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DP13125

**MIDDLE MANAGERS, PERSONNEL
TURNOVER AND PERFORMANCE: A
LONG-TERM FIELD EXPERIMENT IN A
RETAIL CHAIN**

Guido Friebel, Matthias Heinz and Nick Zubanov

**INDUSTRIAL ORGANIZATION and
LABOUR ECONOMICS**



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Discussion Paper DP13125

Published 19 August 2018

Submitted 19 August 2018

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Abstract

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JEL Classification: L2, M1, M12, M5

Keywords: organizations, Managers, randomized controlled trial (RCT), insider econometrics, communication, HR, hierarchy, personnel turnover

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**Middle managers, personnel turnover and performance:
A long-term field experiment in a retail chain**

August 2018

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Abstract

In a field experiment, a large retail chain's CEO asked managers of treated stores "to do what they can" to reduce personnel turnover. Turnover decreases by a quarter for nine months; a reminder treatment triggers a similar decrease for a shorter period. Treated managers report shifting their time toward HR; their employees report more managerial attention and support. Store sales are unaffected, indicating that the possible performance increases related to managers spending more time on HR are neutralized by the effects of managers spending less time on customers and goods. The discernible efficiency gains occur at the firm, rather than at the store level.

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This paper was formerly circulated and presented under the title "Making managers matter". We thank our seminar participants, and in particular our discussants, in Amsterdam (Tinbergen Institute and U of Amsterdam), Barcelona (UB), CEU Budapest, Copenhagen University, Cologne, Frankfurt, Leuven, Maastricht, Munich (LMU), Oxford, Regensburg, Stanford, Toronto, and participants at the Queen's Org Econ Conference 2018, INSEAD RCT Lab 2018 in Singapore, NBER Org Econ workshop 2017 in Boston, CEPR IMO conference 2017 in Copenhagen, VfS meeting 2017 in Vienna, the IOEA 2017 in Cargèse, the Advances in Field Experiments Workshop 2016 in Chicago, Natural Experiments/Controlled Field Studies 2016 in Munich, the SIOE conference 2016 in Paris, the Harvard-MIT-Stanford Empirical Management Conference 2016 at MIT, Australian Org Econ 2016 in Sydney. We would like to thank the managers and employees in our study firm, and Monika and Julija Mozureviciute, and Justina Staniulyte, who provided excellent research assistance. Friebel is at Goethe University Frankfurt, Heinz at University of Cologne and MPI for Research on Collective Goods Bonn and Zubanov at University of Konstanz. Friebel is also affiliated with CEPR and IZA, Heinz with CEPR, and Zubanov with IZA. We gratefully acknowledge financial support under the Institutional Strategy of the University of Cologne within the German Excellence Initiative (Hans Kelsen Prize 2018).

1. Introduction

There is growing evidence that management practices such as performance targets, monitoring, and incentives can explain substantial parts of organizational performance (e.g., Bloom et al., 2014; Bloom et al., 2017) and persistent productivity differences across firms (Syverson, 2011). Many of these practices can be adopted as a *technology* (Bloom et al., 2016), but productivity also depends on the way people's interactions in an organization are managed.¹

Face-to-face interaction is crucial for the well-being of people (Goffman, 1967) and for the productivity of teams (Battiston et al., 2017), but is costly in terms of time (Ellingsen and Johannesson, 2007). Top management's time is limited and information about the different needs of different people at different points in time is dispersed. Hence, large organizations tend to delegate personal interactions to middle managers implying a loss of control of top management (Williamson, 1967; Gibbons and Roberts, 2013) and cementing middle managers' importance. In the past, little was known in economics about middle managers.² Recent contributions (Lazear et al., 2015; Hoffman and Tadelis, 2018; Benson et al., 2018) document that workplaces managed by "good" managers score better on work place performance and employee turnover.³ The design of the studies above is based on observational data, which does not allow to causally disentangle the role of managers from the roles of firms' incentives and policies in shaping different performance outcomes. It also remains unclear from these papers what good middle managers do to make a difference.

We provide causal evidence on the effect of middle managers on personnel turnover in the workplaces they manage⁴ and on store-level sales. We carry out a

¹ Previously, these interactions have been of interest mainly for industrial psychology and management science (see Rhoades and Eisenberger, 2002), but they are increasingly becoming a focus of economics as well (Kosfeld, 2017; Zehnder et al., 2017).

² In contrast, the importance of the *top* manager's personality and what they do for productivity has been the subject of a classic theoretical literature (e.g. Barnard, 1938; Cyert and March, 1963), and a substantial more recent empirical literature has shown how important CEOs are for firm performance (e.g. Bertrand and Schoar, 2003; Bandiera et al., 2014; Bandiera et al., 2017).

³ Managers can also have very destructive effects on workplace performance, as Glover et al. (2017) show in their study on the link between supervisor attention and minority worker performance in a retail firm.

⁴ To avoid confusion, we are not primarily interested in the effect of turnover on firm efficiency or wages, the subject of a large literature in labor economics that among others has pointed to the effect of turnover on specific capital and match quality (e.g., Anderson et al., 1994). Rather, we mainly want to understand the effect of managers' behavior on personnel turnover.

long-term experiment (16 months *post* treatment) in a retail chain with 238 stores, 7,700 employees, and high levels of personnel turnover, in the realm of 70-90% per year. In our main treatment (labeled *Manage*), the CEO and Head of HR sent a letter to randomly selected middle (i.e., store) managers asking them to do what they can to reduce turnover in their stores. Turnover in the respective stores decreased by one quarter, an effect lasting nine months before petering out. After sending a reminder, however, we triggered another, shorter, treatment effect of similar magnitude.

To open the black box of what managers do to affect personnel turnover, we use a battery of ten different surveys directed at different hierarchical levels and match these with administrative and experimental data. After the treatment, middle managers, current employees, and employees who quit all report increased interactions between managers and employees. We also find evidence that middle managers are using their local information to direct attention to those employees they deem most likely to quit. Intensified manager-employee communications require additional time: indeed, from the manager time use surveys we find that the managers spent more time – about 20 minutes per day longer – on HR-related tasks.

While there is an appreciable treatment effect on personnel turnover, we find no effect on store sales. (We also find no effect on shrinkage, i.e., the value of perished goods.) This came as a surprise to us and the management, because in the pre-treatment data we found a strong correlation between personnel turnover and these performance measures, reflecting the belief of many management scholars that happier employees are both less likely to leave and more productive (cf. Hausknecht and Trevor, 2011).

With the help of the time use survey, we can, however, offer an explanation for this result. Managers in the treatment group do *not* work longer hours, rather, they shift around 20 minutes of their daily work time from interacting with customers (to increase sales) and dealing with the flow of goods (to reduce shrinkage) to HR activities (to reduce turnover). The shift of time use seems to occur along the transformation curve implied by the production function of the manager. Extra managerial time spent on employees may indeed improve sales; we do not observe this because the effect is neutralized as less managerial time is spent on customer- and goods-related tasks.

Despite the absence of an effect on sales at the *store* level, our experiment brought efficiency gains at the *firm* level. Administrative costs associated with hiring,

training, and quits of workers decrease, as does the risk of high turnover jeopardizing the functioning of the internal labor market, and of damaging the firm's reputation.

In contrast to the bulk of the growing literature on field experiments in firms, which have focused on the effect of monetary incentives on financial performance⁵, our study focuses on the effect of intra-firm communications on personnel turnover. We relate to a small number of studies that use communication as an intervention in an organizational and personnel economics framework (Ashraf et al., 2017; Englmaier et al., 2017). Our paper is the first that investigates "skip-level" communication (Friebel and Raith, 2004) as a management tool, that is, communication between CEO and store managers skipping the regional manager level.⁶

To learn more about the role of skip-level communication, we designed two additional treatments. One, labeled *Career*, focused on employee retention (rather than self-selection as in Ashraf et al. 2017), and informed store employees about career opportunities in the firm. It consisted of a letter from top management to each employee, and letters to the store managers asking them to inform employees about these opportunities. This treatment resulted in a small and statistically insignificant effect on personnel turnover, and according to the surveys, it seems that managers played a less active role in facilitating its effect. The other treatment, *Career+Manage*, was the combination of the above treatments. It produced an effect comparable to that of the *Manage* treatment, however, this effect realized only after a few months. Compared with the *Manage* treatment, these results suggest that an active role on the part of the manager is important for the turnover decision of workers.

The role of middle managers in our experiment is compatible with an analytical framework (e.g., Dessein and Prat, 2016) in which middle managers allocate their time given the existing performance goals, corresponding monetary incentives, and direct orders from supervisors. Middle managers reacted to top management's communication by shifting their attention to HR activities. They may have rationally anticipated some rewards for decreasing personnel turnover, but upon

⁵ For instance, Delfgaauw et al. (2013), Friebel et al. (2017), Manthei et al. (2017).

⁶ This is different from papers on training, for instance, Grönqvist and Lindqvist (2016) who use observational data to show that military training is associated with stronger management skills, or Schoar (2017) who investigates the effects of training on employee-manager communications in a field experiment.

realizing that these did not materialize (we find no evidence that managers received any turnover-related rewards), they may have gone back to “business as usual”, explaining why the treatment effects faded after nine months.

2. Study background

2.1. The firm and its workers

Our study firm is located in an Eastern EU country. It operates one of the leading retail chains comprising 238 grocery stores spread over the whole country (half are located in urban areas), and controls around one third of the grocery market. An average store sells ca. 200,000 Euros worth of goods per month and employs one store manager and 24 regular employees (see Table 1, Panel A, column 1).

TABLE 1 ABOUT HERE

Store managers (91% female, average age 41, average tenure 6.8 years as of August 2015; see Table 1, Panel B, column 1) run the day-to-day business of the stores. Managers are responsible for operations (maintaining the availability of the goods, store appearance, hygiene and food safety standards) and customer relations. They also take care of most of the HR activities which include scheduling work shifts as well as hiring, training, coordinating and motivating employees. Each store manager reports to her regional manager who oversees ten stores on average and reports to the board of directors. Thus, given their scope of responsibilities and position in the firm’s hierarchy, store managers are the middle managers of the firm.

The largest employee group in the stores (82% on average) and the ones we focus on in this study, are general store employees whom we label as “cashiers” in what follows.⁷ Cashiers are 89% female, their average age is 33, and their average tenure is 2.3 years, (see Table 1, Panel C, column 1). 95% of the cashiers are employed full-time and they almost never move between stores. In addition to operating cash registers, they fill the shelves and clean the store, working in shifts throughout the day. Cashiers earn minimum wage or close to it; their average monthly earnings, including bonuses, are around 345 Euros. Bonus pools for stores are determined by regional managers who also heavily influence the allocation between cashiers; cashiers also receive loyalty bonuses.

⁷ Besides cashiers, stores employ specialists such as bakers or butchers, and (in larger stores) department managers who assist the store managers. These groups of employees have more of a career job, are better paid (their average monthly earnings, including bonuses, are 566 Euros) and tend to stay with the firm longer (average tenure 5.2 years).

Many cashiers are dissatisfied with their working conditions.⁸ Yet, their conditions are similar to competitors', and to the ones observed on the retail market in Eastern EU countries in general (Giaccone and Di Nunzio, 2012).

2.2. The problem of cashier turnover

There is a high turnover rate among cashiers, averaging at nearly 6% per month in the period between February 2014 and August 2015. (For comparison, the turnover rate of store managers is 1.5% per month over the same period, and the one of other store employees is 3%.) This average disguises significant variations in the cashier turnover rate by season of the year, ranging from a low of 3% in January to a high of 10% in August. Newly hired cashiers are particularly likely to quit: in fact, 50% of the cashiers who left did so within five months of being hired, similar to the numbers Burks et al. (2015) report in a U.S. call center.⁹

Top management has expressed an ambition of halving the existing turnover rate. This, unofficial and un-incentivized, target reflects management's conviction that there is a natural rate of turnover, and that some turnover is helpful in adjusting labor input to changes in demand (Siebert and Zubanov, 2009). However, the current high level of turnover among cashiers is considered too high and costly to the firm.

To quantify the employee turnover problem that besets our study firm and to inform deliberations with top management, we attempted to estimate the costs of turnover. These costs consist of four components. First, there are direct costs at the store level: the costs of time spent on turnover administration, interviewing, selecting and training new workers. Training is of particular importance for the firm. For instance, workers learn how to position goods in shelves such that the highest margin goods attract most attention, and how to position goods that are closer to the expiry date in a way that customers are more likely to buy them. This is work intensive for both employees and managers, but each employee must receive this and other trainings, providing a direct rationale for bringing down personnel turnover. Second, there are direct costs at the firm level: the cost of employing HR personnel who update personnel records, run exit interviews, place job ads, collect applications and

⁸ In surveys, the majority of store managers and cashiers mentioned "unpleasant working conditions".

⁹ In general, high turnover is a substantial problem in sectors with low-wage workers; Manning's (2011) survey provides estimates on the elasticity of personnel turnover with respect to wages in the realm of 0.5-1.5.

forward them to store managers. Third, there are indirect costs in terms of profits stores lose due to turnover. In particular, newly hired workers are less productive than experienced workers,¹⁰ existing workers have to put up with changes in shift schedules as many cashiers quit from one day to the next, and store managers lose time dealing with personnel turnover instead of operations and customer relations.¹¹ Fourth, there are indirect costs that accrue to the firm as a whole. In particular, high turnover damages the firm's reputation, diminishes incentives to train workers, and drains the talent pool from which more senior employees can be selected. We provide calculations of the costs in Appendix I, and find a magnitude of roughly three months of wage per quit which is consistent with the estimate of Blatter et al. (2012) and the summary of case studies on turnover costs in Boushey and Glynn (2012). These estimates, though, are fraught with problems of endogeneity, and hence we prefer to rely on the treatment effects to provide a causal estimate of the effects of reducing personnel turnover.

2.3 Why the turnover problem became focal

Historically, our study firm, one of the first modern retail structures in the former Soviet Union, had paid wages well above the market level in retail. However, with the advent of the financial crisis in 2008 and the resulting drastic fall in purchasing power, the company came under pressure to cut costs. As a consequence, wages were adjusted to competitors' levels, and cashier turnover increased to the level we witnessed at the beginning of our intervention.

Initially, the high cashier turnover did not receive much attention within the group of top managers. However, prior to our intervention, the problem gained in importance for a number of reasons. First, there was a change in top management in 2014, when the foreign owner of the firm took action against declining profitability. With this change the firm focused on a broader set of performance measures, among others quality and cashier turnover. Second, it became public in 2014 that *Lidl*, a large international discounter, planned to enter the market (it did actually enter in June

¹⁰ Blatter et al. (2012) estimate that newly hired skilled workers are about 30% less productive compared to averaged skilled workers within a firm for a period of about 80 days. Manning (2011) also concludes in his literature survey that the bulk of hiring costs are the costs associated with training newly hired workers.

¹¹ In our *Store Manager Survey Jul 2015* (for details, see Section 3.2) we find that managers spend on average 10% of their time dealing with personnel turnover.

2016). The top management of the firm expected an 8% drop in sales as a result of the entry of *Lidl*, and decided to increase its claim to quality leadership in the market. Reducing cashier turnover was viewed as a necessity in the quest to improve quality and operational efficiency.¹² Third, between 2010 and 2014 the unemployment rate in the country decreased by more than seven percentage points, which increased hiring costs.¹³ The problem gained additional importance as it became evident that because of high cashier turnover, the internal labor market of the firm was jeopardized. In 2014 and 2015, around half of the regional managers and 60% of the store managers were hired from within the firm (the share of managers hired from within the firm was higher in the years before). At a quit rate of around 70-90%, the talent pool became thin, and the risk of declining quality of managers grew.

Reflecting top management's initial lack of awareness about the turnover problem (and, more generally, HR matters), store managers also tended to disregard the problem. Their key performance indicators (KPIs) did not include personnel turnover, and the instructions they received about HR were mainly related to the paperwork involved. In line with this lack of focus on HR, most of the training store managers received was in dealing with goods, customers, and administration, but not employees. The surveys we carried out indicate that a substantial proportion of store managers did not consider HR a focal activity, and many managers did not believe that they would even be able to reduce turnover. We discuss what we find in the surveys in detail in Section 6.

2.4 What store managers could do to bring down personnel turnover

In line with the saying that workers join firms but leave managers, and consistent with the evidence presented in Lazear et al. (2015) and Hoffman and Tadelis (2018), we assume that managers can affect the participation decision of a worker. To make clearer the potential channels that we will investigate in the next section, consider the

¹² Bloom et al. (2012) show that firms in Central European transition countries operate with management practices that are moderately worse than those of Western European countries. They also find that stronger product market competition and higher levels of multinational ownership in those countries is strongly correlated with better management, a finding confirmed by Friebel and Schweiger (2013) who report similar results for different regions in Russia. In line with this, we find that intensified product-market competition encouraged our firm to rethink its management practices, and that the foreign owner installed a new top management aiming to increase the firm's performance by improving management practices.

¹³ Blatter et al. (2012) estimate that a one percentage point reduction in the unemployment rate increases hiring costs on average by five percentage points.

decision of a worker to stay in a firm F as governed by the following simple participation constraint: $w_F + B_F \geq w_M - c_M$.

Here w_F is a choice variable of the firm, the wage and monetary value of perks; this can barely be influenced by the store manager. Our firm decided not to raise wages during the treatment period (except for the adjustments made in response to minimum wage regulations applying to all firms in the market). The wage the worker would receive if he or she left the firm to find another job in the labor market, w_M , is outside the control of a store manager, and so is c_M , the search cost associated with finding a new job. When unemployed, a worker receives an unemployment benefit that is lower than the utility of her job in firm F .¹⁴

The only factor a store manager *can* influence is B_F , the worker's non-wage benefit in the firm, compared to the benefit from working in another firm; hence, $B_F \geq$ or $<$ zero. There are two main ways to affect B_F . The first one is to make the benefits of staying, such as career prospects more salient through communication (as in Ashraf et al., 2017). The second is to make employees feel better about working in the firm rather than elsewhere. Store managers can do so by increasing the intensity of interaction with workers or changing the quality of these interactions. They can engage in better ways with their employees, for instance, by inviting them for coffee in the breaks or being more responsive to their individual needs in the workplace. These considerations were the basis for our treatments discussed in the next section.

3. Experiment and surveys

3.1 Experimental treatments

Our experiment was registered on the *AEA* homepage (registration ID: *AEARCTR-0000826*). The description we posted is provided in Appendix II. All our three experimental treatments began on September 1st 2015 with a letter addressed to store managers in the respective treatment groups. Shortly thereafter, the COO office made follow-up calls to the managers in all treatment groups, to reinforce the importance of the letters they received. Lastly, at the end of September 2016 we sent a reminder letter to randomly selected store managers. The main registered outcome variable were employee turnover, others were sales and absenteeism.

¹⁴ Note that in our *Cashier Exit Interviews* (discussed in detail Section 3.2) we found that 50% of the cashiers were, three months after leaving, still unemployed; those who already had a new job mainly worked in similar sales and retail jobs, or in other relatively low-skilled jobs.

In our first treatment, *Manage*, the managers received a letter, signed by the firm's CEO and chief HR officer (see Appendix III, Figure B), directing their attention to the costly personnel turnover problem and asking them to take action:

We (...) have a personnel turnover of about 90% per year. (...) 50% of those who leave are leaving in the first few months of their employment (...). Each employee's leaving costs us on average 400 Euros¹⁵ – at least. (...) We would like to bring your attention to the problem and ask you to do what you can to bring down turnover. (...) please talk to your employees and make them feel fully integrated into your team, among others by putting emphasis on the buddy program.¹⁶ (...) it is important to train the new hires (...) and have an open ear for problems they may have in the beginning.

A few comments about the letter: We here talked about a current rate of 90% turnover. This represents the firm-wide average over the last six months before the treatment. It is also the figure the firm was using internally at the time. The difference compared to the figure in Table 1 results from the fact that in the descriptive statistics, we use all data from the personnel archive (from February 2014 onwards). What turnover rate to use in the communication to the managers is somewhat arbitrary. We believed six months to be the right time span, and so did top management. Longer periods would not fit a business that is very dynamic and rather short-term oriented.

Note also that the tone of the letter is rather vague; it influences perception about the problems store managers should deal with and provides a nudge that communication with their employees may be important.¹⁷ The treatment provides no explicit incentives, but, since communications from top management are rare, it

¹⁵ This was a conservative estimate given the administrative costs associated with higher turnover, and correlations between personnel turnover and sales that we observed in the pre-treatment data.

¹⁶ Each new hire is assigned to an experienced colleague who helps him or her in the first few weeks of employment.

¹⁷ Top management told us that store managers rarely engaged in face-to-face interaction with employees. Indeed, in our *Cashier Survey Oct 2015* among control group stores we found that 30% of the store managers had one or no meeting with employees per quarter, and another 30% held only one meeting per month. This appears to be in the same order of magnitude as the evidence from U.S. manufacturing presented in Black and Lynch (2004) who find that less than half of the surveyed establishments report regular meetings to take place.

signaled that employee turnover had become more important. The message entails no precise instructions on how to implement this new directive, but store managers received the hint to focus on the employees most likely to leave.¹⁸

In our second treatment, *Career*, we informed employees about career and development opportunities in our study firm. These opportunities range from jobs in food manufacturing and IT to operations, and there is also a significant internal labor market within the sales function. Cashiers can be promoted to department managers, and half of the store managers and even regional managers began their careers as cashiers. The posters, employee and store manager letters (see Appendix III, Figure C – E) we sent to the *Career* treatment stores highlight these opportunities. The figures communicated about the internal labor market were taken from the personnel statistics of the company. Unlike in the *Manage* treatment, store managers played no active role in the *Career* treatment; all we asked of them was to inform their employees about career and development opportunities, without any reference to personnel turnover. The third treatment, *Career+Manage*, combined the two treatments described above.

We prepared the materials together with the HR and Marketing departments. In the last week of August, we informed top management about the assignment of stores into the different treatment and control groups. A day later, documents were sent to stores. Regional managers had been trained in how to respond to store managers' questions, but treatment status was only revealed to them at the same time as store managers; they were explicitly instructed by the COO not to take any actions beyond responding to questions. Store managers and cashiers were not aware of our involvement in the project. Thus, our field experiment combines randomization and realism (List and Rasul, 2011).

FIGURE 1 ABOUT HERE

The timeline of the experiments is depicted in Figure 1, which also provides an overview of the available data that we will discuss in the next sections. We implemented the treatments beginning in September 2015, informed top management

¹⁸ It is insightful to see the treatment in the light of Gibbons and Henderson (2012) who relate to Rivkin's concepts of *perception* (not knowing that one is behind); *inspiration* (not knowing what to do about it); *motivation* (not having incentives to change); and *implementation* (not having the organization to get it done). Our treatment changed perception and gave some, but little, inspiration; and no explicit motivation (see, for instance, Bandiera et al., 2007, and Manthei et al., 2017) or implementation help.

of our first results in late December 2015, and once per quarter thereafter. Initially, we were unsure for how long the firm would allow us to collect data; the minimum time they agreed on was six months, which is the time span registered at *AEA*. It turned out that we were allowed to collect data on these interventions until December 2016 such that we have 16 post-treatment months of observation. This provides us with the unique opportunity to obtain insights into the long-term effects of the interventions. At the end of September 2016, we sent a reminder to 30 stores each in the *Manage* and *Career+Manage* treatments. We used the same letter in both groups (see Appendix III, Figure G):

We are pleased to report a reduction in firm-wide turnover that we believe has been due to the efforts of our store managers such as yourself. (...) turnover is still high. (...) We would like, once again, to draw your attention to the problem, and ask you to do what you can to bring it down. Please talk to your employees and try to make them feel fully integrated in your team, making use of the buddy program (...). (...) it is important to train the new hires (...) and have an open ear for problems they may have (...).

In a companion experiment in the firm (Friebel et al., 2018), employees in randomly selected stores received a bonus of up to 45% of monthly earnings if they referred a friend, and if both the friend and themselves stayed at least for five months from the moment of referral. This experiment was also meant to reduce turnover, by focusing entirely on the role of social networks on employees. For this experiment, we re-randomized, and in the regressions in this paper, we control for treatment status of the referral experiment, without finding any remarkable results.

3.2 Surveys

To explore the mechanisms that are underlying the treatment effects, we carried out a battery of surveys. Two of the surveys provide quantitative evidence about the time use of managers, the others record qualitative information, in particular, perceptions about the workplace. We used nine different surveys that we carried out at different points in time, and among different target groups: regional managers, store managers, and cashiers. We also used the survey the company generates through exit interviews

among cashiers. Using a large number of different instruments with different sources, different groups, and different questions increases the reliability of the qualitative evidence (Bloom and Van Reenen, 2010) and hence responds to the challenges highlighted by Bertrand and Mullainathan (2001). Each method and instrument may have different drawbacks and advantages, but by combining them, we believe we get a rather complete picture of store managers' reactions in response to the intervention.

Figure 1 provides a timeline of all surveys, the group of employees surveyed, the main goal of each survey, and the response rates. For simplicity, we will use the following labels for the different surveys in the paper:

- Surveys of cashiers: *Cashier Survey Oct 2015*, *Cashier Survey Sep 2016*, *Cashier Exit Interviews*
- Surveys of store managers: *Store Manager Survey Jul 2015*, *Store Manager Survey Oct 2015*, *Store Manager Survey Jan 2016*, *Store Manager Survey Sep 2016*
- Surveys of regional managers: *Regional Manager Survey Oct 2015*, *Regional Manager Mar 2016*, *Regional Manager Nov 2016*

All surveys were framed as “international surveys by Goethe University in Frankfurt” and a local business school, conducted with the purpose of supporting the “research of the professors involved”. There is only one exception, the *Cashier Exit Interviews*, which were conducted by the HR office of our study firm. In the surveys we carried out, employees and managers were assured that their individual responses would only be accessible to the researchers, and not to the study firm. *Cashier Survey Oct 2015*, *Store Manager Survey Oct 2015* and the *Regional Manager Survey Oct 2015* were paper and pencil surveys. The questionnaires were placed by the employees in sealed envelopes and were collected by an employee working in the stores and sent to a professor at a local business school. All other surveys were phone surveys conducted by a native-speaking student assistant employed by us who was not aware of the treatment status of the stores. The HR office informed the respective group of employees that a team of researchers would contact them over the next few weeks.

Although we did not incentivize the participation in the surveys (with the exception of the *Store Manager Survey Jan 2016*, where we gave one out of ten managers a 25 Euro voucher), the response rates in all surveys were relatively high.

The response rates were around 80-100% in the store and regional manager surveys, and around 50-65% in the cashier surveys.¹⁹ The survey results will be mostly used in Section 6.

4. Research design

In general, retail firms offer good opportunities to study interactions between managers and employees: the proximity of employees to managers allows for potentially frequent interactions, the technology is simple and standardized, and the data are of high quality. Another advantage lies in the propensity of retail firms to almost constantly experiment along various lines, such as price promotions, the presentation of the goods on shelves or other marketing activities. At the time of implementation of the experiment, the firm was engaged in twelve different experiments, so-called ‘pilot projects’. Finally, the work environment is representative of many jobs, and retail is one of the largest sectors in the global economy (Cardiff-Hicks et al., 2015; Hortaçsu and Syverson, 2015).

Our administrative data (personnel records, financial and accounting data) span a long period of time, from February 2014 to December 2016. In particular, we used 19 months of pre-treatment data for our randomization. As suggested by Athey and Imbens (2017), we use a stratified procedure in which assignment into the four different groups is carried out along quit rate (our main outcome variable of interest), the location (town or countryside), sales and number of employees (as proxies for store size). Our experiment is sufficiently powered. Based on the pre-treatment distribution of the quit rate, and the number of measurement periods before and after the treatment, having 60 stores in each treatment group would detect a treatment effect on the quit rate of 2 percentage points with probability 0.9. To ascertain whether the treatment and control groups are balanced, we run the mean equality test on a number of store, manager and cashier characteristics. The results (Table 1) show

¹⁹ In the *Cashier Survey Sep 2016* and *Cashier Exit Interviews* around 20% of the participants refused to answer the surveys. The other reasons for non-responses were that the phone numbers were incorrect, the HR office had no longer any contact information, or that the cashiers did not pick up the phone after we rang them at least three times.

that the four groups are balanced with respect to the quit rate – the main outcome variable – and almost all of the other characteristics.²⁰

We use the ANCOVA estimator (McKenzie, 2012):

$$\begin{aligned} Quit_{it,POST} = & treatment_i \times \beta + time\ fixed\ effect_t \\ & + \delta \cdot \overline{Quit_{i,PRE}} + error_{it}, \end{aligned} \quad (1)$$

where $Quit_{it,POST}$ is the post-treatment cashier quit rate in store i and month t , $treatment_i$ is the treatment dummy vector, $\overline{Quit_{i,PRE}}$ is the average of the cashier quit rate in the pre-treatment period (February 2014 to August 2015) in store i , and $error_{it}$ is the idiosyncratic error term clustered at the store level. The components in vector β are estimates of the effect of each of our treatments. The ANCOVA estimator is a generalization of the difference-in-difference estimator in that it controls for the baseline outcome, which, as McKenzie (2012) argues, reduces the variance in the estimated treatment effect. Indeed, ANCOVA is more efficient than difference-in-difference. We therefore use ANCOVA throughout the paper; the main qualitative results are the same when we use a difference-in-difference estimator. For the reminder intervention, we use the same specification (equation 1) except the dependent variable is the quit rate in October 2016 and later.

An alternative to the linear estimator in (1) would be to estimate the treatment effect on the individual decisions to stay or leave with a duration or logit regression; however, since the treatment was at the store level, clustering the individual observations at the store level produces similar estimates and significance statistics.

5. Treatment effects

5.1 Quit rate

Table 2 summarizes the treatment effect over the main treatment period starting in September 2015. We present the effects by quarters. In the first quarter after the treatments took place, the *Manage* treatment results in a significant reduction in the quit rate in the realm of 25% (i.e. 1.8 percentage points, ppts, compared to the control group). The effects of the other two treatments are smaller in magnitude and statistically insignificant. In the second and third quarters, the *Manage* and *Career+Manage* treatments are both statistically significant and reduce the monthly

²⁰ Exceptions are cashier age and the share of female store managers. These differences are unlikely to drive our results because the treatment effects do not depend on either of these variables.

quit rate by 20% to 30%. Over the period of nine months, the effect of the treatments directly involving store managers amounts to around 25%.

Turning to the *Career* treatment, its effects are weaker, in the region of 10-20% of the contemporaneous quit rate in the control group, and are statistically insignificant at the conventional levels in all quarters (p-values between 0.17 and 0.36). However, we cannot reject the null hypothesis of the equality of the effects of the *Manage*, *Career* and *Career+Manage* treatments (p-values of at least 0.27).

TABLE 2, 3 ABOUT HERE

In the *Manage* treatment, the effects are stable and persistent, while the effect of the *Career+Manage* treatment needs time to pick up. Our explanation for these different dynamics is that in the *Career+Manage* treatment, managers may have needed some time to realize that the *Career* treatment has weak effects, and only later began to engage actively with their cashiers (a point we discuss in more detail in Section 6.2).

All treatment effects peter out in the period between June and September 2016. To try to revive them, at the end of September 2016 we sent a reminder letter with a plea to continue efforts to reduce turnover to 30 stores in the *Manage* and 30 stores in the *Career+Manage* groups (Figure F). In doing so, we were able to differentiate between the treatment effects and (potentially group-specific) time trends, while still having enough power to identify the effects. The results are in Table 3. Comparing the first with the second row, *Manage* and *Career+Manage* group stores that received a reminder show a strong, albeit short-lived, treatment effect. The remaining *Manage* and *Career+Manage* and the *Career* group stores (in which no reminder was sent) do not show any effect. The reminder treatment confirms that the *Manage* treatment effect is replicable. As before, it dies out when not reinforced by corresponding incentives – a point we discuss in more detail in Section 7.

Probing into treatment effect heterogeneity, we condition the average treatment effect over the period of nine months after the treatment on a number of store, cashier and store manager characteristics: (i) pre-treatment store-average cashier age, gender and quit rate; (ii) store size in headcount, location (big town vs. countryside), local unemployment rate, and whether the store had a new manager during the treatment period; (iii) store manager age and tenure, and (iv) store managers' fixed effects estimated from the quit rate regression in the same way as Lazear et al. (2015), that is, using manager movements between stores.

The potential heterogeneous treatment effects we listed above are insignificant, with three noteworthy exceptions. First, we find that the treatment effects in the *Manage* and *Career+Manage* treatments are significant only in the stores in which there was no manager change between September 2015 and May 2016. Hence, the treatment indeed seems to work through store managers. Second, the treatment effect is significantly larger in smaller stores (even when we control for span of control measured as the number of non-managerial employees per store divided by the number of store and department managers in each store). Third, the treatment effect is larger in stores managed by managers with a larger fixed effect, that is, a higher quit rate associated with them. We attribute the last two findings to two facets of manager quality. Generally, better managers are likely to be found in larger stores (see Section 7.1). Managers who are better specifically in managing turnover would have a lower turnover fixed effect. We provide further evidence on manager quality in Appendix I.

5.2 Sales, profits and shrinkage

Looking at the other important KPIs of the firm – sales, operational profits and shrinkage – we find no statistically or economically significant effects (see Appendix IV) over the nine-months period after the treatment.²¹ At first glance, it is surprising that there is no positive effect of lower quit rates on sales. After all, one motivation for the firm to engage in activities to bring down turnover was to improve sales. The regressions we carried out on historical data also showed a strong correlation between high turnover and lower sales (but these are hampered by endogeneity).²² We provide an explanation of the coincidence of declining personnel turnover and constant objective performance in the following section.

6. Mechanism

Recall that we find that the *Manage* treatment produces substantial and statistically significant effects on personnel turnover from the start, the effects of the *Career* treatment are lower in order of magnitude and not statistically significant, while the

²¹ We also find no treatment effect on absenteeism.

²² Regressing changes in log sales in the pre-treatment period on changes in labor input and up to three lags of changes in the quit rate gives the coefficients -0.18, -0.14, -0.17 on the current, first and second lags of changes in the quit rate.

Career+Manage treatment starts with small effects but after a while converges to similar effects as the *Manage* treatment. What can be learnt from our surveys about the underlying mechanism?

6.1 Managers' time use in treatment groups

The firm governs store managers' work through a system of incentivized KPIs and direct orders. The interventions we carried out are "skip-level" communications from the CEO and the head of HR directly to the store managers. They are likely to affect the managers' work, but within the constraints already laid upon them by the nature of their work in the stores (e.g., considerable time must also be spent dealing with the flow of goods, accounting and reporting, and, to some extent, customer contact). Hence, the question is to what extent the treatments affect time use toward HR activities.

We measure time use before (*Store Manager Survey Jul 2015*) and after the treatment (*Store Manager Survey Sep 2016*), in a way similar to Bandiera et al. (2017).²³ Managers were asked to indicate how they allocated their time between the following tasks over the preceding few months: (i) management and control of the flow of goods; (ii) interacting with clients; (iii) administrative work, such as generating and supplying primary accounting data to the central office; (iv) HR activities, such as managing, training and communicating with store employees and dealing with personnel turnover.

We find that, on average, the three treatments cause store managers to spend about 20 minutes more per day on dealing with HR activities (around 30 minutes per day in the *Career* treatment, 20 minutes in the *Manage* treatment, and 10 minutes in the *Career+Manage* treatment; the differences between treatments are not statistically significant). We are likely to underestimate the total effect of the treatment for the following reason: quit rates (at least in the *Manage* and *Career+Manage* treatments) go down substantially, in principle leaving more time for managers to engage in non-HR related activities. What we measure is the net effect of spending more time on

²³ We are aware that the timing of the second survey is not optimal (the treatment effect had already vanished by the time). However, in both the first and the second survey, we explicitly asked managers to "think about the last months", which deals with the problem to some extent.

some HR activities but less time on turnover-related activities (such as reading resumé, interviewing, and doing the paper work).

In all treatments, the additional time spent on HR is compensated for by less time spent on customers and goods. Importantly, based on an analysis of the managers' weekly time sheets, there is no evidence of an increase in the actual hours worked.

6.2 *What did managers do?*

Before providing detailed evidence on managers' behavior and the perceptions of cashiers, we would like to point out that the treatments differ in terms of the role of the manager as implied by the different communications.

The *Career* treatment asks managers to inform (all) workers about careers in the firm; in the *Manage* and *Career+Manage* treatment, however, managers were asked to take a much more active role: "do what you can in order to bring down turnover". Moreover, they receive the hint to focus on the workers most likely to leave (the new hires). The *Career+Manage* treatment is also different from the *Manage* treatment because it assigns to the managers the roles of both providing career information to workers, and interacting with the ones most likely to leave, in order to reduce turnover. All of these activities, however, have to be carried out within a relatively limited time budget (given that the operations of the store must be continued).

6.2.1 *Managers' behavior in the Manage treatment*

Four months after the start of the treatment and roughly in the middle of the period between the first and the second time use survey, our assistant phone-interviewed all store managers in the *Manage*, *Career+Manage* and control group.²⁴ The question she asked in the *Store Manager Survey Jan 2016*, was: *Since last Summer/Autumn, have you done anything in particular that you think may have reduced turnover in your store?* The assistant made detailed notes about the responses of each store manager.

Anecdotally, managers' responses provide a first clue about how their behavior changed as consequence of our treatment: one store manager said "I became

²⁴ Due to resource constraints, we did not interview the store managers in the *Career* stores.

worried about an employee's alcohol problem, visited him at home, suggested a medical treatment"; another store manager described that she implemented "more team-building, meetings over coffee/sweets". In the control group, many store managers said they did not believe they could affect turnover ("I can't do anything. Turnover is the workers' fault, not mine!").

We counted words that relate to the face-to-face interaction between store managers and employees: "attention", "care", "talk", "paying respect", and found that 56.3% of the store managers used at least one such expression in their response, compared to 27.5% in the control group. "Paying respect" is one of the most often used expressions that managers use to describe their activities undertaken as a consequence of our treatment(s).

To analyze the responses in more depth and to externally validate them, we conducted an evaluation study in the University of Cologne's experimental laboratory. We showed our assistant's interview notes to the subjects each of whom earned 8 Euros and asked them to rate those notes based on the following questions:

- "According to the store manager, how possible was it to reduce employee turnover? Rate on a scale from 1 (impossible) to 10 (quite possible)."
- "Has the manager intensified effort to reduce turnover in the last months? (no/yes)"
- "Has the manager talked to employees more over the last few months? (no/yes)"
- "Has the manager talked to specific groups of employees more over the last few months? (no/yes)"

Each subject in the lab rated notes from twenty different store manager interviews, and around ten different subjects rated each interview note. The subjects were not aware of the treatment status of the store managers.

We find that store managers in the *Manage* group (compared to the control group) had stronger beliefs that they can affect turnover (4.6 vs. 3.2). They also exerted more effort to reduce turnover (0.47 vs. 0.29; yes = 1, no = 0) and, in general, talked more to their employees (0.51 vs. 0.27). We also find that they tended to focus their attention on "particular groups of workers" (0.28 vs. 0.16) in line with the communication of the top management. When we regress these responses in an ordered logit regression on the treatment dummy, we find that the differences are statistically significant (Table 4, Panel A).

TABLE 4 ABOUT HERE

We now turn to the results of the *Cashier Exit Interviews*, which are available for cashiers who left the firm between 1st July 2015 (i.e., before the treatment) and 15th February 2016. The survey has a response rate of 57%, mainly because one third of the cashiers could not be reached; most cashiers who were reached agreed to participate. In order to deal with the truncation problem imposed by the end of the exit surveys in February 2016, we only look at those cashiers who left during the first three months of their tenure (i.e. who entered before 15th November 2015). This is also in line with the communication to the managers that explicitly pointed to the importance of engaging with new workers in the first three months of their employment, because these are more likely to quit. We exclude from our analysis cashiers who entered before but left after the treatment began (for obvious reasons).

The survey contains two questions of particular interest to our paper: (i) how much attention and support did you receive from your supervisor in the first weeks or months when you arrived in the store?; (ii) how much attention and support did you receive from your colleagues in the first weeks or months when you arrived in the store?

In Panel B of Table 4, we report the results from a difference-in-difference ordered logit regression in which the dependent variables are the responses to the above questions coded on a scale from 1 to 5. We find a statistically significant effect in the *Manage* treatment in terms of managerial attention, but no effect in terms of colleagues' attention.

Results of the *Cashier Survey Sep 2016* in which two randomly selected cashiers per store were interviewed about the amount of time per week supervisors spend on talking to them personally, are in Panel C. We do not find significant effects for the entire sample. However the effect in our *Manage* treatment is significant for stores in which managers did not change since the beginning of the treatment, indicating that, upon a change of manager, the effects disappear (arguably because the new manager was not sufficiently aware of the initial communication). This is in line with our quit rate regressions, in which we only find significant treatment effects in stores where managers did not change (Section 5.1).

6.2.2 Managers' behavior in the *Career* and *Career+Manage* treatments

Here we briefly report the main differences, in terms of managerial behavior, between the *Manage* group and the other treatment groups. First, 32.5% of the managers in the *Store Manager Survey Jan 2016* in the *Career+Manage* treatment used words that relate to face-to-face interaction between managers and cashiers; hence their behavior is more similar to the control group than to the *Manage* group. This is also reflected in the ratings from the external evaluation study in which *Career+Manage* managers are ranked lower than in the *Manage* group, but higher than in the control group. Second, from the *Cashier Exit Interviews* we learned that former cashiers reported on average slightly more managerial attention in the *Career* and *Career+Manage* treatments, compared to the control group, but the differences are statistically insignificant. Third, the results from the cashier survey for the *Career+Manage* treatment, one year after the treatment, are similar to the ones in the *Manage* treatment.

Using the *Cashier Survey Oct 2015* responses from cashiers, we find a significantly positive effect of the *Career* and *Career+Manage* treatments on cashiers' awareness of career opportunities within the firm (compared to the control group), but no effect in the *Manage* treatment.

6.2.3 Summarizing the qualitative evidence from our treatments

The survey evidence presented above provides a consistent picture: In the *Manage* and *Career+Manage* treatments, we see increased intensity of interaction with cashiers, however with weaker initial intensity in the short run for *Career+Manage* (but the same long-run effects). Managers seem to be focused on the cashiers they believe have the highest risk of quitting; those, for instance, in the early stages of employment or those with private problems. In the *Career* and *Career+Manage* treatments we find cashiers to be better informed about career opportunities.

By and large, managers react in all treatments, but there are some differences in the patterns of behavior that are in line with the idea that managers play a more active role in the *Manage* and *Career+Manage* treatments, and more of an information provision role in the *Career* treatment (which nonetheless consumes a substantial amount of time).

Recall that the treatment effect on the quit rate in the *Career+Manage* treatment took some time to pick up (initially the effect is statistically insignificant; see Section 5.1). An interpretation consistent with the qualitative evidence above is that, initially, managers may allocate their time both to providing more attention to

those likely to quit and providing information about career opportunities in order to reduce turnover. Upon learning that the latter tends to affect turnover less than the former, they may have reallocated their time to providing attention.

6.3 Excluding alternative mechanisms

What are the alternative mechanisms that could explain the effects we document? First, managers may change bonus payments. In the personnel data, we find neither differences in the averages nor in the distribution of bonuses between September 2015 and June 2016.²⁵ In our *Store Manager Survey Jan 2016* only three managers from our *Manage* and not a single manager from our *Career+Manage* treatment mentioned that they had changed the allocation of bonuses. Second, managers may refrain from firing incompetent cashiers in order to bring turnover down. In our *Cashier Exit Interviews*, less than 5% of the cashiers report that they left the company “involuntarily”. Performing a difference-in-difference analysis on involuntary quit rates, we find no effect in any treatment. Moreover, none of the managers interviewed in the *Store Manager Survey Jan 2016* who belonged to the *Manage* or *Career+Manage* group mentioned that they had changed their firing policies. Third, managers may change their hiring practices. The observable characteristics (age, female) of new hires do not differ between treatment groups. Out of all managers interviewed in the *Store Manager Survey Jan 2016* who belonged to the *Manage* or *Career+Manage* group, only three mentioned that they had changed their hiring processes. Most importantly, while changes in hiring would only be possible with a certain lag, we observe immediate changes both in the initial and the reminder treatment. Fourth, it could be possible that managers reorganized the shift planning to provide benefits to the workers most likely to quit. In the *Store Manager Survey Jan 2016*, only three managers who belong to the *Manage* or *Career+Manage* (and two in the control) group mentioned that they had reorganized the shift planning. Fifth, as shown in Appendix I, our main results are hardly explainable by contamination between stores that are treated in different ways.

7. An organizational economics explanation of the observations

²⁵ In July 2016, we introduced a field experiment on bonuses in stores, the subject of a companion paper.

Summarizing our results: (i) quit rate decreased substantially in stores in which managers received a direct communication from top management to reduce employee turnover; (ii) managers in the respective stores report using more time for HR activities, and both managers and cashiers report changed behavior of store managers, in particular, more intensive communication and interaction practices with those employees who had the highest risk of quitting; (iii) the treatment effect on turnover was persistent over nine months, vanished, but appeared again (for a shorter period) after a repetition of the communication; (iv) there was no treatment effect on sales, shrinkage or absenteeism.

7.1 Managerial incentives

We interpret these observations as consistent with a theory in which store managers' behavior is mainly influenced by incentives, orders of their direct hierarchy (here, regional managers), and communication from the top management. While explicit incentives and orders in the hierarchy were kept constant, our treatment uses the rare instrument of direct top-down skip-level communication. It is likely that such communication (see Dessein and Prat, 2016) affects store managers beliefs about what is important for the firm, and hence their evaluation results and rewards (e.g., promotion to a larger store or a regional manager position). Consistent with this view, managers shift attention and effort to activities that are likely to bring personnel turnover down, and we saw in the survey that they did indeed do so.

One possible way of rewarding performance in terms of personnel turnover would be in a discretionary bonus to managers who reduced turnover in their stores. Looking at the store manager bonus before and after the start of the experiment (75 Euros per month, on average), we observe only a small correlation between store manager bonus and the quit rate. The estimated correlation between the bonus and the quit rate implies a trivial (60 Cent) increase in the monthly bonus corresponding to the 25% decrease in the quit rate caused by the *Manage* and *Career+Manage* treatments. There is no significant direct effect of those treatments on manager bonus, either.

Were there implicit, career, incentives? We collect data on all manager movements in the relevant time span from the beginning of our treatments until June 2016, the month after the treatment effect vanished. In this period of time, 52 store managers and three regional managers were replaced for a variety of reasons (e.g.

store manager turnover, promotions, maternity leave). This would have given the firm scope for career rewards, either by promoting store managers to a larger store, or to regional manager. Recall that the treatment effect is larger in smaller stores, and we know from the top management and our surveys that managers from smaller stores with good sales performance are usually promoted to larger stores (see Appendix I for more details about promotion patterns).

There is, however, no statistical link between personnel turnover in a manager's store and her chances for promotion. All three regional managers and 13 store managers were replaced by external hires. 21 store managers were replaced by store employees who were promoted, and 18 store managers were replaced by other store managers who moved between stores. Out of these 18 store managers – the only moves that could have been a promotion for store managers who had reduced their personnel turnover – ten were from stores in the *Manage* or *Career+Manage* treatment, and eight from *Career* or control treatments. According to the *Regional Manager Survey Nov 2016* (see Appendix I for more details) only one of the managers in the *Manage* or *Career+Manage* was promoted, and four were actually demoted. Hence, ten months after the treatment, no career rewards had been given to store managers that had reduced their personnel turnover.

With neither promotion nor bonuses following the drop in turnover in the treatment stores, the lack of material reward may be a likely explanation for the treatment effect vanishing after a while. As discussed before, however, when we repeated the treatment, personnel turnover, again, decreased, but only for a short period. It hence seems that, the second time, store managers updated their beliefs about the communication faster than before.

7.2 Store performance

Our explanation for why we do not find significant effects on sales in the treatment group of stores is in line with the simple agency framework we have suggested above. Upon receiving the communication about bringing down personnel turnover, managers shift some of their effort to interacting with the cashiers. This may have a certain positive effect on the productivity of the workforce, and this would increase sales in the treatment group. However, there is also the direct effect of the reallocation of effort from customers and goods to cashiers which would reduce the sales. What we pick up may be the composite of the two effects.

This also implies that, prior to the intervention, stores may have been run efficiently given the incentivized KPIs, and that there was little if any scope of improving the commercial performance of stores. On the level of the firm, however, high personnel turnover created substantial costs. The most tangible of these costs are the administrative costs associated with recruitment, training and workers' quits. For doing the paperwork with entries and exits alone, the firm employed 24 HR officers, many of whom could be reallocated to different tasks because of our treatment. Less tangible, but likely more important, were the risks that at excessively high turnover rates, the firm's reputation was damaged, and the increasingly thin talent pool for the internal labor market of the firm.

8. Concluding remarks

By communicating to middle managers about the importance of personnel turnover, quit rates decrease by a quarter over a period of nine months. There was no change in the incentive scheme or the underlying KPIs, but nonetheless the effects are quite large. In part, this may be explained by the fact that it appears to be the laggards who react most intensively. It is however also noteworthy that our firm is situated in an Eastern EU country formerly part of the Soviet Union, a region with relatively low levels of managerial efficiency (see Bloom et al., 2012; Friebel and Schweiger, 2013). While the foreign owners had introduced numerous new management practices such as price setting, logistics, product, and customer management, HR was not among the priorities of the company before we began our collaboration.

Our paper shows that enhanced communication matters for one outcome (personnel turnover) without negatively affecting the others, in particular, sales. The intervention was beneficial for the firm and because it reduced quits, it must have been beneficial for workers as well. Exit interviews document that more than 50% of quitting employees were unemployed three months after they left the firm, while most of the other employees work in similar jobs. Hence, many workers leave because of their managers' behavior, which was changed through our treatment. Our treatment also has positive social externalities, because by reducing the incidence of unemployment, it involves lower expenses for unemployment benefits.

One could, however, see the glass to be half empty rather than half full: In contrast to the widespread belief in the management literature (see the survey of Hausknecht and Trevor, 2011) that bringing down turnover from high levels implies

higher performance, we find no evidence for such an organizational automatism. The key to understanding why this is (not) the case is that managers shift their time use from other activities to HR, effectively staying on the transformation curve of their store.

Another implication of our research relates to a large literature in management making the point that a transformational rather than transactional leadership style leads to more satisfied employees, and higher profits for the firm. Contributors to this literature are struggling to explain, though, why not all firms adapt such leadership styles. Our results shed some doubt on the superiority of a more humane leadership style in terms of performance at the store level.²⁶ Different leadership styles may do equally well (or badly) at the unit (i.e. store) level, at least in retail and other low-skilled sectors. The measurable effect in terms of performance we find is at the headquarter level only, but in order for the firm to reap the benefits on the firm level, managers may need incentives to follow the “better” leadership style. In our case, when incentives did not materialize, leadership style reversed.

Finally, our paper shows that communication from top managers to middle managers can have substantial effects and supports a conjecture frequently seen in the management literature (at least since Barnard, 1938) with causal evidence. It is noteworthy that the effect has a certain duration, but ultimately fades away. A similar, second, communication has similar effects but much shorter duration. The question of the optimal frequency of skip-level communication from the top is a fascinating topic that we leave for future research. Our experiment was inspired by work on managerial attention and strategic focus (Geanakoplos and Milgrom, 1991; Halac and Prat, 2016; Dessein and Santos, 2016) and we hope that our results may inspire further (theoretical) work on communication as a management tool.

²⁶ And so does a meta study by Judge and Piccolo (2004) in the industrial psychology literature, which finds strong correlations between transformational leadership and job satisfaction, but low correlations between transformational leadership and performance of groups and organizations.

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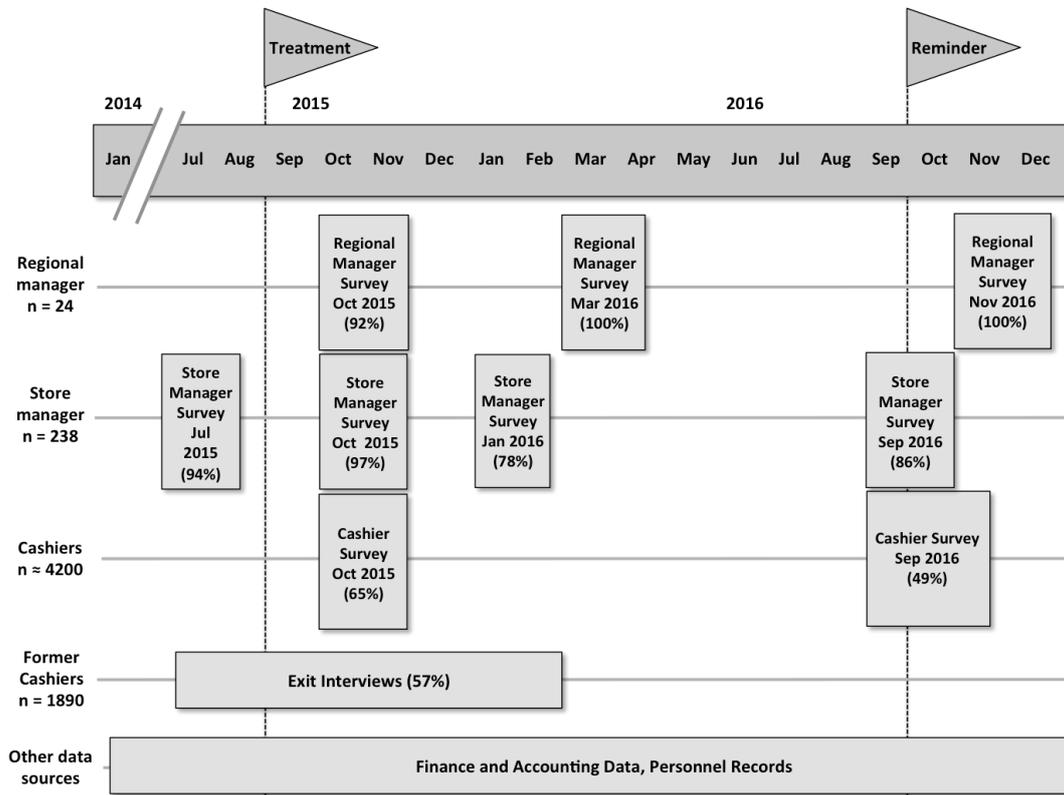
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Figures and Tables

Figure 1: Data sets used in the paper



Notes: Response rates in the surveys are in parentheses. Store manager and cashier surveys were framed as “international surveys in the retail industry”. *Cashier Exit Interviews*: We only use data for cashiers who quit in the first three months in the paper (n = 535). *Store Manager Survey Jan 2016*: Eleven store managers were not interviewed as they only recently moved to the store.

Table 1: Descriptive statistics, by treatment group (Feb. 2014-Aug. 2015)

	Panel A: Characteristics of stores					Mean equality test p-value
	All stores (n = 238)	Control (n = 59)	Manage (n = 60)	Career + Manage (n = 59)	Career (n = 60)	
Mean monthly sales	206,120 (154,378)	190,724 (126,991)	203,065 (145,426)	221.212 (183.959)	209,503 (154,342)	0.736
Mean store size (in square meters)	638.78 (369.70)	584.63 (307.07)	642.35 (357.89)	682.06 (417.07)	646.05 (381.88)	0.499
Mean number of employees (incl. store managers)	25.16 (18.50)	23.00 (15.27)	24.41 (17.13)	26.89 (21.41)	26.35 (19.35)	0.612
Mean monthly shrinkage	5,752 (4,276)	5,340 (3,542)	5,431 (3,718)	6,368 (4,970)	5,860 (4,626)	0.543
Span of control (non-managerial employees per manager)	3.38 (1.56)	3.17 (1.45)	3.45 (1.54)	3.43 (1.68)	3.46 (1.56)	0.551
Location: Town	53.57%	52.73%	56.90%	55.89%	48.71%	0.810
Regional unemployment rate	7.73% (2.33%)	7.44% (2.20%)	7.64% (1.91%)	7.96% (2.85%)	7.89% (2.29%)	0.559
Panel B: Characteristics of store managers						
Mean monthly earnings	933.01 (276.92)	932.02 (260.69)	925.45 (268.60)	936.59 (288.07)	937.94 (289.36)	0.962
Mean age (in years)	40.66 (8.45)	41.61 (6.65)	39.06 (9.09)	42.05 (9.00)	40.04 (8.37)	0.506
Mean tenure (in years)	6.77 (4.39)	7.13 (4.32)	6.25 (4.39)	7.4 (4.64)	6.32 (4.12)	0.684
Share of females	91.08%	87.34%	96.24%	86.94%	93.76%	0.054
Percentage of work time allocated to HR (self-reported)	27.66% (11.08%)	28.16% (11.47%)	25.63% (8.74%)	26.83% (10.99%)	29.93% (12.51%)	0.172
Mean monthly quit rate	1.48% (1.21%)	1.30% (1.13%)	1.12% (1.05%)	1.78% (1.32%)	1.74% (1.31%)	0.518
Panel C: Characteristics of cashiers						
Mean monthly quit rate	5.74% (7.61%)	5.94% (7.95%)	5.78% (7.85%)	5.33% (7.19%)	5.89% (7.45%)	0.595
Mean number of cashiers	17.64 (13.05)	16.27 (11.19)	17.26 (12.35)	18.87 (15.08)	18.15 (13.15)	0.709
Mean monthly earnings	344.66 (108.10)	340.06 (107.64)	346.96 (109.05)	347.65 (106.91)	343.46 (108.70)	0.451
Mean age (in years)	33.32 (12.77)	32.21 (12.58)	33.59 (12.68)	32.57 (12.80)	34.79 (12.84)	0.014
Mean tenure (in years)	2.30 (2.50)	2.21 (2.48)	2.33 (2.49)	2.22 (2.34)	2.42 (2.65)	0.646
Share of females	88.98%	88.11%	88.06%	89.32%	90.30%	0.476

Notes: Panel A and C: Data are from February 2014-August 2015; Panel B: Earnings, age, tenure and share of females are from August 2015, percentage of work time allocated to HR is from the *Store Manager Survey Jul 2015*.

Table 2: Average treatment effects on the quit rate by time period

	Sep. 2015- Nov. 2015	Dec. 2015- Feb. 2016	Mar. 2016- May 2016	Jun. 2016- Sep. 2016
Manage treatment	-0.018** (0.009)	-0.025** (0.013)	-0.018* (0.010)	0.003 (0.010)
Career + Manage treatment	-0.004 (0.009)	-0.022* (0.012)	-0.023** (0.011)	0.008 (0.011)
Career treatment	-0.008 (0.009)	-0.014 (0.013)	-0.014 (0.011)	0.007 (0.010)
Control group average quit rate	0.072 (0.084)	0.076 (0.140)	0.086 (0.091)	0.090 (0.098)

Notes: The specification that generates the results in this table is the ANCOVA estimator (equation 1). Columns 1 and 2 represent the results for the initially intended treatment duration of six months, according to our AEA registration. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Average treatment effects after sending the reminder

	Oct. 2016	Nov. 2016	Dec. 2016
Manage/Career + Manage treatment: Reminder sent	-0.030** (0.012)	-0.010 (0.015)	0.012 (0.012)
Manage/Career + Manage treatment: No reminder sent	0.012 (0.015)	0.005 (0.014)	-0.016 (0.013)
Career treatment	0.002 (0.017)	0.007 (0.016)	0.003 (0.014)
Control group average quit rate	0.061 (0.086)	0.058 (0.065)	0.051 (0.073)

Notes: The specification that generates the results in this table is the ANCOVA estimator (equation 1). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Responses in our store manager survey (Panel A), cashier exit interviews (Panel B) and cashier survey (Panel C)

	Mean (SD) response Control	Estimated ologit coefficients		
		Manage	Career + Manage	Career
Panel A (Store Manager Survey Jan 2016): Differences in free text responses of store managers evaluated by ten external evaluators				
According to the store manager, to what extent is it possible for her/him to reduce employee turnover? (Scale: 1 (not possible) to 10 (possible))	3.191 (1.551)	1.233*** (0.383)	0.516 (0.353)	(NOT SURVEYED)
Has the store manager increased effort to reduce the turnover in the last months compared to the time before? (Scale: 1 (yes) or 0 (no))	0.293 (0.375)	0.948** (0.393)	0.716* (0.406)	
Has the store manager talked to workers more over the last few months compared to the time before? (Scale: 1 (yes) or 0 (no))	0.271 (0.340)	1.023** (0.416)	0.353 (0.365)	
Has the store manager talked to particular groups of workers more over the last few months compared to the time before? (Scale: 1 (yes) or 0 (no))	0.165 (0.234)	0.745* (0.396)	0.651* (0.380)	
Panel B (Cashier Exit Interviews, Jul. 2015 - Feb. 2016): Difference-in-Difference in the responses of former cashiers who quit in the first three months after being hired				
How much attention and support did you receive from your supervisor in the first weeks or months? (Scale: 1 (no attention) to 5 (a lot of attention))	4.098 (1.036)	0.688* (0.406)	0.452 (0.417)	0.393 (0.412)
How much attention and support did you receive from your colleagues in the first weeks or months? (Scale: 1 (no attention) to 5 (a lot of attention))	4.301 (0.913)	-0.060 (0.399)	0.042 (0.444)	0.240 (0.483)
Panel C (Cashier Survey Sep 2016): Differences in the responses of randomly selected cashiers				
How many minutes per week on average does your store manager talk to you personally about work or other issues? (Scale: 1 (0 min), 2 (1-5 min), 3 (6-10 min), 4 (11-30 min), 5 (31-60 min), 6 (61-120 min), 7 (>120 min))				
Responses: all cashiers	4.322 (1.596)	0.331 (0.347)	0.417 (0.326)	0.085 (0.281)
Responses: cashiers where the store manager is the same since the beginning of the treatment	4.228 (1.648)	0.772* (0.415)	0.752* (0.401)	0.041 (0.349)

Notes: LHS variable question 2, 3 and 4 in Panel A: Share of “yes” responses. Ologit standard errors (in parentheses): Robust standard errors in Panel A, standard errors are clustered at the store level in Panel B and C. Number of observations: 129 (Panel A), 535 (Panel B), 334 (Panel C, question 1) and 223 (Panel C, question 2). Panel A: We did not interview the store managers in the *Career* treatment group because of the time constraints of our student assistants. In Panel C we include a dummy as a control that captures whether a store received a reminder at the beginning of October 2016. * p<0.1, ** p<0.05, *** p<0.01.

Appendix I: Additional analyses

Calculation of the costs of turnover

This section provides details of the *ex ante* calculation of the costs of turnover we carried out. The costs of turnover that we include in our calculations consist of four components: 1) the direct costs of managing turnover at the store level (e.g., manager time); 2) the direct costs at the firm level (e.g., the costs of employing HR personnel that deal with turnover); 3) the indirect costs of turnover in terms of the effect it has on store profitability; and 4) the indirect costs of turnover in terms of its effects on the firm's reputation, human capital accumulation, and the talent pool. The first two components can be estimated, the third requires strong assumptions to be statistically estimated, and the fourth cannot be quantified. We base our calculations on the pre-treatment (February 2014-August 2015) average number of quits of 1.2 per store per month, the average cashier salary of 345 Euros per month, the average store manager salary of 933 Euros per month, and the average operational profit (sales minus costs of sales minus wages minus overheads minus shrinkage) of 38,000 Euros per store per month.

Starting with the first component – the direct costs of turnover accrued to individual stores – we learned from several randomly selected store managers we interviewed in Spring 2015 that it takes one hour to interview each applicant, which given the hires per applicant rate of 0.4 means 2.5 hours per hire. It takes the store manager two hours to instruct each new hire, half an hour to process the paperwork of each leaver, and another half an hour to rewrite the work schedule. Each newly hired worker undergoes a two-day on-the-job training period during which he or she is paid but does not work. We assume the costs of training to be equivalent to a day of a store manager salary. In addition, a mentor (another cashier) spends two hours with each newly hired worker. Summing up, each quit takes 40 hours of cashier time and 18 hours of store manager time.

Turning to the second component – direct costs accrued at the firm level – we learned from interviews with the head of HR that there were 23 employees in the HR office whose job was to administer hiring and quits. In our calculations, we assume that their wages are 10% higher than the average wage of cashiers, giving a monthly wage budget of 8,730 Euros. On top of this figure comes the tax wedge of 38.8%, which is the Eurostat 2015 average tax wedge estimate for the eastern EU countries

(Eurostat, 2015). Additionally, there are rental costs of the office space required to accommodate them, estimated at 10 Euros per sq m per month, which is in the range of office space rates in non-premium locations in the city where our study firm is based. Assuming every employee needs five square meters, these costs amount to 1,150 Euros per month. Summing up, the direct costs amount to 292 Euros per store per month, or 244 Euros per quit.

As for the third component of turnover costs – lost sales and profits – we observe a negative correlation between store operational profit and quits. Regressing changes in log operational profit on changes in labor input and up to three lags of changes in the quit rate gives the coefficients -0.18, -0.14, -0.17 on the current, first and second lags of changes in the quit rate. (The coefficients on the deeper lags are small and insignificant). For reasons of endogeneity (workers leaving at a higher rate in the stores that are less productive), these results cannot be interpreted as causal evidence on the effect of quits; a naïve estimate stemming from the regression coefficients would suggest a 4.9% decrease in operational profit ($=0.1*(-0.18-0.14-0.17)$) in response to a permanent increase in the quit rate of 0.1. If the present quit rate went from the pre-treatment average 5.74% down to zero, the operational profits would increase by $38,000*0.49*0.0574=1,069$ per store per month on average, suggesting that each quit costs 890 Euros in terms of lost sales.

Summing up, the total costs of turnover are $244+890=1,134$ Euros per quit. This figure corresponds to around three months' worth of cashier gross earnings. Note that our estimate does not include the costs of uniforms and placing job advertisements, and, more importantly, the costs turnover brings to the firm's reputation and talent pool (the fourth component).

Different types of managers

We estimate our main specification with the treatment dummies interacted with store average size measured in terms of employee headcount. Our estimates for the period of September 2015 to September 2016 imply a reduction in the *Manage* (*Manage+Career*) treatment effect of 1.8 (1.4) ppts corresponding to a one-standard-deviation increase in store size. To explain this result, we first check whether it is driven by span of control measured as the number of non-managerial employees per store / department manager in each store. It is not: the interactions between the

treatment dummies and store size do not disappear when we control for the span of control as well as for its interactions with the treatment dummies.

Our explanation of the treatment effect heterogeneity by store size rests on the practice of career management in the firm, according to which, as we were informed by the COO, managers who successfully manage small stores get promoted to larger ones in order to leverage their human capital at larger scales.²⁷ Store managers' average monthly earnings in the pre-treatment period were 933 Euros (August 2015). A ten-percent increase in store size is associated with a 2.6% increase in managers' wages.

Digging deeper into this argument, in the *Regional Manager Survey Nov 2016*, we showed all regional managers the names of all store managers (n = 79) who moved between stores in the pre-treatment period, and asked them about the reasons for those movements. In 85% of the cases, regional managers could provide the reason (in 15%, the regional manager responsible for the movement had quit the firm). The two most important reasons for movements were store managers' promotions (51% of the cases) and demotions (15%).²⁸ According to the personnel records, before promoted managers moved, they had on average 17 employees in their store, and in their new stores on average 37 employees; for demoted managers the numbers are 46 before, and 21 employees after the movement. This provides a first indication that the treatment effect may interact in interesting ways with the quality of the manager, and that it is mainly the weaker managers who respond to the treatment.

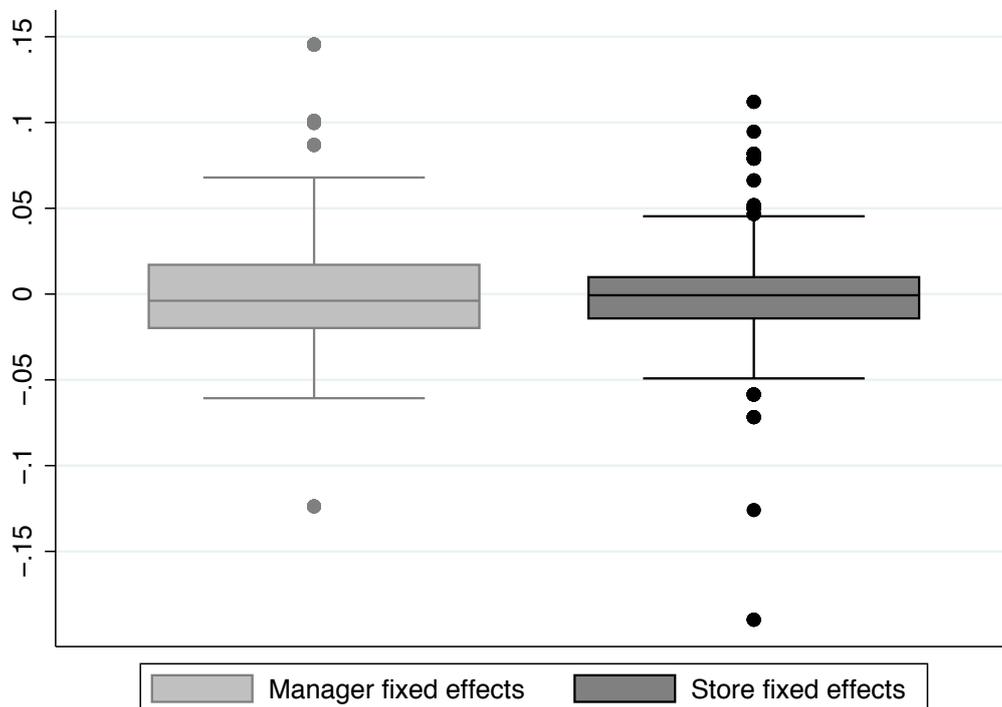
To substantiate this conjecture, we follow Bertrand and Schoar (2003), Lazear et al. (2015), Janke et al. (2016), Hoffmann and Tadelis (2018), who all use manager movements to identify manager "fixed effects" in performance. We use the method proposed in Abowd et al. (1999) and implemented in Cornelissen (2008) to estimate the manager and store fixed effects in the quit rate. Figure A shows the distributions of store manager (the box plot on the left) and store fixed effects (the box plot on the right) in the quit rate. In line with the previous literature, the considerable variation in the manager fixed effects indicates that store managers matter for employee turnover.

²⁷ This is an argument reminiscent of the theories of Lucas (1978), Rosen (1982), Garicano (2000) and many others; for empirical evidence see, for instance, Garicano and Hubbard (2007), Smeets et al. (2016).

²⁸ In the remaining cases, store managers were interim managers (9%; e.g. because of parental leave or sickness of store managers), the manager moved privately (9%), the store was closed (5%) or other reasons were given (6%).

Interacting the *Manage* and *Career+Manage* treatment dummies with the estimated store manager fixed effects we find that a one-standard-deviation change in the manager fixed effect (i.e., one-standard-deviation decrease in manager quality as measured by ability to deal with turnover) is associated with a 2.9 ppt larger effect of the *Manage* treatment and a 1.6 ppt larger effect of the *Career+Manage* treatment. Although the latter results need to be taken with some care given the endogeneity of manager movements between stores from which manager fixed effects are estimated (a problem applying to of all the related literature), the mass of the evidence reported in this section strongly suggests the importance of differences in manager quality for the efficacy of our treatments.

Figure A: Box plots of store manager and store fixed effects from the quit rate regression



Spillovers

A robustness concern applies to many field experiments and also to ours: there could be spillovers between different groups of stores. There are two types of potential spillovers. First, stores managers in the control group may imitate what stores in the treatment groups are doing, which would lead to an *underestimation* of the treatment

effects. Second, store managers in the control group may feel discouraged about the fact that they were not included in the treatment groups, and interact less with their employees. This would lead to an *overestimation* of the treatment effects.

We believe that treatment spillovers, positive or negative, are unlikely for the following reasons. First, our treatments did not affect any material aspects of the store manager job, such as salary. If they did, we would see changes in store manager turnover, which we did not observe. Second, store managers in our study firm are used to experiments. For example, when we started our treatment, there were twelve other pilot projects run by the firm in subsamples of stores, experimenting with prices, logistics, marketing and products. Yet, neither in the past nor in our treatment period store managers complained about inclusion or non-exclusion in pilot projects to the regional managers or top management. Third, in the absence of material effects on store manager livelihood, it is unlikely that the managers in the control stores would continue being uneasy for the entire nine-month period during which we observed significant treatment effects.

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Appendix II: AEA RCT Registry (August 31st, 2015)

Friebel, Guido, Matthias Heinz and Nick Zubanov (2015), "The impact of employer-employee communication on employee turnover."

We run a field experiment to investigate the impact of employer-employee communications on employee turnover. Our study firm – a network of 238 retail stores located in an Eastern European EU member state – has been troubled with store staff turnover averaging at 90% per year, a figure high even for the retail sector standards. Turnover is expensive, costing about 400 Euros per quit worth of time spent finding and training up a replacement. Low pay and limited career options have been blamed for high store staff turnover.

Yet, the fact that half of the leaving staff quit within the first three months on the job suggests that turnover could be reduced by better induction into the firm, which we believe can be accomplished through improved employer-employee communications. Hence, our first experimental treatment, labeled “job induction”, is to send a letter signed by the firm CEO to the treatment group store managers motivating them to do what they can to reduce staff turnover. In particular, the letter mentions the importance of helping employees fully integrate into their teams, of training new hires, and of having an open ear for the concerns workers may have, especially in the beginning of their tenure.

Our second treatment, labeled “career communication”, is about communication with the staff regarding career options at our study firm. Although career options for store staff are perceived as limited, the facts are that a considerable proportion of store and regional managers were promoted from cashiers, and that our study firm offers a variety of careers in its HR, logistics, finance and production divisions (we do not cover these in our experiment). Employees in the stores selected for our second treatment receive letters emphasizing these facts and encouraging them to contact a specially appointed HR officer for information on career possibilities.

Finally, our third treatment combines the above two so that we can learn whether job induction and career communication are substitutes, complements or neutral to each other in their effect on staff turnover.

We select employees into treatments or control group by store using stratified randomization. In addition to store average quit rate, which is our outcome variable, we balance the treatment and control group in terms of store sales, size and location, as these characteristics are correlated with staff turnover. We work with store and regional managers to ensure that we can detect and minimize information spillovers between stores in different treatment groups. The field experiments starts on September 01st, 2015.

Appendix III: Materials

Figure B: Store manager letter in the *Manage* treatment

[LOGO OF THE FIRM]

Dear NAME OF THE STORE MANAGER,

Over the last few years, FIRM NAME has invested much effort and resources in maintaining and further improving the quality of goods, customer service and refurbishments. We believe that we are on a good way to become the best retailer in COUNTRY! However, much remains to be done for FIRM NAME to achieve the leading position. We would like to ask you for your help in dealing with an important problem that many stores are facing on a daily basis.

It is about personnel turnover. We currently have a personnel turnover of around 90% per year. We also know that 50% of those who leave are leaving in the first few months of their employment at FIRM NAME. Each employee's leaving costs us on average 400 Euros – at least.

This turnover severely impedes your efforts of improving the quality of our products and services. In this case, a biggest part of your job is for searching new employees and training them. Also, all organized training, such as practice sessions and leadership clubs, are not effective as they should be.

We would like to bring your attention to the problem and ask you to do what you can, in order to bring down the turnover. In particular, please talk to your employees and make them feel fully integrated into your team, among others by putting emphasis on the buddy program. Please also note that it is important to train the new hires in the essential processes and have an open ear for problems they may have in the beginning.

Need help, consultation or advice? Contact NAME AND PHONE NUMBER OF AN EMPLOYEE IN THE HR DEPARTMENT.

Yours sincerely,

PICTURE, NAME AND
SIGNATURE OF THE CEO

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SIGNATURE OF THE HEAD OF HR

Note: In the letter we communicated a personnel turnover of 90% because the respective figure was computed using the quit rates over the last six months before the treatment.

Figure C: Poster in the *Career* treatment

The poster is framed to look like a window with two vertical handles on the sides. It is divided into three horizontal panels, each with a different illustration and a callout bubble.

- Top Panel:** Illustration of a store interior with a cashier and a customer. A large speech bubble at the top says: "Feel free to open your career possibilities at FIRM NAME!". Below it, a smaller bubble says: "Did you know that:".
- Middle Panel:** Illustration of a person working at a computer workstation. A yellow bubble on the left says: "Nearly half of our regional managers started their career working in a FIRM NAME store!". A green bubble on the right says: "More than half of our store managers started their career as cashiers!".
- Bottom Panel:** Illustration of a man in a suit holding a presentation board with a line graph, standing in front of three seated people. A green bubble on the left says: "FIRM NAME offers a variety of training and development activities, ranging from professional training to university education!". A yellow bubble on the right says: "FIRM NAME has more than 200 different occupations in a wide variety of areas!".

At the bottom of the poster, a grey banner contains the text: "Seek your Career and grow with FIRM NAME! Are you interested in career opportunities? We are waiting for your call! NAME, PHONE NUMBER".

Figure D: Employee letter in the *Career* treatment

[LOGO OF THE FIRM]

Your Career Opportunities at FIRM NAME!

Dear NAME OF THE EMPLOYEE,

We are grateful for your dedication and daily work in reaching our main goal - to become the best and most attractive to customer grocery store in COUNTRY! We believe that while achieving this common goal, every employee (without exception) have ability to grow.

Our company offers many different career opportunities for each employee – that is why FIRM NAME is a great place for every employee who seeks a career. We would like to share some facts with you.

Did you know

- More than half of our store managers started their career as cashiers!
- Nearly half of our regional managers started their career working in an FIRM NAME store!
- Almost all Shift Managers and Unit Managers started their work at the cash-desk!
- FIRM NAME is employed more than 200 different occupations in a wide variety of areas – production, logistics, marketing, IT, finance, HR, Commerce!
- FIRM NAME sponsors a variety of training and development activities for its employees, ranging from professional training to university education and also provides the opportunity to participate in various projects!

After starting to work in higher position there will be not only substantial wage increase, but also you can develop your professional activities, leadership skills and to grow as a person.

Are you interested in career opportunities? We are waiting for your call on internal: NAME AND PHONE NUMBER OF AN EMPLOYEE IN THE HR DEPARTMENT
Seek your Career and grow with FIRM NAME!

Yours sincerely,

FIRM NAME

Figure E: Store manager letter in the *Career* treatment

[LOGO OF THE FIRM]

Dear NAME OF THE STORE MANAGER,

Over the last few years, FIRM NAME has invested much effort and resources in maintaining and further improving the quality of goods and stores, for instance by refurbishments. We believe that we are on a good way to become the best retailer in COUNTRY.

However, much remains to be done in this direction. As the next step in our strategy for FIRM NAME to achieve the leading position, we are introducing a new initiative to make career opportunities at FIRM NAME more visible to its employees.

Such opportunities are ample. For instance, 52% of the current store managers started their career as cashiers. Furthermore, along with a substantial wage and status increase, a promotion brings additional opportunities to develop professionally and to exercise leadership at work.

Enclosed you will find letters in separate envelopes that are addressed to each individual employee, as well two posters. We kindly ask you to do the following:

- Place one poster (the A4 size) on the staff information board.
- Place the other poster (the A3 size) where most store employees can see it, for example, in the staff common lounge.
- Arrange the meeting with all employees, for instance, in the morning. If not everyone can attend this meeting, please arrange another meeting so that everyone is informed.
- During the meeting(s) please read the letter aloud to ensure everyone is informed.
- Hand over the addressed envelope to each employee.

You will also find a few extra copies of the employee letter, to be given to newly hired employees. Please make additional copies if needed.

You can call NAME AND PHONE NUMBER OF AN EMPLOYEE IN THE HR DEPARTMENT in case you have questions. Also let the employees know that they can call us with their questions.

Yours sincerely,

FIRM NAME

Figure F: Store manager letter in the *Career+Manage* treatment

[LOGO OF THE FIRM]

Dear NAME OF THE STORE MANAGER,

Over the last few years, FIRM NAME has invested much effort and resources in maintaining and further improving the quality of goods, customer service and refurbishments. We believe that we are on a good way to become the best retailer in COUNTRY!

However, much remains to be done for FIRM NAME to achieve the leading position. We would like to ask you for your help in dealing with an important problem that many stores are facing on a daily basis.

It is about personnel turnover. We currently have a personnel fluctuation of around 90% per year. We also know that 50% of those who leave are leaving in the first few months of their employment at FIRM NAME. Each employee's leaving costs us on average 400 Euros – at least.

This turnover severely impedes your efforts of improving the quality of our products and services. In this case, a biggest part of your job is for searching new employees and training them. Also, all organized training, such as practice sessions and leadership clubs, are not effective as they should be.

We would like to bring your attention to the problem and ask you to do what you can, in order to bring down the turnover. In particular, please talk to your employees and make them feel fully integrated into your team, among others by putting emphasis on the buddy program. Please also note that it is important to train the new hires in the essential processes and have an open ear for problems they may have in the beginning.

In order to inform every employee about career opportunities in our company we have written a personal letter to each of your employees (you will find all letters in this envelope).

We believe, that FIRM NAME is a great place for the ones who seek career options and we are glad that we can suggest broad opportunities for that. For instance, 52% of the current store managers started their career as cashiers, Unit managers or in the other positions. We want to bring your attention, that along with a substantial wage increase, a promotion brings additional opportunities to develop professional activities and to exercise leadership at work and to grow as a person.

Please do the following as soon as possible with the posters and letters in this envelope:

- Place one poster (the A4 size) on the staff information board.
- Place the other poster (the A3 size) where most store employees can see it, for example, in the staff common lounge.
- Arrange the meeting with all employees (If not everyone can attend this meeting, please arrange another one so that everyone is informed and during the meeting please read the letter aloud to ensure everyone is informed.
- Hand over the addressed envelope to each employee.

You will also find a few extra copies of the employee letter, to be given to newly hired employees. Please make additional copies if needed.

Need help, consultation or advice? Contact NAME AND PHONE NUMBER OF AN EMPLOYEE IN THE HR DEPARTMENT.

Yours sincerely,

PICTURE, NAME AND
SIGNATURE OF THE CEO

PICTURE, NAME AND
SIGNATURE OF THE HEAD OF HR

Figure G: Store manager letter in the *Reminder* treatments

[LOGO OF THE FIRM]

Dear NAME OF THE STORE MANAGER,

You /your store received a letter from us, in September 2015, asking you to do what they can to reduce turnover. We are pleased to report a substantial reduction in firm-wide turnover, that we believe has been due to the efforts of our store managers such as yourself. We are grateful for this!

However, turnover is still high. Dealing with quits and searching and training new employees takes time and other valuable resources away from important activities around the store. Besides, organized training, such as practice sessions and leadership clubs, are not as effective as they should be when people often come and go.

We would like, once again, to draw your attention to the problem of turnover, and ask you to do what you can to bring it down. Please talk to your employees and try to make them feel fully integrated in your team, making use of the buddy program among our other HR initiatives. Please also note that it is important to train the new hires in the essential processes and have an open ear for problems they may have in the beginning as well as throughout their employment.

Need help, consultation or advice? Contact NAME AND PHONE NUMBER OF AN EMPLOYEE IN THE HR DEPARTMENT.

Yours sincerely,

PICTURE, NAME AND
SIGNATURE OF THE CEO

PICTURE, NAME AND
SIGNATURE OF THE HEAD OF HR

Appendix IV: Additional estimation results

In this section, we report treatment effects on sales, operational profits, shrinkage and absence (Tables A, B, C and D, respectively). All effects are statistically insignificant, with a few borderline cases.

Table A: Average treatment effects on log store operational profits in the main treatment period

	Sep. 2015- Nov. 2015	Dec. 2015- Feb. 2016	Mar. 2016- May 2016	Jun. 2016- Sep. 2016
Manage treatment	-0.024 (0.027)	-0.017 (0.025)	-0.018 (0.024)	0.036 (0.032)
Career + Manage treatment	-0.019 (0.027)	-0.026 (0.025)	-0.008 (0.026)	-0.013 (0.029)
Career treatment	-0.003 (0.026)	0.017 (0.027)	0.020 (0.025)	0.028 (0.030)

Notes: The specification that generates the results in this table is the usual ANCOVA estimator (equation 1). The observations with annual sales growth above the top 1% (+110%) and below the bottom 1% (-42%) are excluded from the sales regression. These observations come from stores that underwent renovation and were thus closed part of the time. Controls include headcount, store size in square meters, share of fresh products, dummies for location and exposure to *Lidl*. * p<0.1, ** p<0.05, *** p<0.01.

Table B: Average treatment effects on log sales in the main treatment period

	Sep. 2015- Nov. 2015	Dec. 2015- Feb. 2016	Mar. 2016- May 2016	Jun. 2016- Sep. 2016
Manage treatment	0.002 (0.019)	-0.005 (0.020)	-0.003 (0.018)	0.033 (0.021)
Career + Manage treatment	-0.003 (0.014)	-0.005 (0.017)	-0.002 (0.017)	-0.009 (0.019)
Career treatment	0.018 (0.016)	0.021 (0.019)	0.026 (0.018)	0.030 (0.022)

Notes: The specification that generates the results in this table is the usual ANCOVA estimator (equation 1). The observations with annual sales growth above the top 1% (+57%) and below the bottom 1% (-30%) are excluded from the sales regression. These observations come from stores that underwent renovation and were thus closed part of the time. Controls include headcount, store size in square meters, share of fresh products, dummies for location and exposure to *Lidl*. * p<0.1, ** p<0.05, *** p<0.01.

**Table C: Average treatment effects on log share of shrinkage
in sales in the main treatment period**

	Sep. 2015- Nov. 2015	Dec. 2015- Feb. 2016	Mar. 2016- May 2016	Jun. 2016- Sep. 2016
Manage treatment	0.005 (0.030)	0.027 (0.035)	-0.001 (0.035)	-0.036 (0.036)
Career + Manage treatment	0.007 (0.029)	0.001 (0.032)	0.001 (0.035)	0.005 (0.031)
Career treatment	0.031 (0.030)	0.032 (0.032)	0.006 (0.040)	0.017 (0.036)

Notes: The specification that generates the results in this table is the usual ANCOVA estimator (equation 1). Controls include location, exposure to *Lidl*, stores size in square meters and headcount. * p<0.1, ** p<0.05, *** p<0.01.

**Table D: Average treatment effects on cashier absenteeism
(days per month) in the main treatment period**

	Sep. 2015- Nov. 2015	Dec. 2015- Feb. 2016	Mar. 2016- May 2016	Jun. 2016- Sep. 2016
Manage treatment	-0.013 (0.245)	-0.017 (0.251)	-0.081 (0.260)	-0.378 (0.380)
Career + Manage treatment	-0.168 (0.245)	-0.017 (0.259)	-0.222 (0.268)	-0.044 (0.386)
Career treatment	0.076 (0.255)	0.074 (0.245)	-0.171 (0.278)	-0.252 (0.391)

Notes: The specification that generates the results in this table is the usual ANCOVA estimator (equation 1). Controls include location, exposure to *Lidl*, stores size in square meters and headcount. * p<0.1, ** p<0.05, *** p<0.01.