76.00	80.03	0.936	44.25	85.41	0.005
Share of students writing a letter	0.742	0.730	0.910	0.479	0.780	0.004
N° of ideas on how to support the campaign	0.419	0.622	0.842	0.188	0.439	0.117
<i>N</i>	31	37		48	41	
Intensive margin (N° of words written conditionally on writing a letter)	102.43 ( <i>N</i> = 23)	109.67 ( <i>N</i> = 27)	0.793	92.35 ( <i>N</i> = 23)	109.44 ( <i>N</i> = 32)	0.522

*Note: p-values are obtained from the Wilcoxon rank sum test and the Chi-square test, respectively.*

Regression analysis (see Appendix C.3), which controls for an individual’s knowledge about the campaign, whether other petition letters have already been written, the individual’s age, and gender, confirms the previous findings as regards our main outcome measures. In sum, the analysis of behavior from experiment 2 indicates that the pattern of results obtained in the main experiment carries over to a setting that is not characterized by an employment relationship. Overall, these results provide support for the interpretation that, as elaborated earlier on, feedback about past failure might act as a signal of high task meaning for the treated individuals.

To corroborate this suggestion, we asked students in the survey how important the food waste topic is for them personally on a scale from 1 to 7. Similar to the performance measures, we find a highly significant positive difference between treated and non-treated students (5.753 vs. 5.114 with  $p=0.001$ , Wilcoxon rank sum test, two-sided). Hence, this finding further supports the idea that principals who urge people to pursue a goal even if its attainment seems to be difficult, signal to their agents that a positive outcome is highly important. Agents might then react by investing more effort in the matter.

## 6. Conclusions

Failure in organizations – falling short from achieving particular goals – of all sizes and types is common. Little is known about whether information about past failure impacts workers’ subsequent performance. We conduct a field experiment in which we follow up a failed direct-mail campaign to recruit new volunteers with a phone campaign with the same goal. We recruited temporary workers and randomly assigned them to either receive (treatment group) or not receive (control group) information about the previous failed mail campaign and we measure their performance on the new phone campaign. We find that workers in the treatment group perform better at the phone campaign – in terms of both numbers dialed (about 14% improvement) and completed interviews with potential volunteers (about 20% improvement) – regardless of whether they were part of the previous team which has worked on the failed mail campaign. Further evidence from a second experiment with student volunteers recruited to write petition letters in support of a campaign to

reduce food waste suggests that a likely mechanism behind our finding is that the information about past failure coupled with the decision of the employer to take a second crack at the task signals to agents the enhanced worthiness of the project.

Our results have implications for human resources policies and practices of firms and for charitable organizations that rely on the contributions of volunteers. The message of this research is that disclosure of information on past organizational failure can raise the subsequent performance of workers or volunteers and so managers should adopt practices that facilitate transparency. Our evidence, of course, is gathered from a setting in which the project that is being pursued has a significant social impact, which may matter for how workers perceive their job and whether feedback would act as a task significance cue. It would be interesting to examine whether the result we obtain would carry over in more standard workplace settings in which the project generates primarily private benefits for the employer. In those settings, feedback could indeed signal the employer's perception of the importance of the project, but whether this would also translate into higher work engagement remains an open question. Also, we note that, unlike here, in other settings it may not be possible for the employer to withhold information about organizational failure from employees who may be able to retrieve the information through other channels. A fruitful avenue for future research would be to examine whether even in such situations where information reaches employees without the intent of the employer, past failure has a positive spillover effect on subsequent performance.

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## Appendix

### Appendix A: Experimental design and procedures of the main experiment

#### A1. The phone survey questionnaire

Phone nr.: 0651- \_\_\_\_\_ Time of day: \_\_\_\_\_

Gender of interviewee:  female  male

*Hello, my name is \_\_\_\_\_. I'm calling you on behalf of the [REDACTED]. In cooperation with the volunteering agency in [REDACTED], we conduct a short survey within the city as regards the local population's volunteering activities. We would highly appreciate your support. Do you have about 3 to 5 minutes to answer some questions?*

Interview will be conducted.

Receiver of the call rejects. "Could you connect me with another person in your household who would be willing to answer some questions?"

Yes, interview will be conducted with another person.


No, end of call.

Receiver of the call, or someone else in the household, wants to be called back later on:

Name: \_\_\_\_\_ Time of day: \_\_\_\_\_

Volunteering activities so far	Yes	No	Don't know/ no answer
<b>Q1: Are you currently volunteering, e.g. in a sports club, at church, or a social organization?</b> <b>→ If yes, Q1a next. If no, Q1b next.</b>			
<b>Q1a: Where exactly, in which position and when did you start?</b> <b>→ Continue with Q2!</b>			
<b>Q1b: Have you been volunteering previously?</b> <b>→ If yes, Q1c next. If no, Q2 next.</b>			

<p><b>Q1c:</b> <i>Where exactly, in which position and for how long?</i></p> <p>If someone has had more than one position: Description of only one, the most important position (as perceived by the interviewee).</p>			
<p><b>Q1d:</b> <i>Why did you end your volunteering activity?</i></p>			
<p><b>Q2:</b> <i>Have you already heard about the volunteering agency in Trier?</i></p>			

<p><i>For your information:</i></p> <p><i>The volunteering agency establishes contacts between social organizations/ initiatives and associations that are looking for volunteers. Hence, the agency is your contact for all ideas, questions and projects around volunteer work.</i></p> <p><i>The `heart` of the agency is a database with which you can systematically search for individually matching honorary posts. Currently, there are more than 200 open posts. Most of these are directed to individuals who would like to engage regularly with about half a day per week.</i></p> <p><b>Q3:</b> <i>Probably, there is also a suitable position for you? Shall I tell you the internet address of the agency? I could also send you a free and non-binding information package by mail so that you can have a look at what the agency does and what they offer.</i></p>			
	Yes	No	Don't know/ no answer
<p>Interviewee shows some interest.</p>			
<p>Interviewee wanted to know the URL:  </p>			
<p>Free and non-binding information package  <i>"In that case, I need your postal address":</i></p>			

*Thank you very much for the nice and informative conversation. Finally, I need some general information.*

Socio-demographics		Don't know/ no answer
<b>Q4:</b> <i>How many persons live in your household, including yourself?</i>	____ Adults ____ Children	
<b>Q5:</b> <i>In which year were you born?</i>		
<b>Q6:</b> <i>Are you employed?</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No If yes: <i>How many hours per week?</i> _____	

A2. A representative office



### A3. List of phone numbers

	A	B	C	D	E	F	G	H	I	J
1	Telefonnummer			Inexistent	Niemand da	AB	Besetzt	Später	Ablehnung	Interview
140	139	0651	86767	X						
141	140	0651		X						
142	141	0651					X			
143	142	0651		X					X	
144	143	0651							X	
145	144	0651								
146	145	0651		X						
147	146	0651		X						
148	147	0651		X						
149	148	0651			X					
150	149	0651								X
151	150	0651		X						
152	151	0651						X		
153	152	0651							X	
154	153	0651								X
155	154	0651							X	
156	155	0651		X	X					
157	156	0651			X					
158	157	0651		X						
159	158	0651		X						
160	159	0651			X					
161	160	0651			X					
162	161	0651			X					
163	162	0651		X						
164	163	0651					X			
165	164	0651								X
166	165	0651							X	
167	166	0651								
168	167	0651								
169	168	0651								
170	169	0651								
171	170	0651								
172	171	0651								
173	172	0651								



## A4. Welcome (and treatment) letters for interviewers

### 1. *Old workers*

Dear Ms. XX,

we are pleased that you have found the time to assist us in our cooperation with the volunteering agency once again. As a follow up to last year's Christmas campaign, we would like to use short but numerous phone calls to raise the local population's awareness for the volunteering agency and to gain new volunteers within the city and the surrounding region once again.

*[For treatment group only:*

Unfortunately, the first round of the project was not nearly as successful as we have hoped it would be: from 12,500 letters stamped and sent, we received only 9 responses from people interested in volunteering. Hence, the success rate was less than 0.01 percent.]

Now, we are looking forward to your active support!

Best regards,

XX

Shall we inform you about the further development of the project by email?

- No thanks, I am not interested.
- Yes, I would like to stay informed.
- Yes, I would like to stay informed. Additionally, I would like to receive an information package on the agency by mail to the following address:

## 2. *New workers*

Dear Ms. XX,

we are pleased that you have found the time to assist us in our cooperation with the volunteering agency.

The project already started last year. In the course of a Christmas campaign, 12,500 local households were informed about the agency's work and personal engagement possibilities by mail. As a follow up to that campaign, we would like to use short but numerous phone calls to raise the local population's awareness for the volunteering agency and to gain new volunteers within the city and the surrounding region once again.

*[For treatment group only:*

Unfortunately, the first round of the project was not nearly as successful as we have hoped it would be: from 12,500 letters stamped and sent, we received only 9 responses from people interested in volunteering. Hence, the success rate was less than 0.01 percent.]

Now, we are looking forward to your active support!

Best regards,

XX

Shall we inform you about the further development of the project by email?

- No thanks, I am not interested.
- Yes, I would like to stay informed.
- Yes, I would like to stay informed. Additionally, I would like to receive an information package on the agency by mail to the following address:

## A5. Feedback sheet

	Disagree				Completely agree		
I was very satisfied with the working conditions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I felt uncomfortable calling unknown people.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducting the interviews was exhausting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
From my point of view, the paid wage was too high.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel co-responsible for the success of the recruitment campaign.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tried to convince as many people as possible to stimulate enthusiasm about volunteering.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

What do you think: How many of the people you have been talking to today, will start volunteering?

\_\_\_\_\_

What do you think: What is the overall success rate of both recruitment campaigns (the number of new volunteers in relation to the number of all contacted individuals, in percent)?

Success rate of the letter campaign before Christmas: \_\_\_\_\_

Success rate of the current phone campaign: \_\_\_\_\_

Have you already done a similar job (e.g. in a call center)?  Yes  No

If yes: What exactly have you done and for how long? Please describe.

\_\_\_\_\_  
\_\_\_\_\_

Did you set yourself a goal you wanted to reach during your shift? If yes, please describe.

\_\_\_\_\_  
\_\_\_\_\_

Do you have any further ideas how to support the volunteering agency in order to recruit more volunteers for the city and the surrounding region? Please list everything you come up with, even if it is difficult to implement or cost intensive.

\_\_\_\_\_  
\_\_\_\_\_

## Appendix B

### B1. Letters on the background of the campaign against food waste

Dear students,

we, the chair for Business Administration with the focus on Social Services Management, participate in a campaign against food waste with an own supporting project. In Europe, 80 million individuals live below the poverty line. Whereas many people struggle to feed their family day-to-day, supermarkets within the European Union toss out about 40 kilograms of food, each night.

In a first round of our project, we collected signatures within the city and the surrounding area for the petition "EU: Oblige supermarkets to donate unsold food!". The lists of signatures will be handed over to the European Commission as soon as they discuss the law proposal.

*[For treatment group only:*

Unfortunately, this first round did not meet the desired result of about 12,500 signatures. Although the campaign will end soon, we have only 380 signatures so far. This is just 3 percent of our self-set goal.]

Now, we are looking forward to your active support:

Please write some lines hereinafter that explain why you personally think it is important that the European Commission should increase efforts to control the waste of food. All letters will be transferred to the European Commission together with the lists of signatures.

Please note the following: A petition letter is more substantial and valuable the more diverse arguments you urge and the lengthier the letter is. Spelling and grammatical mistakes and illegible writing should be avoided. A signature below the letter is not necessary but it makes the letter more credible.

If enough citizens call for a law in the legislative program that forces supermarkets to donate the food they would throw away otherwise, the European Commission cannot ignore this claim.

B2. A survey on food waste and petitions in general

1. Did you already know the campaign?

- yes  no

2. How important is the topic food waste for you personally?

irrelevant Very important

- 1 2 3 4 5 6 7
- 

3. Are you, or have you been, engaged in this area (e.g. volunteering student initiatives private efforts)? If yes, please describe.

---

4. Are you, or have you been, volunteering in general? If yes, please describe.

---

5. How many petitions have you already signed?

- 0  1-2  3-5  more than 5

Have you already written a petition letter (by email or mail)?

- yes  no

6. Please state how much you believe that a corresponding law will be passed (in percent, e.g. 10%, 50%, 90%)?

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7. Do you have any further ideas what we could do?

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For statistical purposes:

Gender:  female  male  other/ not specified

Age: \_\_\_\_\_ years

### B3. The petition letter template (two pages in total)

An:

Jean-Claude Juncker, Präsident der Europäischen Kommission

Frans Timmermans, Erster Vizepräsident der Europäischen Kommission & EU-Kommissar für Bessere Rechtssetzung

Von:

Studierende der Universität



den 17.12.2015

**Betreff: Petition: EU: Verpflichtet Supermärkte ihr unverkauftes Essen zu spenden!**

Sehr geehrter Herr Präsident, Sehr geehrter Herr Vizepräsident,

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Deswegen spreche ich mich **für** ein EU-Gesetz aus, welches die Verpflichtung von Supermärkten zur Abgabe von überschüssigem Essen an Wohltätigkeitsorganisationen regelt.

**Als EU-BürgerIn bitte ich um Beachtung auch meiner Argumente.**

Mit freundlichen Grüßen

## Appendix C Additional Results

### C1. Summary statistics of worker characteristics

	Experiment 1		Experiment 2	
	Control group	Treatment group	Control group	Treatment group
Age	26.3	22.6	21.2	20.6
Female	67.6%	69.4%	68.9%	83.1%
Volunteer	41.2%	41.7%	39.2%	47.4%
Old worker	47.1%	47.2%	--	--
Already done a similar job	18.2%	14.3%	--	--
Student	91.2%	94.4%	--	--
Campaign already known	--	--	28.2%	32.1%
Already written petition letters	--	--	17.1%	9.2%
<i>N</i>	34	36	79	78

*Note:* Not all individuals answered all questions. Hence, numbers of observations might vary marginally across the different items.

## C.2 Main regression results using OLS

	(1)	(2)	(3)	(4)	(5)
Feedback treatment	15.400** (6.995)	17.988** (6.787)	15.533** (6.845)	17.882** (8.391)	18.123* (9.894)
Age			-0.567 (0.356)	-0.515 (0.387)	-0.645 (0.391)
Female			2.872 (7.969)	3.296 (7.967)	2.584 (8.002)
Volunteers			-7.006 (7.796)	-4.175 (10.331)	-6.746 (7.808)
Old workers			-11.356* (6.756)	-11.156 (6.776)	-8.333 (10.357)
Information x Regular volunteers				-5.435 (14.354)	
Information x Old workers					-5.970 (14.683)
Constant	129.794*** (5.540)	144.448*** (10.773)	161.076*** (15.790)	157.587*** (15.967)	167.114*** (19.251)
<i>Further Controls:</i>					
Organizational controls	-	✓	✓	✓	✓
<b>Observations</b>	70	70	70	70	70
<b>R<sup>2</sup></b>	0.067	0.170	0.232	0.233	0.234

*Notes:* The dependent variable is the number of calls. The table reports point estimates obtained from OLS regressions (robust standard errors in parentheses). Organizational controls include dummies for time of the day (morning, afternoon, evening) and the offices in which the interviews took place. Significance levels are denoted as follows: \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01.



### C.3 Regression analyses for the petition experiment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Dep. Variable:</i>	Average n° of words		Extensive margin			Intensive margin		
<i>Subgroups:</i>			All	Volunteers	Non-volunteers	All	Volunteers	Non-volunteers
Feedback treatment	1.461** (0.261)	1.504* (0.333)	0.204*** (0.070)	0.087 (0.109)	0.289*** (0.093)	1.060 (0.185)	0.901 (0.218)	1.112 (0.289)
Campaign already known		1.266 (0.243)	0.078 (0.082)	0.003 (0.127)	0.100 (0.120)	1.135 (0.167)	0.894 (0.210)	1.261 (0.280)
Volunteering for waste reduction		1.792** (0.487)	0.273** (0.138)	0.109 (0.156)		1.240 (0.266)	0.883 (0.259)	1.433 (0.478)
Already petition letters written		1.201 (0.311)	0.160 (0.122)	0.104 (0.209)	0.251 (0.161)	0.948 (0.206)	1.327 (0.287)	0.829 (0.291)
Female		0.856 (0.231)	-0.067 (0.090)	-0.081 (0.138)	-0.036 (0.126)	1.076 (0.224)	1.248 (0.396)	0.904 (0.293)
Age		1.012 (0.029)	0.033 (0.021)	0.057 (0.037)	0.012 (0.022)	0.997 (0.021)	0.930* (0.040)	1.002 (0.027)
Constant	56.709*** (8.026)	41.816*** (26.175)				96.473*** (44.334)	440.158*** (409.148)	91.900*** (55.000)
<b>Observations</b>	157	145	145	63	76	98	46	52
<b>Pseudo R<sup>2</sup></b>	0.001	0.002	0.084	0.053	0.108	0.002	0.005	0.006
<b>Prob &gt; <math>\chi^2</math></b>	0.034	0.087	0.024	0.717	0.043	0.917	0.681	0.446

Note: The table reports incidence rate ratios obtained from negative binomial regressions for specifications (1)-(2), and for specifications (6)-(8). Specifications (3)-(5) show average marginal effects obtained from probit regressions. Robust standard errors in parentheses. Significance levels are denoted as follows: \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01.



Halle Institute for Economic Research –  
Member of the Leibniz Association

Kleine Maerkerstrasse 8  
D-06108 Halle (Saale), Germany

Postal Adress: P.O. Box 11 03 61  
D-06017 Halle (Saale), Germany

Tel +49 345 7753 60  
Fax +49 345 7753 820

[www.iwh-halle.de](http://www.iwh-halle.de)

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