Low-cost Management Training Program in the Bangladeshi Garment Sector*

PRELIMINARY AND INCOMPLETE: PLEASE DO NOT CIRCULATE

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Abstract

Factories in lower-income countries are characterized by low efficiency and poor working conditions. Can low-cost management interventions lead to improvements on both fronts at the same time? We conduct a low-cost management training program for managers and supervisors in 25 readymade garment factories in Bangladesh. Training is provided in a combination of group-based modules and individual factory "activations". These group-based modules focus on productivity and human resource management practices intended to improve productivity and provide direct benefits to workers. Using both detailed survey data and administrative records, we find the program has a significant positive effect on workers. Practices aimed improving communication on the production floor seem to have been more effective than technical and production-related practices. The program had the strongest effects on human-resource related outcomes, leading to decreases in exit rates, turnover and absenteeism. However, most of the effects disappear within six months of treatment. We see some evidence of spillovers of practices, particularly to production lines on the same floor as the treatment line, but the spillovers do not appear to explain the fade of the treatment effects.

Keywords: management, organization, productivity, scaling-up interventions, Bangladesh.

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I Introduction

There are large and persistent differences in performance among firms in developing countries (Hsieh and Klenow, 2008; Syverson, 2004). As Bloom et al. (2013) have shown, these differences can partly be explained by variation in management practices. They identified a causal effect of management practices on firm performance in a large-scale RCT in 17 Indian garment factories. A highly individualized management training intervention at the cost of $75,000 per firm lead to productivity improvements of 17%. Little evidence exists on the effect of training programs of more modest scale and costs. To show that a cheaper group-based consulting approach can have similar effects as individual one-on-one coaching at one-third of the cost, Iacovone et al. (2018) implemented a group-based training program in 159 small and medium-sized automotive parts manufacturing firms in Columbia. They found that the group-based training costing around $10,000 per firm led to similar improvements in management practices of 8 to 10 percentage points as the individual training costing three times as much.

We analyze the effects of a group-based consulting intervention designed for very large, export-oriented factories in Bangladesh's readymade garment sector. The intervention consisted of a training program called "Benefits for Business and Workers" (BBW) implemented in 25 garment factories in Bangladesh. The six-month training program consisted of 24 days of classroom-based training (off-site), four follow-up "activation" visits (on-site) and one roll-out session (on-site). The aim of this management consulting service was to offer training and practical expert advice to key factory managers on productivity and human resource management practices. As the name suggests, the program focuses particular attention on improving management practices intended to lead to direct improvement in working conditions for production workers. We use detailed administrative and survey data to examine outcomes on both the employer and the employee side. The training initially focuses on a single production line, and our data also allow us to analyze spillover effects within factories.

The project differs from previously analyzed interventions in four main ways. First, the intervention was designed from the perspective of making workers better off, and asking if these improvements paid for themselves. The training program focused on a narrow set of practices that the consultant believed would directly make workers better off. In a context where buyers care about social compliance, it is possible for the intervention to be profitable to factories even if productivity is not improved. Second, these practices were generic rather than factory-specific so that they could be taught in a group-based training format to large factories with on average 1880 workers. Only "activations" of practices were done at the individual factory level. Third, the program was designed with a complementarity of practices in mind: Changing a single practice may not be effective, so implementing all changes on a

single production line allowed factory management to see the benefit of the changes at a lower cost. Hence, the intervention operated initially on a single production line, and then consultants assisted the factories to role changes out to other production lines. Fourth, we examine changes at a much more detailed level - both in measurement of practices and in measurement of adoption. This allows us to understand which practices are more easily adopted, illuminating why changing practices is difficult.

The project contributes to two strands of the literature. First, it contributes to the growing literature on the experimental evaluation of training and consulting programs in firms to improve business practices and management. One part of this literature focuses on training programs for microenterprises (see McKenzie and Woodruff (2014) for a review). The other part more related to our project focuses on intensive individualized consulting programs in small and medium-sized enterprises (Bloom et al., 2013; Bruhn and Karlan, 2018; Higuchi et al., 2017). Second, the project is related to the recent literature on the effect of business networks and group-based training programs on firm performance (Chatterji and Fuqua, 2018; Dalton et al., 2018; Iacovone et al., 2018; Lafortune, 2018; Cai and Szeidl, 2018).

The rest of the paper is organized as follows: Section 2 contains the context in the Bangladeshi garment industry and the sample selection, section 3 the experimental design. Section 4 discusses the data used. The main empirical specification and results for worker outcomes are presented in section 5, and for factory outcomes in section 6. Section 7 discusses the cost effectiveness of the program and section 8 concludes.

II Context in Bangladesh and sample selection

II.1 The ready-made garment industry

Most ready-made garment factories in Bangladesh specialize in the production of a particular family of garment. Factories participating in this project produced light knit and woven garments such as t-shirts, jeans, and jackets. Production in woven factories is typically organized in three sections: cutting, sewing and finishing. Many larger light-knit factories are also integrated into knitting of the fabric as well. The BBW program was focused on the sewing section, which usually employs around 60 percent of the workers in the factory.

Sewing is organized in production lines. The cut fabric enters at the top of the line and the finished product exits at the end of the line. Each worker performs a single process – for example, sewing the side seam of a t-shirt. Depending on the complexity of the garment the line may have between 15 and 70 sewing machine operators and five to 15 helpers, although there is considerable variation across factories in the ratio of helper to operators. A typical production floor has 8-10 production lines, though some may have more or fewer. The median factory in our sample has 1706 employees in the sewing section and 50 employees per sewing line (see table 1).

II.2 Management hierarchies

The management structure in Bangladeshi garment factories is in general very hierarchical within each department (see figure 5). The main departments involved in our intervention are the Production, the Industrial Engineering (if existing), the Quality, and the HR department. The latter also entails the Welfare Officer. Some factories have dedicated Industrial Engineering ("IE") departments that manage most technical aspects of production including setting targets and determining the layout of the line. Using IE techniques is certainly thought to be best practice, yet whilst the presence of IE departments is not uncommon, they are far from ubiquitous.

Supervisory Structure: The supervisory structure in the production department tends to depend upon a variety of factors, most prominently on the number of machines. A line of 40 machines will typically have two supervisors and one line chief who may be in charge of one to three lines. Some factories have supervisors that work across multiple lines, and some do not have line chiefs; however, the majority of cases are as described above. The duties of line supervisors are various and include motivating workers, teaching workers new production techniques, identifying quality issues and working with Industrial Engineers to solve problems that may cause bottlenecks on the line. The so-called 'Floor-In-Charge' is responsible for floor-wise production. Managers above are responsible for the whole factory. Quality inspectors are responsible for one line, whereas the quality supervisor may be assigned to one line although they generally have responsibility for more than one line. In the HR department, responsibilities cover HR processes across the whole factory. In some IE departments, IE Officers are responsible for one specific line, whereas in others their responsibility covers more than one line.

Decision-making process: Typically, only top managers have the authority to actually make decisions, whereas lower and middle managers are responsible to act upon and implement those decision, and supervise workers. Hence, the decision-making process requires open decisions to be carried upwards to the top manager of the respective department across multiple layers within the department. The final decision is then taken by top managers from one or several departments. The implementation process, in turn, requires the final decisions made at the top to be carried downwards to lower managers across multiple layers within one department for implementation. As soon as more than one department is involved in decision-making, the complexity of the coordination process to make decisions sharply increases, resulting in delays or even failures to make decisions.

III Experimental Design

III.1 Description of the intervention

Overview: The intervention consisted of a training program called "Benefits for Business and Workers" (BBW). The aim of this management consulting service was to offer training and practical expert advice to key factory managers on productivity and human resource management practices. It was jointly carried out by Impactt Ltd, a UK-based consultancy, and Rajesh Bheda Consulting, an Indian-based consultancy, focusing on enhancing the competitiveness in the fashion industry. The program provided training in both technical interventions intended to directly improve productivity and also in human resource interventions to indirectly increase productivity by lowering absenteeism rates and labor turnover rates through higher motivation and well-being of workers. As the name of the program suggests, practices were designed with the aim of providing benefits simultaneously for both workers and the firm. The attendance bonus policy serves as a good example to illustrate the purpose of the program. On the one hand, workers benefit from the policy financially. On the other hand, the firm benefit in terms of higher planning security as workers are motivated to be less absent in an unexcused manner (they are only eligible for the bonus if they announce absent days in advance).

Participating factories were organized into groups of six for the classroom component of the training. Modules related to productivity (PR) and human resource (HR) practices were taught during group-based class-room sessions (off-site) on 24 days over a period of six to eight months. The program also provided four visits by the consulting team to each participating factory for the purpose of "activation" of what was learned in the training sessions. These on-site sessions focused on implementation of the practices on the pilot line, but did not contain any individualized consulting. Finally, the consulting team visited the factory at the end of the training program to begin the process of rolling the practices out to other lines in the factory, initially working with three additional lines chosen by the factory. Factories could continue rolling out the most effective strategies on further lines themselves after the end of the training program. Most practices were non-existing in participating factories before the start of the intervention.

Training content: The aim of the training was to develop solid and robust systems allowing sustained improvements in productivity and quality and, simultaneously, improvements in workers' job quality. The HR modules covered recruitment design, simplification of policies and their implementation, improvement of access to social benefits, improvement of pay and reduction of working hours, staff training, performance management and incentive setting as well as data management. Training also emphasized communication approaches, such as the importance of listening to workers' voice, grievance procedures and feedback systems, or worker committees. The Production modules covered quality, procurement and industrial engineering aspects, line balancing, operation standardization, production planning, as well as data management and analysis.

Examples of the HR practices are:

- Induction system: Showing fire exits, welfare office, etc. to new hires
- Buddy system: Assignment of experience operators as mentors to new hires
- One-step leave policy: Reducing the time cost for operators to request leave
- Exit interviews: Conduct of exit interviews with workers who plan to quit their job to figure out potential reasons
- Worker participation committee: Informing workers about the functioning of worker participation committees and allowing them to raise concerns to management
- Promotion policy: Clarifying promotion policies and supporting workers in attaining the skills required for promotion
- Job description: Information about roles and responsibilities, and basis to measure performance
- Attendance bonus: Introducing a bonus payment for attendance
- Communication approaches: Facilitation techniques for good quality conversations with workers to understand and respond to their needs

Examples of Production practices are

- Up-skilling operators: Continuous training for workers to improve their skills
- Capacity Study: Sheet to provide information on the operator's potential capacity, i.e. average cycle time of an operation
- Skills matrix: Tracking of existing manpower skill strength and weaknesses
- Line balancing: Levelling workload to remove bottlenecks and excess capacity
- Non-productive time: Understanding and measurement of non-productive time
- Zero Defect Initiative: Training of operators to inspect the quality of their own operations, including awards for operators without any quality mistakes

During the group training sessions, managers were assigned "homework" that might include the review of existing practices, the practical implementation of new practices on pilot lines, the tracking of new metrics, or the evaluation of certain practices or the development of a roll-out plan. These issues were then discussed by the group at the following session.

For more information about the training modules see section A.1.3 in the appendix.

Participating Factories: A total of 25 factories participated in the project. The majority of factories (17 factories) came from one large buyer, and seven factories came from three other buyers. One factory joined through direct contact with the research team rather than through a buyer. Buyers were initially contacted in Bangladesh and the UK. Meetings with supplying factories were then organized in Bangladesh, with 37 factories being invited to supplier

engagement meetings between June and September 2015. Initially, 27 factories enrolled in the program, but two of these factories dropped out before the start of the program due to closure/internal problems.

Participants with factories: The training program is designed to train jointly managers from different departments. In total, six managers per factory from the Production, HR/Welfare, Industrial Engineering and Quality department were supposed to attend the training (i.e. Production manager, HR manager, Welfare officer, Industrial Engineer, Quality manager, and the Line-Chief/Supervisor of one chosen treatment line). Factories were grouped in batches of five or six factories so that each classroom session was intended to have between 30 and 36 managers attending. Workers were not involved in the training program.

Costs: The total cost of the program was 10.500 Dollars per factory. At the time of the project, a grant from UK Aid covered half the cost of the training. The other half was typically split between the buyer and the factory. Impactt offered buyers the option to pay a lump sum that then allowed them to enroll supplier factories for a cost of 650 Dollars per factory, to be paid for by the factory. The fee paid by the factory was seen as a signal of the factory's commitment to the program. For this project, the 650 Dollar fee was waived for the 17 suppliers of the large buyer. The buyer in turn promised to provide support and encouragement to substitute for the financial contribution of the factories. The remaining eight factories paid the participation fee of 650 Dollars.

III.2 Selection of treatment lines and assignment into batches

The project was designed in the form of a randomized controlled trial to provide training to the managers who were in charge of one chosen treatment line per factory. The normal protocol was for the consultant to ask each factory to choose one line as the "pilot" line. Managers from that production line and a vertical slice of the hierarchy above that line were then invited to the relevant classroom sessions. The vertical slice would include, for example, the production manager who is the boss of the line chief, and that production manager's boss. Similarly, mid- and higher-level managers from the HR, industrial engineering and quality sections were also invited to the sessions. We expected factories to nominate pilot lines based on factors that made them more susceptible to change and adaptation, including open-mindedness and willingness to learn. Hence, the lines selected to be a pilot line may not be comparable to other lines in the factory.

For the purpose of the research project, we asked factories to nominate three potential pilot lines. Factories were asked to nominate lines on at least two different floors where that was possible. We then randomly chose one of the three nominated lines to be the treatment line, with the other two nominated lines designated as control lines. Although the program is designed to focus attention exclusively on the pilot line initially, the taught practices were

expected to spillover to other lines, either because practices like worker induction might be implemented at the floor level, or because of communication among line managers. We expect these spillovers to be stronger on the same floor than across floors / units. We therefore differentiate between control lines on the same floor and control lines of different floors in the analysis. We define control floors as floors with no treatment lines but at least one control line, and treatment floors as floors with a treatment line (with or without control lines). In two-thirds of the factories (17 factories), there is a control floor, i.e. at least one control line on a different floor than the treatment line. We classify fourteen out of those factories, which only have control lines on a different floor than the treatment line, as type "A", and three factories, which have control lines on both the treatment and the control floor, as type "B". In the remaining eight factories, there is no control floor, i.e. selected control lines are only on the same floor as the treatment line (type "C"). We conducted surveys on all of the treatment and control lines. Additionally, we surveyed workers and managers on the (up to) two lines adjacent to the treatment line to measure spillovers. In case the control lines were adjacent to the treatment lines and hence, subject to more direct spillovers, they were dropped as control lines.

Assignment into batches: The factories were grouped into five batches of five or six factories that received the training program jointly (see appendix figure 1). The start of training for the five batches was staggered over a period of four months.[1] The assignment into batches was affected by two factors. First, the composition of batch one was pre-determined: Two non-sample factories and four factories of the main sample were assigned to batch one on a 'first come, first served' basis. Second, the composition of batch two to five was driven by location for logistical reasons, reducing the flexibility to assign completely random: 11 factories which were roughly in the same location were randomly assigned into batch two and three, five factories in other locations were automatically placed into batch four, another five factories which decided to join the program later into batch five.

III.3 Selection of survey participants

Selection of surveyed operators: Five lines were surveyed from each factory: The treatment lines, the two control lines (if no control line dropped), and the two adjacent lines. From the treatment and control lines, three operators were randomly selected to be surveyed (two from the front and one from the back of the line). Additionally, we surveyed the operator on the line who had joined the factory most recently. On the adjacent lines, two operators were randomly selected (one from the back and one from the front).

[1] The timing of the batches could not be staggered further because the UK Aid-sponsored program ended in June 2016 and all training had to be completed by that time.

One section of the line supervisor/line chief (LS/LC) survey required respondents to answer questions about an operator he knows "better". For this purpose, we gave the names of two out of three surveyed experienced operators on the LS/LC's line, allowing the manager to choose the one he knew better.

IV The data

IV.1 Data sources

We study the impact of the training program by combining both detailed survey data and factory data (production and salary data). Survey data is used to measure whether workers experienced any changes and are better off, whereas firm data is used to analyze whether the factory experienced any changes and is better off.

Surveys were carried out at three different time periods: Just before training start (Baseline survey), two to three months after the first training (Midline survey) and after the end of the program (Endline survey) as depicted in figure 2. Respondents to those survey questions include line operators (LO), line supervisors/line chiefs (LSLC) and managers (MG). For the operator survey, we randomly selected six operators from five lines per factory.

Production and salary data were collected on all lines in the units participating in the study (units with either treatment, control and/or adjacent lines) from 8 weeks prior to the beginning until approximately 6 months after the end of the project.

IV.2 Outcome measures

Worker outcomes (Survey data): To measure effects on employees, we define four indices based on different practices taught in the program: HR, PR, Wellbeing and Communication index. The HR resp. PR index measures the implementation of HR- resp. PR-related practices, the wellbeing index tracks perceived wellbeing and the communication index measures changes in communication patterns**.**

All indices consist of grouped survey questions about specific practices/approaches which are described in detail in appendix A.2.4. As not all practices are covered in each survey, indices contain different questions per group of survey respondents (operators, supervisors/line chiefs and managers). Indices are constructed as a weighted mean of those standardized questions, i.e. questions are weighted by the inverse of the covariance matrix (Anderson, 2008). All practices are introduced in the first or second training module before the Midline survey was carried out (see figure 2).

Firm outcomes (Factory data): To measure the effect of the training program on firm outcomes, we construct two indices which each averages together different HR- resp. PR-

related outcome variables. The aggregation improves statistical power to detect effects that go in the same direction (based on Kling, Liebman & Katz, 2007).

The HR index consists of four HR-related outcome variables:

- Exit rates: Percentage of workers quitting the factory in a given month within two months of joining
- Turnover rates: Percentage of workers quitting the factory in a given month after two months of joining
- Absenteeism rates: Percentage of workers absent in a given month
- Promotion rates: Percentage of workers promoted in a given month

The PR index consists of three PR-related outcome variables:

- Efficiency: Productivity in a given week
- Alteration rates: Percentage of altered pieces in a given week
- Reject rates: Percentage of rejected pieces in a given week

Further definitions of those main outcome variables can be found in appendix A.2.3. The HR index is based on monthly salary data; the PR index is based on weekly production data. We adjust for multiple outcome variables using the 'sharpened q value' approach based on the Benjamini-Hochberg procedure (Benjamini et al., 2006). We report false discovery rate-adjusted q-values for HR-related and PR-related outcome families.

The availability of firm data up to 6 months after the end of the project allows us to not only measure short-run effects against a set of comparison lines that were not selected by the factories to receive training, but also long-run spillover effects on those comparison lines.

IV.3 Descriptive Statistics and Balance

The experimental firms all produced fabric for the international export market. Table 1 reports summary statistics for the sewing sections of these firms (as the experiment focuses on the sewing section only). On average, the sewing section has about 1874 employees. Sewing processes are organized in production lines of on average 54 workers per line with approximately 8 lines per floor. Almost 90% of all workers on the sewing floor are female. Workers have an average tenure in the factory of 2 years and 8 months. Monthly labor turnover is about 6 percent, but exit rates in the first two months after joining are significantly higher, with 24 percent of workers joining leaving within two months. Absenteeism is modest, with 3 percent of workers absent on a typical day; 2 percent of workers are promoted each month, on average. The complexity of a style is proxied by the "standard minute value" (SMV). The industrial engineering department estimates the SMV by identifying each step required to produce the entire garment, and then estimating the number of seconds a fully

efficient worker would take to complete each step. The sum of these times yields the SMV for the full garment. For example, a tank top might have an SMV of 4 minutes and a simple t-shirt of 6 minutes. This implies that 20 fully efficient workers would produce 300 tank tops or 200 t-shirts each hour. The SMV is an essential determinant in price negotiations with buyers. To calculate the daily line-productivity measure, daily output is multiplied by the SMV, and then divided by total labor input on that line and day measured in worker-minutes. The average productivity is 41%. Anothermeasure of productive efficiency is the percentage of garments that require alterations, or re-work. The average alteration rate is around 5 percent. A final measure is the percentage of garments that are rejected due to too many defects. The average reject rate is 0.1%.

Balance: We do not observe significant differences between the treatment, adjacent and control group for any of the covariates apart from turnover (see table 2). We regress the treatment indicator (for treatment or adjacent lines) on all covariates to test for joint significance. The p-value of this joint F-test is 3.04 for control and treatment lines, and 5.50 for control and adjacent lines, suggesting that the randomization produced highly comparable groups. We also do not observe significant differences between treatment, adjacent and control group for any of the four indices (HR, PR, Wellbeing and Communication) at Baseline, apart from the HR and Communication index for operators as shown in table 3. There is no reason to be concerned about these imbalances, as the composition of the index hugely varies between Baseline and Midline/Endline (only 26 questions available at Baseline). Out of 26 difference in means tests performed, only 5 return statistically significant differences, which would be expected in random sampling.

IV.4 Compliance with the experimental protocol

We measure compliance by examining whether those managers assigned to training actually attended the training. Attendance at the classroom sessions is an indication of engagement by management in the broader consulting initiative. Full compliance with the protocol is often difficult because of communication issues, shocks faced by the factory (e.g. production pressures, absenteeism, etc.), and other factors. However, we observe a relatively stable attendance rate among key attendants, which is slightly decreasing between the second and third training sessions from an average of approximately 70 percent to an average of 65 percent (see Figure 10). Key attendants, those required to attend the training sessions, were mainly low-level managers responsible for the pilot line and mid-level managers responsible for several lines or the floor. Higher-level managers, responsible for production units or the whole factory, were expected to attend only the plenary session kicking off the training program, but were not required to attend the training. On average, the higher-level managers attended 15 percent of the training sessions. Over the course of the training, we can see a decline in the

attendance of middle managers in all departments apart from the HR department, whereas lower managers show a relatively stable attendance (see figure 11).

V Impact on Worker Outcomes

V.1 Main effects

We begin by examining the effect of the training on management practices. We measure practices with responses from surveys of line operators and line-level managers. Recall that the surveys are carried out on treatment and control lines, as well as on the lines adjacent to the treatment line. We use combinations of the lines to measure treatment effects and spillover effects, as described later in this section.

The survey questions asked workers whether several practices taught at the training were implemented on their line. Tthe HR training modules, for example, introduced several practices related to the induction of new workers into the factory. The goal of these practices is to reduce the very high exit rates within the first few months after a worker joins the factory by making new workers feel more like they are part of the team. A key practice is the assignment of a "buddy" for each new worker. The buddy is a line operator with substantial tenure at the factory who can answer the questions a new worker might have about practices and expectations at the factory. A separate induction practice taught in the training is having the Welfare Officer responsible for the line where the new worker is assigned meet with each new worker on the first day of work, to provide information about safety and other procedures at the factory. In addition to induction, the training encouraged factories to make it easier for workers to ask for formal leave. Workers are typically able to take one day per month leave without losing their attendance bonus, if they arrange the leave in advance. Where the process of asking for formal leave is complex, workers may simply not show up for work rather than asking for leave. This is costly both to the worker, who loses some part of their attendance bonus, and the factory, who must adjust workers to fill in the gap on the production line after production has already started for the day.

We take a similar approach for practices related more directly to production. For example, the training encourages the factory to make regular skills assessments of workers. Sewing skills are usually the largest component of promotion decisions, so regular assessments helps to ensure that promotion decisions are viewed by workers as being fair. Skills assessments also provide line managers with current information about the capabilities of each operator, which is useful in assigning workers to specific tasks. A second practice stressed in the training is the need to provide continuous training to machine operators on the line. Section A.2.4 in the appendix shows the complete list of practices, and the list of questions we use to determine whether or not these practices are being followed on the line.

Finally, we use survey responses related to worker attitudes to create a measures of worker well-being and communication between workers and managers. The specific questions on which these measures are based are also shown in section A.2.4 in the appendix.

Empirical specifications: We begin by combining the several measures related to practices for management of new and existing production workers into two indices, one measuring adoption of HR practices, and the second adoption of production practices. We create the indices using the method suggested by Anderson (2008). We then estimate the following equation for each of these two indices:

$$\mathbf{I_{l,f,t}} = \beta_0 + \beta_1 \boldsymbol{EL} + \beta_2 \boldsymbol{T_{l,f} x ML} + \beta_3 \boldsymbol{T_{l,f} x EL} + \boldsymbol{\delta_f} + \varepsilon_{f,t}$$

Where, $\mathbf{I_{l,f,t}}$ is the index associated with a set of practices which aggregates survey responses from all operators or line supervisors/line chiefs working on one particular line l in factory f in month t. $T_{l,f}$ is a treatment indicator equal to one if the survey respondents work on a treatment line. ML and EL are indicator variables indicating the responses are from midline and endline surveys, respectively. $T_{l,f}xML$ and $T_{l,f}xEL$ are indicator variables equal to one if both the treatment indicator $T_{l,f}$ and ML, resp. $T_{l,f}$ and EL are equal to one. We also include factory fixed effects δ_f. The error term $\varepsilon_{f,t}$ is clustered at the line level.

As many managers are not assigned to specific lines and share responsibility for several lines or even the whole factory, the specification for the manager surveys does not contain a treatment indicator variable:

$$\mathbf{I_{l,f,t}} = \beta_0 + \beta_1 \boldsymbol{EL} + \boldsymbol{\delta_f} + \varepsilon_{f,t}$$

Results and possible mechanisms: Results are depicted in table 4, columns 1 (HR) and 6 (production) for line operators, columns 3 and 8 for line supervisors/line chiefs, and columns 5 and 10 for managers. We can see positive but insignificant effects for line operators and managers regarding HR practices. Once increasing statistical power through adding adjacent lines to the regression in column 2, effects are indeed significant in contrast to no (or even negative) effects regarding PR practices. Table 5 shows the results for indices of worker wellbeing and communication. Worker wellbeing of operators is slightly lower on treatment lines at the time of the Midline survey, though the effect is not significant, but is marginally significantly higher at the time of the Endline survey. We do not see any improvement in the wellbeing of line supervisors/line chiefs and managers, though the focus of the program was more on production workers in any case. The clearest and largest effects of the training appear to be on communication between workers and managers. The communication index based on

the line operator surveys shows a large and highly significant difference between treatment and control groups.

Collectively, the results on Table 4 and 5 show that workers on the production floor benefitted from the program, in particular with respect to HR practices, wellbeing and communication approaches. Production practices do not seem to have changed.

We show disaggregated results for each component of the indices in the appendix. An overview is given in figure 19, which summarizes results from tables 13, 14 and 15. It shows that the buddy system, one-step leave policy, and communication approaches seem to have worked particularly well. All of these practices change the way workers interact on the production floor. In contrast, the HR-related practices related to promotion policies or job descriptions, and most production-related practices and tools, skills tests, skills matrices, etc. do not seem to have been implemented, or are even worse than on control lines. Only quality practices seem to have worked well from the point of view of line supervisors / line chiefs. One core part of quality practices is the introduction of zero-defect operators who are responsible for checking the quality of certain processes. This practice might have also changed how operators interact with each other on the production floor. The negative coefficient on quality practices in the manager survey does not imply a halt of those practices, but rather indicates that no additional practices have been implemented between midline and endline. We provide qualitative support of the disaggregated results, by showing managers' perceptions about the most important changes in policies or processes. Even managers from the production, IE and quality department consider HR-related practices, such as the buddy system and the one-step leave policy, among the most important changes (see left graph of figure 20). Interestingly, they consider teamwork as one of the most important changes in their own job (see left graph of figure 21), which also relates to the interaction patterns on the production floor.

We can conclude that practices aiming at directly changing the interaction of people seem to have been better implemented than practices aiming at changing technical aspects and the production process itself. To explain this result, we draw upon a detailed evaluation of each practice by industry experts as depicted in appendix figure 4. Based on set-up costs, operating/maintenance costs and the speed and precision of feedback, all practices are ranked with the lowest number being the most costless practice to implement. Practices which have worked well are among the most highly ranked practices, e.g. buddy system and one-step leave policy on the second place. Looking at the criteria, one possible explanation could be that technical practices might require more cross-departmental communication to be approved and implemented (e.g. Quality, Production, Industrial Engineering and HR department), whereas practices affecting the interaction of workers on the production floor require a less intensive exchange of information between different departments, e.g. only HR

and Production department. As described in section II.2., decisions requiring several departments are often delayed or fail due to the hierarchical nature of the management structure. Hence, practices including several departments might have been more difficult to implement. Other possible explanations are the high degree of standardization of those practices (not factory-specific), the low resources required for set-up, the focus on soft skills as opposed to hard skills to maintain those practices, the reasonably high degree of self-sustainability, i.e. little effort required for maintaining those practices, and quick and easily measurable feedback about whether practices worked or not. Furthermore, we can conclude that not all practices were complementary; successfully adopting individual practices can already lead to positive effects on worker outcomes.

V.2 Spillover effects

In this section, we aim to analyze whether adjacent lines and/or control lines started to adopt the same practices implemented on treatment lines, possibly leading to an underestimation of the results in the analysis in section V.1. We focus on practices/approaches which seem to have worked well on treatment lines from the workers' point of view, i.e. the HR, wellbeing and communication index for line operators as described above.

Empirical specification: We use two empirical specifications which are illustrated in section A.3.2. in the appendix. First, we aim to measure spillovers from treatment to adjacent lines by including an interaction term for adjacent lines into equation three (as illustrated in column 2, figure 13):

$$\begin{aligned}\mathbf{I}_{\mathbf{l,f,t}} = \ & \beta_0 + \ \beta_1 \boldsymbol{EL} + \beta_2 \boldsymbol{T_{l,f}} \boldsymbol{xML} + \beta_3 \boldsymbol{T_{l,f}} \boldsymbol{xEL} + \beta_4 \boldsymbol{A_{l,f}} \boldsymbol{xML} \\ & + \beta_5 \boldsymbol{A_{l,f}} \boldsymbol{xEL} + \ \boldsymbol{\delta_f} + \ \boldsymbol{\varepsilon_{f,t}}\end{aligned}$$

where $A_{l,f}$ is an indicator equal to one if the survey respondents work on an adjacent line. $A_{l,f}xML$ and $A_{l,f}xEL$ are indicator variables equal to one if both the adjacent indicator $A_{l,f}$ and ML, resp. $A_{l,f}$ and EL are equal to one. All other parameters are specified as in equation three. Second, we aim to measure spillovers from treatment to control lines, by estimating equation three and five with different restrictions on the control group. We use only control lines on the same floor as treatment lines (see column 3, figure 13), or only control lines on a different floor than treatment lines (see column 4, figure 13). Stronger treatment effects in a regression without control lines on the same floor ("Diff") would be an indication of spillover effects: Control lines on the same floor started to adopt the same practices as on treatment lines.

Results and possible interpretation: We measure spillovers to the lines adjacent to the treatment lines by including the adjacent lines in the sample and adding interaction terms MidlineXAdjacent and EndlineXAdjacent. The results are shown in columns 2, 4, 7 and 9 in

tables 4 (HR and production practices) and 5 (wellbeing and communications). We observe positive significant spillovers to adjacent lines only with respect to communication practices (Table 5). The coefficients on MidlineXAdjacent and EndlineXAdjacent for the operator's HR and wellbeing index are positive but not significant.

The spillover regressions in Tables 4 and 5 include all of the control lines. Recall that in two-thirds of the factories, we have a control line on a different floor than the treatment line. Both because communication among managers across floors is much less frequent than communication within floors, and because some practices might be implemented at the floor level, we arguably obtain cleaner results if we exclude control lines on the same floor. The results from regressions making this exclusion are shown in columns 4, 8 and 12 of Table 6 (labeled "Diff"). We continue to find significant spillover effects to adjacent lines for the communication index, but now also find marginally significant effects for the HR index using the Endline data. Coefficients of adjacent lines for the wellbeing index go in the same direction as those of treatment lines (first negative, then positive), but stay insignificant.

Spillover effects to control lines on the same floor are only observed for the HR index. Effects on wellbeing resp. communication seem to have been restricted to treatment resp. treatment and adjacent lines without any spillovers to control lines. These results can be proven by comparing regressions with control lines on the same floor to regressions with control lines on a different floor. Effects for the HR index disappear in the former (column 1 and 3, Table 6), but are even stronger in the latter (column 2 and 4, Table 6). Effects for the communication index, however, stay significant in both specifications (columns 9 to 12, Table 6).

To summarize, HR-related practices seem to have spilled over to adjacent and control lines on the same floor, whereas communication practices seem to have improved only on treatment and adjacent lines, and worker wellbeing only on treatment lines. One possible explanation could be that HR-related practices are very well-defined, easy-to-deploy practices/tools that can be copied without intensive coordination processes, whereas communication practices and good working relationships between supervisors and workers are more of an "art" and soft skill inherent to those supervisors of treatment lines who attended the training. Additionally, some of the HR practices are by nature floor-wide and were most likely implemented on the treatment floor from the beginning, e.g. induction system and worker representatives.

VI Impact on Firm Outcomes

VI.1 Main effects

We see changes in practices related to HR, and particularly those related to induction of new workers. We also see increased communication between workers and managers. Do either of

these translate into changes in performance? We use administrative records from the factory to examine two sets of outcomes. First, we examine outcomes that we view as following directly from HR practices – exit of newly-hired workers, labor turnover among production workers more broadly, and absenteeism rates. Second, we look for effects of the training on productive efficiency and product quality.

Empirical specification: To analyze effects on firm outcomes, we define four post-training times – As training modules are grouped into four periods (see figure 2 in the appendix) with one HR and one production module per period. Each post-training period contains the time following one of the four training periods until the start of the subsequent training period. The period after the fourth training is three months and the training is spread across six months. The regressions therefore show the pattern of the outcome variables over roughly nine months following the start of the training. The treatment effects might appear after any of these training periods. We estimate the following ANCOVA specification as illustrated in figure 16 in the appendix section A.3.3:

$$\begin{aligned}\mathbf{Y_{l,f,t}} = \ & \beta_0 + \ \beta_1 \boldsymbol{Ybase}_{l,f} + \beta_2 \boldsymbol{Post2}_{l,f} + \ \beta_3 \boldsymbol{Post3}_{l,f} + \beta_4 \boldsymbol{Post4} \\ & + \ \beta_5 \boldsymbol{TxPost1}_{l,f} + \beta_6 \boldsymbol{TxPost2}_{l,f} + \ \beta_7 \boldsymbol{TxPost3}_{l,f} \\ & + \ \beta_8 \boldsymbol{TxPost4}_{l,f} + \ \gamma_t + \ \delta_f + \ \varepsilon_{f,t}\end{aligned}$$

where $Y_{l,f,t}$ is the outcome variable of interest; l indexes the line in factory f in month t. $Ybase_{l,f}$ is the baseline value of the dependent variable (average over a period of three months before training start) and $T_{l,f}$ an indicator variable equal to one for the treatment line and equal to zero for the two control lines. $PostX_{l,f}$ is an indicator variable for the period between training X and X+1. $T_{l,f}xPostX$ are indicator variables equal to one if both $T_{l,f}$ and $PostX$ are equal to one. We also include weekly time dummies γ_t to control for seasonal variation, and factory fixed effects δ_f to control for systematic differences across factories. The error term $\varepsilon_{f,t}$ is clustered at the line level. As with the survey data, we use Anderson indices of the variables related to HR and production outcomes.

Results and interpretation: Table 8 presents the main results of the effect of the training program. We find a significantly positive effect after the first and second training modules for HR-related outcome variables, but not for production-related variables. There is a non-trivial increase in efficiency, though the effect is not statistically significant. Looking at the individual outcome variables of the HR index, we observe that the effect on the HR index is mainly driven by a sharp decrease in exit rates of newly hire workers. These exit rates fall by 16 percent, and the effect remains significant even when using sharpened Q-values to account for multiple hypothesis testing. Thus, the administrative data reinforce the results reported in section V

above, in particular the strong effect on outcome variables driven by HR-related practices. Interestingly, table 8 also shows that the overall effect on the outcome index vanishes after the third and fourth training date.

VI.2 Spillover effects

In this section, we are interested in analyzing spillovers from treatment lines to adjacent and/or control lines, possibly leading to underestimated results in section VI.1. Furthermore, we aim to find out whether the disappearance of effects on the HR index after the third and fourth training modules can be explained by the fact that treatment lines stop doing the new practices or by the fact that control lines adopted new practices as well, i.e. spillover effects.

Empirical specification: The factory data allows to undertake a more detailed spillover analysis than the survey data, as it also contains outcome data for lines where we did not survey workers. Factories with more than two floors may have purposively chosen lines on floors that are different from the other floors in the factory. However, since we randomly selected the treatment line from the lines nominated by the factory, we should expect that, on average, the lines on floors with a treatment line will be identical to the lines on floors with at least one control line.

We use eight specifications to measure spillovers (see figure 15 in the appendix) as follows:

i. "*All C-lines" (ABC Type):* Treatment lines are compared with control lines in all sample factories. This is the basic specification as described in section VI. 1.
ii. *"All C-lines" (AB Type):* We exclude all factories which only have control lines on the same floor as treatment lines (factories of type "C"). As the following specifications to measure spillovers only include A and B factories, this specification serves as a better comparison than the specification with A, B and C factories of section VI.1.
iii. *"Ddiff C-lines" (AB Type):* Effects in specification ii. might be underestimated due to control lines on the same floor as treatment lines. To analyze whether results are actually confounded, we compare treatment lines only to control lines on a different floor than the treatment line.
iv. *"Adj-lines" (ABC Type):* We include adjacent lines in the basic specification i. to analyse spillover effects from treatment to adjacent lines which are located next to treatment lines on the same floor.
v. *"Adj-lines" (AB Type):* We use specification iv. as a starting point, but only include control lines on different floors than treatment lines. We expect results without control lines on the treatment floor, to which practices might have easily spilled over, to be less confounded than results of specification iv. with control lines on the treatment floor.

vi. *"Adj+Other" (AB Type):* We include adjacent and non-survey/other lines on the treatment floor and compare those to all lines on the control floor. This enables us to analyze spillover effects from treatment lines to adjacent and/or other lines on the treatment floor.

vii. *"C-floor" (AB Type):* We compare all lines on treatment floors against all lines on control floors. This allows to detect treatment effects under the circumstance that practices spilled over to the whole treatment floor.

viii. *"All floors" (AB Type):* We compare all lines on treatment floors against all lines in the factory. This specification is similar to specification iv., but less robust due to the fact that other floors without any control lines might differ from the treatment floor.

Results and interpretation: As there is no significant effect on the PR index, we only focus on the HR index in the following paragraph. All results refer to table 7. A key takeaway from the analysis is that although the results in the short-run generally hold up to controlling for spillovers, we find no significant effects for any outcome in period 4, even when we compare treatment lines to lines on other floors. While it is possible that the effects spill over even to other floors, the analysis of practices in the previous section indicates that the differences in practices remain even after the endline survey, which is roughly period 4 in the administrative data.

Excluding control lines on the same floor as treatment lines leads to positive effects on the HR index after the first, second and third training, which is then disappearing after the fourth training (see column 5). If control lines on the same floor are included in the analysis, the coefficients on the treatment indicator after the first, second and thirdtraining are still positive, but lower in size, indicating that spillovers might have taken place to control lines on the same floor (see column 3). The coefficients might not be significant due to a lack of statistical power.

We can only see positive (but insignificant) coefficients after the second and third training for adjacent lines once control lines on the same floor as treatment lines are excluded (see column 7 without exclusion and column 9 with exclusion). This might be due to spillover effects not only to adjacent, but also to control lines on the same floor.

We can confirm the adoption of new HR practices on control lines (and all other lines on the same floor), as indicated by a positive and significant coefficient after the third period (OtherXPost3 in column 11), and positive (but not significant) coefficient in the following period. The positive and significant coefficient only appears after the third training, possibly because a floor-wide spillover to *all other* lines on the floor might take some time. Adjacent lines seem to adopt new practices a bit earlier after the second training with positive (but not significant) coefficients until the third training and significantly positive coefficients after.

If we compare all lines on the treatment floor to all lines on the control floor (column 13) and to all other lines in the factory (column 15), a positive and significant coefficient appears after the second training as well, which is in line with the results separated for adjacent and other lines in column 11. The effect seems to have decreased after the fourth training date, which might be due to the fact that some lines stopped doing certain practices or some practices were dropped. However, we cannot make the conclusion that all practices were dropped, as we do not see a decrease of effects on the HR, wellbeing or communication index in the survey data (see section V.2.). Results on treatment lines are still significantly better at the "Endline"-date (used for survey data), which is even several months after the "Post4"-date (used for factory data).

Regressions with individual index components using the specifications above are shown in section A.4.2. of the appendix. For example, table 23 shows that HR spillover effects to adjacent and other lines on the treatment floor are driven by a decrease in exit rates, turnover and absenteeism. Efficiency seems to improve also on other lines on the same floor as treatment lines.

Robustness. The factory data may not accurately reflect on which line a worker is actually working, whereas we know the current line code with near certainty from the survey data. Thus, we re-run regressions from above with one subset of factories with accurate floors and another subset of factories with accurate line codes, which we identified based on matching the line code/floor in the survey data with the one in the factory data for the month of the survey to get an indication of the how accurate the factory data are. As workers mostly move across lines on the same floor, but not across lines on different floors, the subset with accurate floors only excludes five factories (match rate <75%), whereas the subset with accurate lines drops thirteen factories (match rate <60%). Running regressions with the subset of factories limits the statistical power, but shows similar patterns of results (see appendix tables 31 and 32 for the subset based on floors, and tables 33 and 34 for the subset based on line codes).

VII Conclusion

We implemented a low-cost management training program in 25 garment factories in Bangladesh. Particular features of the program were the focus on improving working conditions alongside productivity, the generic nature of the practices taught in groups, as well as the joint implementation of all practices on one single line per factory to account for complementarity of practices. We find an overall positive effect of the training program on worker and factory outcomes suggesting that outcomes can be improved not only by implementing factory-specific practices as in Bloom et al. (2013) or Iacovone et al. (2018), but also by adopting generic practices (only with "activations" at the factory level).

To find effects on worker outcomes, we analyzed detailed survey data with line operators, line supervisors/line chiefs and managers, and find positive and significant effects on HR practices, wellbeing and communication approaches for line operators. This indicates that workers on the production floor seem to have benefited from the program. Practices aimed at changing the interaction of people have worked particularly well (e.g. buddy system orone-step leave policy), whereas technical and production-related practices (e.g. job descriptions, or skills matrices) do not seem to have worked, possibly due to the higher extent of cross-departmental communication required for implementation. Due to the hierarchical nature of the management structure, decisions involving several departments require complex coordination processes leading to delays or failures of decision-making processes and possibly fewer adoptions of those practices requiring more cross-departmental communication. This also suggests that practices are not necessarily complementary and the adoption of practices changing the interaction of workers alone - which require less cross-departmental communication - can already lead to improvements of outcome variables. Besides, we find positive and significant spillover effects for HR practices to adjacent and control lines on the same floor. Effects on wellbeing resp. communication seem to be more local and restricted to treatment resp. treatment and adjacent lines only, possibly due to the higher extent of soft skills and less concrete/easy-to-implement nature of communication practices and good working relationships between supervisors and workers. In addition, some of the HR practices were most likely implemented floor-wide from the beginning, e.g. worker representatives.

To find effects on firm outcomes, we analyzed detailed factory data (salary and production data), and find positive and significant effects on HR-related outcomes, in particular driven by a decrease in exit rates (less workers leaving the factory within two months of joining). Effects on PR-related outcomes are not significant: Efficiency seems to be higher on treatment lines than control lines, but with insignificant coefficients. The disappearance of the positive effect on HR-related outcomes on treatment lines after the third training module can be explained by spillover effects of practices to other lines on the same floor as treatment lines. In particular, we can observe a decrease in exit rates, turnover and absenteeism on treatment floors. Spillover effects on PR-related outcome variables are weaker. Efficiency seems to improve on other lines on the same floor as treatment lines, whereas alteration rates are not lower on treatment than control lines at all. All effects on both HR and PR outcomes seem to vanish after the last training, possibly due to the discontinuation of certain practices. As survey indices are still positively significant at Endline (which is several months after the fourth and last training), it is likely that at least some practices have been kept.

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Table 1: Summary Statistics

	Mean	SD	Median	Min.	Max.	Obs.
Salary data						
Employees per firm	1873.95	972.45	1706.00	130.00	3707.00	5010
Employees per line	53.61	26.25	50.00	1.00	152.00	4740
Share of female operators	0.88	0.11	0.89	0.00	1.00	4943
Tenure (in months)	32.30	16.20	28.88	1.00	116.84	4948
Exit rate (within two months)	0.24	0.34	0.00	0.00	1.00	4948
Turnover rate	0.06	0.11	0.03	0.00	1.00	4948
Absenteeism rate	0.03	0.03	0.02	0.00	0.49	4332
Promotion rate	0.02	0.08	0.00	0.00	1.00	4948
Production data						
Standard minute value	21.08	12.50	18.62	3.23	60.00	9669
Daily output	4613.91	5955.72	2796.00	0.00	27460.00	24519
Running days	11.64	15.92	6.00	0.00	93.00	17558
Efficiency	0.41	0.17	0.39	0.09	0.96	9354
Alteration rate	0.05	0.06	0.04	0.00	0.40	20733
Reject rate	0.001	0.004	0.000	0.000	0.026	20733

Notes: Table 1 shows the summary statistics of key variables from the monthly salary and weekly production data over a time period of three months before the first training and three months after the last training. Exit rate is the share of workers leaving the factory within two months of joining. Turnover rate is the share of workers leaving the factory with a tenure of more than two months. Absenteeism rate is calculated by dividing the number of absent days by the total number of absent and present days per month. Promotion rate measures the share of workers who got promoted within a given month. The standard minute value proxies the complexity of a style and is the sum of the time, in seconds, it takes to perform each sewing operation to assemble one piece of the style. To calculate daily efficiency per line, daily output is multiplied by the SMV, and then divided by total labor input on that line and day measured in worker-minutes. Running days are the number of days a style is produced per line. To measure quality, we use alteration and reject rates, which are the number of alterations and rejects, respectively, divided by the total number of garments checked.

Table 2: Balance Table

	Control	Treatment	Adjacent	Non-survey	se(C-T)	p(C-T=0)	se(C-A)	p(C-A=0)	se(C-Ns)	p(C-Ns=0)	N
Salary Data											
Share of female operators	0.87	0.83	0.83	0.90	(0.03)	0.24	(0.01)	0.24	(0.01)	0.04	1124
Tenure (in months)	36.90	38.70	37.83	33.74	(5.56)	0.75	(2.60)	0.86	(1.40)	0.42	1127
Exit rate	0.20	0.16	0.16	0.21	(0.06)	0.57	(0.03)	0.45	(0.02)	0.86	1127
Turnover rate	0.08	0.04	0.05	0.08	(0.02)	0.08	(0.01)	0.11	(0.01)	0.96	1127
Absenteeism rate	0.03	0.03	0.03	0.03	(0.01)	0.75	(0.00)	0.72	(0.00)	0.46	974
Promotion rate	0.01	0.01	0.01	0.03	(0.01)	0.68	(0.00)	0.96	(0.00)	0.02	1127
Production Data											
Standard minute value	23.65	22.33	20.80	18.61	(3.47)	0.71	(1.62)	0.38	(0.88)	0.06	3083
Daily output	3750.59	3961.26	3401.75	4350.53	(678.45)	0.76	(300.33)	0.56	(167.49)	0.23	6308
Running days	9.31	11.89	8.99	10.18	(2.15)	0.23	(1.03)	0.88	(0.41)	0.48	4501
Efficiency	0.43	0.47	0.44	0.44	(0.05)	0.46	(0.02)	0.80	(0.01)	0.87	2903
Alteration rate	0.07	0.07	0.09	0.06	(0.02)	0.78	(0.01)	0.21	(0.00)	0.30	5144
Reject rate	0.00	0.00	0.00	0.00	(0.00)	0.90	(0.00)	0.63	(0.00)	0.87	5144

Notes: Adjacent lines are lines next to treatment lines. Non-survey lines are all lines in the factory which are neither control, treatment nor adjacent lines, i.e. all lines on which no surveys had been conducted. They can even be on floors without any control, treatment or adjacent lines. (C-T), (C-A) and (C-Ns) indicate the difference of average values of control lines from those of treated lines, adjacent lines or non-survey lines respectively, with *se* and *p* showing the standard deviation and p-value of the difference. The data is at the line level and includes all observations within two months prior to the month of the training start. The p-value of the F-statistic of the omnibus balance test for control and treated lines using salary data is 0.50. The p-value of the F-statistic of the omnibus balance test for control and treated lines using production data is 1.37.

Table 3: Balance Table

	Control	Treatment	Adjacent	se(C-T)	p(C-T=0)	se(C-A)	p(C-A=0)	N
Line Operators								
HR	-0.00	0.22	-0.19	(0.12)	0.08	(0.06)	0.15	310
Induction	0.04	0.08	-0.17	(0.13)	0.75	(0.07)	0.13	310
Paired with operator	-0.10	0.25	-0.09	(0.13)	0.01	(0.08)	0.95	310
Promotion beliefs	0.03	0.09	-0.12	(0.11)	0.56	(0.07)	0.26	310
PR	-0.01	0.11	-0.03	(0.14)	0.41	(0.06)	0.84	310
Efficiency of instructions	-0.01	0.11	-0.03	(0.14)	0.41	(0.06)	0.84	310
Wellbeing	-0.00	0.02	-0.06	(0.12)	0.86	(0.07)	0.67	310
Conflict with managers	0.12	0.06	-0.20	(0.16)	0.71	(0.08)	0.07	306
Self assessment	-0.12	-0.09	0.18	(0.12)	0.77	(0.07)	0.04	310
Peer assessment	-0.06	0.06	-0.02	(0.13)	0.39	(0.07)	0.80	309
Communication	0.00	0.37	0.32	(0.17)	0.03	(0.07)	0.02	310
Initation of meetings	-0.08	0.07	0.02	(0.15)	0.30	(0.07)	0.48	310
Knowledge about supervisor	-0.23	0.15	0.14	(0.14)	0.01	(0.07)	0.01	310
Line Supervisors / Line Chiefs								
HR	-0.03	-0.18	0.17	(0.17)	0.39	(0.07)	0.17	252
Last leave request	-0.03	-0.18	0.17	(0.17)	0.39	(0.07)	0.17	252
PR	-0.00	-0.08	0.11	(0.18)	0.67	(0.09)	0.54	252
File checks	-0.02	-0.15	0.01	(0.18)	0.49	(0.09)	0.84	252
Flags	-0.18	0.06	-0.08	(0.19)	0.22	(0.07)	0.48	252
Stopwatch	-0.15	0.10	0.02	(0.17)	0.14	(0.08)	0.29	252
Efficiency of processes	0.00	-0.31	0.12	(0.14)	0.03	(0.08)	0.43	252
Reduction of movements	0.02	-0.23	0.09	(0.15)	0.09	(0.08)	0.67	252
Bottleneck solutions	0.09	-0.04	-0.00	(0.18)	0.47	(0.09)	0.60	252
Wellbeing	-0.00	0.06	-0.16	(0.19)	0.75	(0.09)	0.35	252
Collaboration	0.02	0.06	-0.19	(0.17)	0.83	(0.08)	0.19	251
Self assessment	-0.02	0.17	-0.11	(0.18)	0.28	(0.07)	0.53	252
Peer assessment	0.00	-0.08	0.11	(0.18)	0.66	(0.08)	0.52	252
Suggestions	0.00	-0.03	-0.05	(0.17)	0.84	(0.08)	0.72	251
Communication	0.00	-0.06	-0.11	(0.16)	0.71	(0.07)	0.46	252
Initiation of meetings	0.06	-0.03	-0.00	(0.15)	0.54	(0.07)	0.67	252
Communication of targets	-0.08	-0.05	-0.09	(0.17)	0.86	(0.07)	0.96	252
Knowledge about operators	0.10	-0.06	0.00	(0.18)	0.39	(0.08)	0.53	252
Performance meetings	-0.03	0.23	-0.04	(0.22)	0.25	(0.10)	0.96	146
Line target meetings	0.00	0.02	-0.12	(0.24)	0.95	(0.11)	0.58	135
Operator target meetings	-0.18	-0.01	-0.04	(0.21)	0.43	(0.11)	0.53	95

Notes: (C-T) resp. (C-A) indicates the difference of average values of control lines from those of treated lines resp. adjacent lines, with *se* and *p* showing the standard deviation and p-value of the difference. We use HR, PR, Wellbeing and Communication indices at Baseline. Due to a different composition of indices at Baseline and Midline/Endline, we also show individual index components which are available at Baseline.

Table 4: HR and PR index (all control lines)

	HR Index					PR Index				
	(1) LO	(2) LO	(3) LSLC	(4) LSLC	(5) MG	(6) LO	(7) LO	(8) LSLC	(9) LSLC	(10) MG
Endline	-0.063	-0.15	-0.086	-0.23		-0.033	-0.0025	-0.12	-0.15	
	(0.30)	(0.28)	(0.31)	(0.30)		(0.27)	(0.24)	(0.27)	(0.24)	
MidlineXTreated	0.46	0.52*	0.20	0.035		0.16	0.15	0.33	0.37	
	(0.31)	(0.28)	(0.28)	(0.25)		(0.30)	(0.29)	(0.30)	(0.30)	
EndlineXTreated	0.30	0.44	0.0041	0.011		0.24	0.15	0.18	0.20	
	(0.31)	(0.32)	(0.31)	(0.31)		(0.30)	(0.28)	(0.36)	(0.37)	
MidlineXAdjacent		0.33		-0.51**			-0.36		-0.50*	
		(0.28)		(0.23)			(0.28)		(0.27)	
EndlineXAdjacent		0.25		-0.067			-0.090		-0.36	
		(0.27)		(0.28)			(0.31)		(0.26)	
Treated					0.24**					-0.32**
					(0.11)					(0.12)
Constant	0.15	0.18	0.12	0.25**	-0.11**	0.046	0.011	0.16	0.12	0.15**
	(0.18)	(0.17)	(0.15)	(0.13)	(0.053)	(0.14)	(0.18)	(0.20)	(0.17)	(0.056)
Observations	126	209	128	219	247	126	209	128	219	247
Line clusters	63	106	65	116	25	63	106	65	116	25
p: MLxT=MLxA		0.53		0.055			0.084		0.0086	
p: ELxT=ELxA		0.50		0.77			0.43		0.087	

Notes: Table 4 shows the main treatment effects on the HR index and PR index. All indices are based on Anderson (2008). Index components are different for Line operators (LO), Line supervisors/line chiefs (LSLC) and managers (MG) (see section A.2.4 in the appendix). Midline and Endline are indicator variables equal to one if responses are from midline and endline surveys, respectively. Adjacent lines are lines next to treatment lines. MidlineXTreated and EndlineXTreated are indicator variables equal to one if both the treatment indicator and the respective survey indicator are equal to one. MidlineXAdjacent and EndlineXAdjacent are indicator variables equal to one if the adjacent line indicator and the respective survey indicator are equal to one. Regressions include factory fixed effects and the error term is clustered at the line level. p-values are shown at the bottom of the table for testing the equality of coefficients on treatment and adjacent lines at Midline and Endline (MLxT=MLxA; ELxT=ELxA). Standard errors are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Wellbeing and communication index (all control lines)

	Wellbeing Index					Communication Index				
	(1) LO	(2) LO	(3) LSLC	(4) LSLC	(5) MG	(6) LO	(7) LO	(8) LSLC	(9) LSLC	(10) MG
Endline	0.58**	0.53**	0.46	0.50		0.54**	0.54**	-0.024	-0.10	
	(0.23)	(0.21)	(0.30)	(0.31)		(0.23)	(0.21)	(0.30)	(0.26)	
MidlineXTreated	-0.23	-0.26	0.13	0.15		1.07***	0.98***	0.045	-0.038	
	(0.31)	(0.29)	(0.26)	(0.30)		(0.24)	(0.23)	(0.26)	(0.21)	
EndlineXTreated	0.41*	0.47*	0.20	0.20		1.13***	0.98***	0.29	0.24	
	(0.24)	(0.24)	(0.26)	(0.27)		(0.28)	(0.27)	(0.36)	(0.36)	
MidlineXAdjacent		0.022		-0.094			1.22***		-0.54**	
		(0.29)		(0.30)			(0.26)		(0.22)	
EndlineXAdjacent		0.31		-0.0039			0.52**		0.23	
		(0.27)		(0.31)			(0.26)		(0.27)	
Treated					-0.039					0.14
					(0.16)					(0.16)
Constant	-0.34*	-0.31	-0.16	-0.20	0.018	-0.14	-0.10	0.20	0.27*	-0.065
	(0.19)	(0.19)	(0.19)	(0.22)	(0.073)	(0.16)	(0.16)	(0.17)	(0.15)	(0.072)
Observations	126	209	128	219	247	128	209	128	219	247
Line clusters	63	106	65	116	25	65	106	65	116	25
p: MLxT=MLxA		0.35		0.37			0.39		0.016	
p: ELxT=ELxA		0.59		0.48			0.14		0.96	

Notes: Table 5 shows the main treatment effects on the Wellbeing and communication index. All indices are based on Anderson (2008). Index components are different for Line operators (LO), Line supervisors/line chiefs (LSLC) and managers (MG) (see section A.2.4 in the appendix). p-values are shown for testing the equality of coefficients on treatment and adjacent lines at Midline and Endline (MLxT=MLxA; ELxT=ELxA). Standard errors are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Spillover analysis (line operators only)

	HR Index				Wellbeing Index					Communication Index		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Same	Diff	Same	Diff	Same	Diff	Same	Diff	Same	Diff	Same	Diff
Endline	0.10	-0.14	0.018	-0.31	0.55	0.59**	0.42	0.51*	0.99**	0.34	1.00**	0.32
	(0.44)	(0.41)	(0.41)	(0.35)	(0.45)	(0.28)	(0.39)	(0.26)	(0.48)	(0.25)	(0.44)	(0.22)
MidlineXTreated	0.23	0.56	0.094	0.70**	0.032	-0.34	-0.31	-0.28	1.35***	1.01***	1.22***	0.85***
	(0.44)	(0.36)	(0.40)	(0.32)	(0.32)	(0.39)	(0.33)	(0.35)	(0.38)	(0.27)	(0.34)	(0.25)
EndlineXTreated	-0.089	0.47	-0.16	0.78**	0.70**	0.29	0.53*	0.47	0.95***	1.27***	0.77**	1.07***
	(0.45)	(0.35)	(0.44)	(0.35)	(0.33)	(0.31)	(0.32)	(0.30)	(0.35)	(0.35)	(0.38)	(0.30)
MidlineXAdjacent			-0.10	0.50*			-0.022	-0.013			1.47***	1.09***
			(0.41)	(0.30)			(0.33)	(0.35)			(0.38)	(0.27)
EndlineXAdjacent			-0.36	0.58*			0.39	0.29			0.30	0.61**
			(0.42)	(0.30)			(0.33)	(0.33)			(0.40)	(0.26)
Treated												
Constant	0.37	0.047	0.57*	0.036	-0.53**	-0.28	-0.27	-0.29	-0.49*	-0.0035	-0.38	0.058
	(0.34)	(0.24)	(0.32)	(0.21)	(0.21)	(0.26)	(0.25)	(0.26)	(0.29)	(0.19)	(0.29)	(0.18)
Observations	76	104	159	187	76	104	159	187	78	106	159	187
Line clusters	38	52	81	95	38	52	81	95	40	54	81	95
p: MLxT=MLxA			0.51	0.52			0.33	0.38			0.42	0.40
p: ELxT=ELxA			0.49	0.49			0.64	0.57			0.13	0.15

Notes: Table 6 shows regression results for HR, Wellbeing and Communication index based on survey data from line operators. "Same" indicates that only control lines on the same floor as treatment lines are included, whereas "Diff" indicates that only control lines on a different floor than treatment lines are included. All indices are based on Anderson (2008). p-values at the bottom are shown for testing the equality of coefficients on treatment and adjacent lines at Midline and Endline (MLxT=MLxA; ELxT=ELxA). Standard errors are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Summary table of overall effects using different factory types and lines

	All C-lines (ABC)		All C-lines		Diff C-lines		Adj-lines (ABC)		Adj-lines		Adj+Other		C-floor		All floors	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	HR	**PR**	**HR**	**PR**	**HR**	**PR**	**HR**	**PR**	**HR**	**PR**	**HR**	**PR**	**HR**	**PR**	**HR**	**PR**
TreatedXPost1	0.44*	0.041	0.21	0.0020	0.28	0.016	0.45*	0.037	0.29	0.016	0.20	0.045	0.11	0.12	0.045	0.044
	(0.24)	(0.19)	(0.21)	(0.23)	(0.22)	(0.24)	(0.23)	(0.19)	(0.21)	(0.23)	(0.13)	(0.22)	(0.095)	(0.10)	(0.091)	(0.093)
TreatedXPost2	0.44*	0.0011	0.45	-0.0042	0.49	-0.057	0.46**	-0.00032	0.51	-0.050	0.47	-0.12	0.12	-0.023	0.27	0.0044
	(0.22)	(0.13)	(0.44)	(0.15)	(0.45)	(0.15)	(0.21)	(0.13)	(0.42)	(0.15)	(0.35)	(0.13)	(0.20)	(0.060)	(0.18)	(0.055)
TreatedXPost3	-0.044	0.012	0.40	0.0047	0.45	-0.0089	0.018	0.010	0.46	-0.0043	0.60	-0.053	0.69**	-0.035	0.81***	0.016
	(0.41)	(0.14)	(0.49)	(0.16)	(0.51)	(0.17)	(0.40)	(0.14)	(0.52)	(0.17)	(0.50)	(0.15)	(0.30)	(0.072)	(0.30)	(0.067)
TreatedXPost4	-0.13	0.093	-0.20	0.088	-0.17	0.070	-0.12	0.093	-0.15	0.084	-0.054	0.076	0.11	0.070	0.12	0.052
	(0.16)	(0.11)	(0.23)	(0.12)	(0.23)	(0.12)	(0.15)	(0.11)	(0.22)	(0.12)	(0.19)	(0.10)	(0.074)	(0.051)	(0.073)	(0.049)
AdjacentXPost1							0.16	0.062	-0.022	0.011	-0.13	0.055				
							(0.19)	(0.15)	(0.22)	(0.19)	(0.16)	(0.16)				
AdjacentXPost2							-0.014	0.096	0.39	0.046	0.34	-0.054				
							(0.24)	(0.10)	(0.44)	(0.11)	(0.38)	(0.084)				
AdjacentXPost3							-0.35	-0.070	0.33	-0.00082	0.41	-0.049				
							(0.56)	(0.13)	(0.53)	(0.15)	(0.48)	(0.13)				
AdjacentXPost4							0.0061	0.059	0.12	0.036	0.20*	0.042				
							(0.11)	(0.094)	(0.14)	(0.11)	(0.10)	(0.084)				
OtherXPost1											0.14	0.18				
											(0.11)	(0.12)				
OtherXPost2											-0.067	0.0054				
											(0.22)	(0.067)				
OtherXPost3											0.86***	-0.042				
											(0.33)	(0.075)				
OtherXPost4											0.13	0.084				
											(0.085)	(0.057)				
Base	0.094	0.31***	-0.025	0.28***	-0.091	0.28***	0.061	0.26***	-0.11	0.27***	0.097**	0.10***	0.100***	0.11***	0.057	0.18***
	(0.076)	(0.096)	(0.11)	(0.097)	(0.12)	(0.096)	(0.071)	(0.060)	(0.096)	(0.066)	(0.038)	(0.027)	(0.038)	(0.027)	(0.039)	(0.040)
Observations	289	2069	200	1631	188	1511	469	3397	297	2486	1080	8107	1080	8107	1245	9689
R^2	0.34	0.32	0.34	0.33	0.32	0.32	0.29	0.31	0.31	0.32	0.26	0.31	0.25	0.31	0.21	0.29
Line clusters	51	68	35	52	33	48	83	112	52	79	193	257	193	257	224	306
Control Mean	0.024	-0.047	0.048	0.022	0.073	0.017	0.042	-0.047	0.17	-0.0066	0.077	0.045	0.0095	0.0011	0.018	-0.0011
Factory Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Notes: Table 7 shows the main treatment effects on firm-related outcome variables, i.e. the HR and PR index. All indices are based on Kling, Liebman & Katz (2007). Columns 1 to 6 show regression results of treatment lines (T) compared to control lines, out of which columns 3 to 6 exclude factories with control lines only on the same floor as treatment lines. Columns 7 to 10 compare treatment lines (T) and adjacent lines (A) to control lines, out of which columns 9 and 10 exclude factories with control lines only on the same floor as treatment lines and only keep control lines on control floors. Columns 11 and 12 compare treatment lines (T), adjacent lines (A) and and other lines on the treatment floor (O) to all lines on the control floor. Columns 13 and 14 compare treatment floors to the control floors, and columns 15 and 16 against all lines on all other floors in the factory. Regression results for individual index components are displayed in section A.4.2. Standard errors are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Overall effects, All C-lines (ABC) (columns 1 and 2 in summary table 7)

	Index		**HR Variables**				**PR Variables**		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	HR	**PR**	Exit	Turnover	Absenteeism	Promotion	Efficiency	Alterations	Rejects
TreatedXPost1	0.436*	0.041	-0.076	-0.030*	-0.002	0.012	0.037	0.000	0.000
	(0.239)	(0.187)	(0.061)	(0.017)	(0.008)	(0.014)	(0.023)	(0.010)	(0.001)
			{0.497}	{0.449}	{0.793}	{0.719}	{0.525}	{1.000}	{1.000}
TreatedXPost2	0.444*	0.001	-0.162**	-0.035	0.001	0.002	0.058	0.006	0.000
	(0.222)	(0.133)	(0.068)	(0.022)	(0.006)	(0.017)	(0.037)	(0.009)	(0.000)
			{0.088}	{0.204}	{0.836}	{0.836}	{0.641}	{1.000}	{1.000}
TreatedXPost3	-0.044	0.012	0.181	0.001	0.000	0.029	0.021	0.001	-0.000
	(0.407)	(0.141)	(0.169)	(0.016)	(0.008)	(0.022)	(0.042)	(0.010)	(0.000)
			{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}
TreatedXPost4	-0.133	0.093	0.000	0.012	0.001	-0.006	0.019	0.000	-0.001**
	(0.156)	(0.108)	(0.039)	(0.014)	(0.006)	(0.005)	(0.026)	(0.008)	(0.000)
			{1.000}	{1.000}	{1.000}	{1.000}	{0.928}	{1.000}	{0.065}
Observations	289	2069	289	289	246	289	846	2068	2068
Clusters	51	68	51	51	43	51	35	68	68
R^2	0.34	0.32	0.28	0.28	0.52	0.23	0.54	0.28	0.35
Control mean	0.02	-0.05	0.23	0.06	0.04	0.01	0.38	0.06	0.00
Factory FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

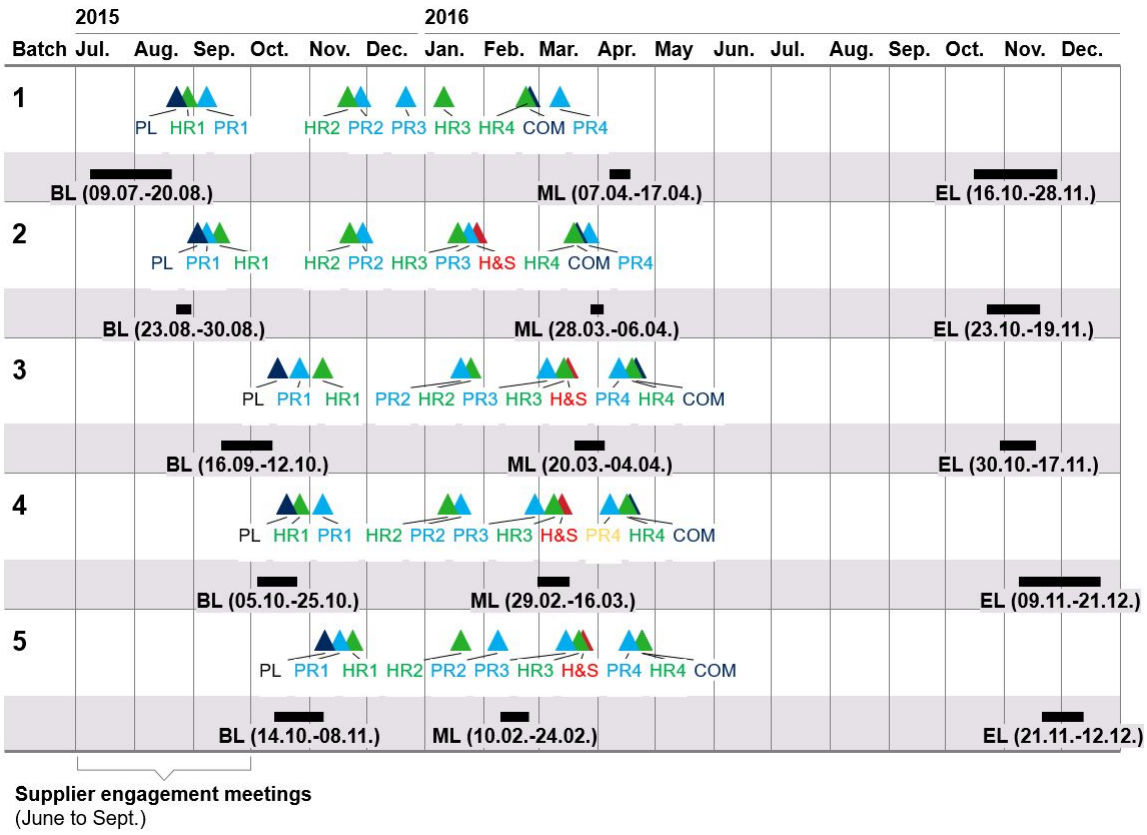
Notes: Table 8 shows treatment effects on HR and PR indices in column one and two, which refer to columns 1 and 2 in the summary table 7, and individual index components (exit, turnover, absenteeism and promotion rates for HR index, and efficiency, alteration rates and reject rates for PR index). Regressions include time fixed effects to control for seasonal variations. We use weekly time dummies for the PR index and corresponding index components, and monthly time dummies for the HR index and corresponding index components. Factory fixed effects are also included to control for systematic differences across factories. The error term is clustered at the line level. False discovery rate-adjusted p-values, also known as q-values, for HR-related and PR-related outcome families were used to adjust for multiple outcome variables. They are shown in curly brackets. We use the 'sharpened q value' approach based on the Benjamini-Hochberg procedure (Benjamini et al., 2006). For simplicity, the regression table does not report coefficients on the $PostX$ variables for $X = (1, 4)$, and the baseline value of the dependent variables.

A Main Appendix

A.1 Description of intervention

A.1.1 Training overview and timeline

Figure 1: Timeline



The training was based upon a program developed by Deutsche Gesellschaft für International Zusammenarbeit ("GIZ"). It is called the „Benefits for Business and Workers initiative", a management consulting service which offers training and practical expert advice to key factory managers on productivity and human resource management practices. The initiative was jointly carried out by Impactt Ltd, a UK-based consultancy, and Rajesh Bheda Consulting, an Indian-based consultancy focusing on enhancing the competitiveness in the fashion industry. The program campaigns with the statement that "BBW helps transform factories into good businesses providing great jobs for their workers by developing a skilled, well-paid, safe and loyal workforce". On the one hand, businesses should have benefits from the program, e.g. reduced absenteeism and worker turnover, more motivated workers and managers, increased productivity, savings through quality improvements and reduced wastage. On the other hand, workers should have benefits from the program, e.g. increased job satisfaction, ability to raise and resolve issues, more skills, access to promotion, higher income and lower working hours. Hence, it does not only consist of technical interventions to directly improve productivity, but

also of HR interventions to indirectly increase productivity, e.g. via lower absence rates and lower turnover resulting of enhanced well-being of workers. The overall aim of the program is to develop solid and robust systems to make sustained productivity and quality improvements, while improving worker's job quality.

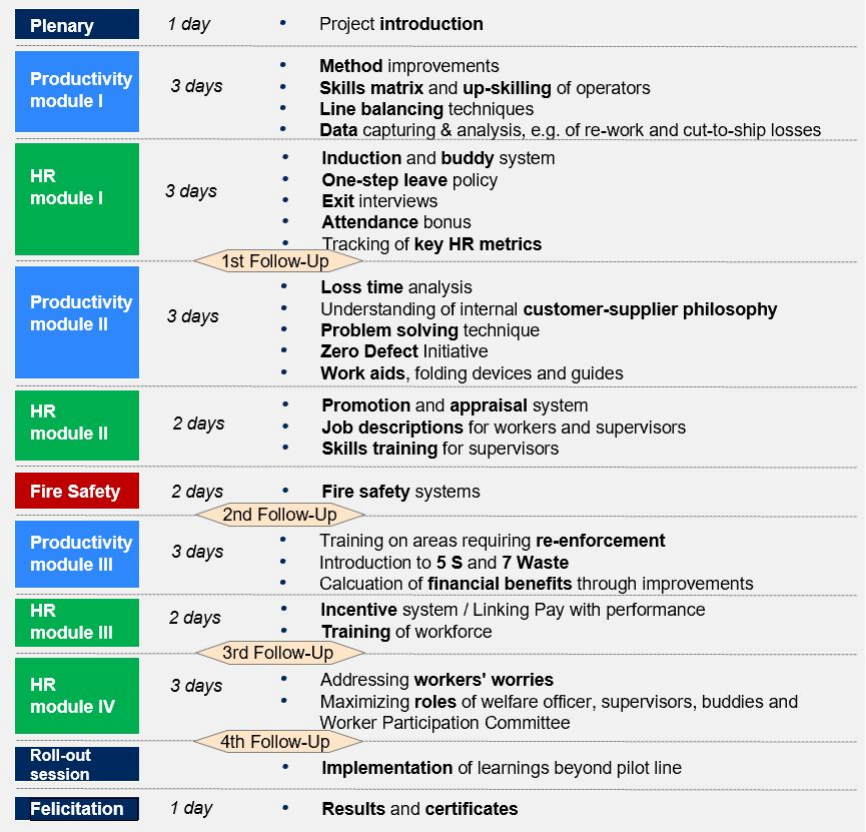
The program provided 24 days of group classroom-based training plus 4 follow-up visits and a roll-out session extended over a period of 6-8 months. The follow-up visits were scheduled regularly between training sessions to review progress and clarify content. The 1-day roll-out session served to roll out what they have learned to three other lines within the factory. At the end of the programme, factories could continue to roll out the most effective strategies on further lines.

Figure 1 shows a timeline with survey and training dates. Before each training start date, Baseline surveys were conducted (abbreviated as "BL"). Around the period of the third and fourth modules, Midlines surveys were conducted (abbreviated as "ML"). Endline surveys were carried out approximately six months after the last training date (abbreviated as "EL"). The order of the training modules slightly varied from batch to batch, e.g. batch one and four were first taught human resource module one (HR1), whereas batch two, three and five were first taught production module one (PR1). In total, the training consisted of a plenary sessions to kick off the program, four HR and four PR modules, a Health and Safety module, and a Communication module.

A.1.2 Detailed training content

In the plenary session (1 day), participants were supposed to get to know each other and understand the requirements of the program. The first productivity module (3 days) was aimed at strengthening industrial engineering concepts and basic quality tools. In particular, this module taught concepts about method study, skills matrix, capacity study, line balancing, up-skilling operators, computation of productivity and quality baseline performance, rework capturing and analysis, cut to ship losses and asked participants to develop future action plans. The first human resource module (3 days) was aimed at empowering the HR department and review HR basics. In particular, it taught concepts about one-step leave policies, absenteeism policies, attendance bonus, buddy systems, exit interviews and exit registers, and instructions to track key HR metrics. The second productivity module (3 days) aimed at strenghtening problem solving abilities and initiating Zero Defect Operators. Participants learned about methods to capture loss time, 5 Why approach, incl. cause and effect diagrams, internal customer-supplier orientation, and zero defect initiatives. The second human resource module (2 days) aimed at empowering supervisors to take on more HR responsibilities and improving teamwork. Specific training contents were job descriptions for workers and supervisors, team work, positive attitude towards work and root cause analysis, promotion and appraisal system for workers and supervisors, ways to engage middle managers and supervisor skills and training development. The Fire and Safety module (2 days) was aimed at improving problem solving skills and how to make better decisions. It taught about current fire safety systems, barriers to effective systems, what a great safety system looks like, tools and techniques for strengthening current systems, what to consider in building safety and how to make better decisions. The third productivity module (3 days) was aimed at teaching computation of financial benefits

Figure 2: Training modules



through improvements and need based training formats. In particular, it introduced methods to calculate improvements and financial benefits, gave training on areas requiring reinforcement, and taught the 5S workplace organization method (Sort, Set in Order, Shine, Standardize and Sustain), one of Toyota's lean manufacturing concept. The third human resource module (2 days) was aimed at concepts to get the best out of workers and provide them with the right skills, i.e. how to train workers, to develop a training plan, to decide upon promotions and link pay to performance, to develop production incentives and financial calculations. Participants also had to come up with a draft for improved production incentive schemes. The fourth human resource module (2 days) was aimed at getting the best out of workers and provide them with the right piece of mind, i.e. how to addess workers' worries and how to maximize the role of welfare officer, supervisors, buddies and worker participation committee. It also taught how to train workers and representatives of the worker participation committee. Participants were required to share progress and challenges at the beginning and to develop future action plans at the end of each module. Follow-ups were conducted four times (1 day each, so 4 days in total) to ensure a smooth implementation and to clarify any doubts. During the roll-out session (1 day), participants had to agree about the best ways to roll out the learnings of the pilot line to the rest of the factory. The felicitation session (1 day) was aimed at reviewing the progress, celebrating success, distributing certificates and agreeing upon forward action plans. Please see a summary of the modules in figure 2.

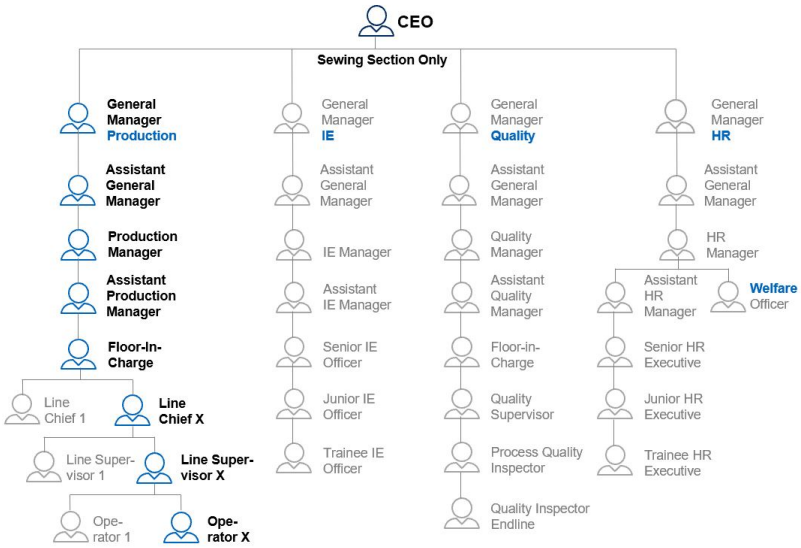
Figure 3: Evaluation of practices

				Set-up costs			Operating/maintenance costs			Speed and precision of feedback/effects	
Category	**Practice**	**Description**	**Rank**	**Number of depart-ments involved**	**Degree of standar-dization**	**Resou rces for set-up**	**Number of users**	**Core skills et**	**Degree of self-sustaina-bility**	**Speed of feedback**	**Measu-rability of effects**
HR	Induction system	- Show important factory locations (e.g. fire exit, welfare office) to newly hired operators - Hold conversation with welfare officers on first day of joining to reduce any discomfort	1	HR	high	low	Welfare Officer, HR Manager, PR Manager, Line Chief, Supervisor	Soft skills	medium	short-term	easy
	Buddy system	- Assign newly hired operators to more experienced operators to discuss any work-related issues - Seat newly hired operators next to more experienced operators	2	PR, HR	high	low	PR Manager, Line Chief, Supervisor, Welfare officer, HR Manager,	Soft skills	medium	short-term	easy
	One-step leave policy	- Ask operators to directly request leave from supervisor to reduce bureaucracy and improve the balance between worker well-being and workplace demand	2	PR, HR	high	low	PR Manager, Line Chief, Supervisor, HR Manager, HR Executive	Soft skills	medium	short-term	easy
	Worker representatives	- Assign one operator as worker representative to communicate concerns to management from the workers' point of view	4	PR, HR	high	high	Supervisor, Line Chief, Production Manager, Quality Supervisor, Quality Manager, HR Manager, Welfare Officer	Soft skills	medium	Imme-diate	medium
	Promotion policy	- Introduce clear KPIs to identify eligible workers for promotion - Make promotion policy transparent to workers	9	PR, HR, IE	medium	high	HR Manager, HR Executive, PR Manager, Line Chief, Supervisor, Quality Manager, Quality Controller, Quality Supervisor, IE Manager, IE Executive	Hard skills	low	long-term	medium
	Job descriptions	- Develop job descriptions for subordinates - Periodically review job descriptions with manager to ensure an understanding of mutual expectations, and to assess the achievement of goals and objectives	7	PR, HR, IE, QL	high	high	PR Manager, HR Manager, Quality Manager, IE Manager	Hard skills	medium	long-term	difficult
	Exit interviews	- Conduct exit interviews with workers leaving the factory - Discuss outcomes of exit interviews and identify patterns - Make changes in practices as a result of exit interviews	1	HR	high	low	Welfare Officer, HR Manager, PR Manager, Line Chief, Supervisor	Soft skills	medium	short-term	easy
	Attendance bonus	- Introduce attendance bonus - Make attendance bonus policy transparent to workers	3	HR	high	high	Welfare Officer, HR Executive, HR Manager	Soft skills	high	long-term	easy
PR	Up-skilling	- Assess skills gaps and prepare training plan to fill the gap - Implement training plan and record progress to analyse performance and quality of the training	8	PR, IE, Training	medium	high	Supervisor, Line Chief, Production Manager, IE Manager, IE Executive, Training Manager	Hard skills	low	long-term	medium
	Skills tests	- Conduct skills test once a new worker joined and regularly with existing workers - Maintain skills matrices to identify training areas	5	IE	medium	low	Supervisor, Line Chief, Production Manager, Quality Supervisor, IE Manager, IE Executive	Hard skills	medium	long-term	difficult
	Quality practices	- Develop zero defect operators who ensure to maintain required quality levels - Maintain files of checked garments - Use visual aids for quality inspections	6	PR, QL	medium	high	Supervisor, Line Chief, Quality Supervisor, Production Manager, Quality Manager	Hard skills	low	long-term	medium
	Production-related practices and tools	- Use stopwatch - Change line layout and set targets - Solve bottlenecks	4	PR, IE	high	high	Supervisor, Line Chief, Production Manager, IE Manager, IE Executive	Hard skills	low	Imme-diate	easy
Commu-nication	Communication practices	- Communicate targets to workers - Discuss work-related matters with managers and workers, e.g. turnover, quality, efficiency, or up-skilling - Discuss issues that affect workers	9	PR, HR, IE, QL	medium	high	Supervisor, Line Chief, Production Manager, Quality Supervisor, Quality Controller, Quality Manager, IE executive, IE Manager	Soft skills	low	long-term	difficult

Notes: Figure 3 shows an evaluation of each practice taught during the training program. Criteria to evaluate set-up costs are the number of departments involved, degree of standardization/formalization from low (not standarized), medium (somewhat standardized) to high (very standardized), and resources required for set-up in terms of time from low (0-2 days), medium (2-10 days) to high (>10 days). Criteria to evaluate operating/maintenance costs are the number of users of the practice, the core skillset (soft or hard skill), and the degree of self-sustainability/frequency of required effort from low (continuous effort), medium (from time to time) to high (one-time effort). Criteria to evaluate the speed and precision of feedback/effects are speed of feedback from immediate (within one week), short-term (within one month) to long-term (more than one month), and measurability of effects from easy, medium to difficult. Points are given for each criteria, which are summed up to assess the rank of all practices.

A.1.3 Organisational structure in Bangladeshi garment factories

Figure 4: Chains of command



Notes: Figure 4 shows the management structure of a typical garment factory in Bangladesh. Note that not all factories have dedicated Industrial Engineering ("IE") departments.

Generally speaking factories specialise in the production of a particular family of garment. The sample of factories that participated in this project produced light knit and woven garments. These factories produce t-shirts, jeans, jackets and other similar products characterised by the type of fabric used. These factories do not produce knitted goods such as sweaters, nor goods utilising specialised techniques such as the metal work that is typical of lingerie producers. Whilst the method of organising the production of light knit and woven garments differs throughout the territories that produce those goods, it is fair to say that in Bangladesh the overwhelming model is that of the production line whereby cut cloth enters at the start of the line and moves sequentially with finished products exiting at the end of the line. Depending on the complexity of the garment the line will typically have between 15 and 70 sewing machine operators and five to 15 helpers, although there is considerable variation across factories in the ratio of helper to operators. The supervisory structure on the production lines tends to depend upon a variety of factors, the most pertinent of which is the number of machines. A line of 40 machines will typically have two supervisors and one line chief who may be in charge of one to three lines. The duties of line supervisors are various and include motivating workers, teaching workers new production techniques, identifying quality issues and working with the IE department to solve problems that may cause bottlenecks on the line. Some factories have supervisors that work across multiple lines, and some do not have line chiefs; however, the majority of cases are as described above. Line supervisors and line chiefs are part of the production department and are directly supervised by the so-called Floor-In-Charge who is reponsible for one production floor. In addition to the Production department, factories typically have Quality and HR departments. Quality supervisors/inspectors may be assigned to one production line although

they generally have responsibility for more than one line. The Welfare Officer belongs to the HR department. Some factories also have dedicated Industrial Engineering ("IE") departments that manage the most technical aspects of production including setting targets and determining the layout of the line. Using IE techniques is certainly thought to be best practise, yet whilst the presence of IE departments is not uncommon they are far from ubiquitous. As the chains of command in figure 4 show, each department has a General Manager, an Assistant General Manager, a Departmental Manager, and an Assistant Departmental Manager. Due to steep hierarchical structures and lack of authority at lower managerial levels, instructions flowing downwards to workers or supervisors, and approvals/requests flowing upwards to general managers have to go through many layers of the organisation. Decisions tend to be made only at the highest managerial level.

A.1.4 Assignment into batches

The participating 25 factories were sorted into five "early" and "late" batches, with an early or late start date between August and November 2015. Batches one and two were classified as early batches and batches three to five were classified as late batches. The assignment was affected by two factors. Firstly, the composition of batch 1 with six factories had already been decided on a first-come-first-serve basis before the randomization strategy was developed. Four out of those six were factories of the main sample, one was the pilot factory and one was a separate factory not included in the sample. Hence, only the remaining 18 factories (22 minus the four factories from the main sample which had already been assigned to Batch 1) could randomly be assigned into batch 2 to 5. Secondly, the country director of BBW ("Benefits for Business and Workers") program in Bangladesh had a strong preference for grouping batches based on location for logistical reasons, reducing the flexibility to assign completely random. 12 factories out of 18, which were roughly in the same location, were randomly assigned into an early and into a late batch. The other 6 factories were automatically placed in the late batch. In September 2015, four new factories expressed interest in joining the programme. They were assigned into a new batch 5. One final factory, which decided to join the program end of October, had to be assigned to batch 5 as well, as the start date of previous batches was already due. In September 2015, one factory dropped out due to closure of the factory and in October 2015, one additional factory dropped out due to internal problems, reducing the total sample to 25.

Figure 5: Assignment into batches

Batch	Nb. of factories	Assignment	Training start date
Batch 1	Four (+ 2 non-sample)	'First come, first served' basis	August 23, 2015
Batch 2	Six	Random (similar location)	September 3, 2015
Batch 3	Five	Random (similar location)	October 15, 2015
Batch 4	Five	By default (diff. location)	October 20, 2015
Batch 5	Five	By default (late join date)	November 9, 2015

To summarise (see figure 5), only 12 factories located closely to each other were randomly assigned into an early batch (batch two) or late batch (batch three). Batch one was decided before the randomization strategy was developed on a 'first come, first serve' basis, batch four was reserved for remaining factories in different locations, and batch five for factories which joined later.

A.2 Description of the data

A.2.1 Data overview

We use both detailed factory data and survey data for the analysis in this paper. Factory data is collected from the factories at least three months before the first training and continuing for a period of at least six months after the last training. Importantly, we collect data on all lines in the participating factories, whether those lines were nominated for training or not. Thus, we have a very clean randomised control group against which to measure the short-run effects of training (nominated/surveyed lines only, i.e. treatment, adjacent and control lines), and can also obtain credible estimates of effects using a set of comparison lines that were not selected by the factories to receive training (non-surveyed lines). Factory data consists of two types of data: Production data and salary data. Production data is collected at the daily level and includes line-level productivity-related information such as styles produced, output, allocated and actual manpower in numbers, manpower in available minutes, order quantity, running days, or standard minute value, and quality-related information such as number of spots, rejects, and alterations, or number of pieces quality checked. The so-called standard minute value (smv) is a style-specific value, calculated prior to the start of production of the style. It is the sum of the time, in seconds, it takes to perform each sewing operation to assemble one piece of the style. Thus, it provides a measure of the required labor input per piece under ideal production conditions. We collapse production data at the weekly level. Salary data is collected at the monthly level and includes worker-level information such as grades, attendance, absenteeism, days paid, salary deductions or allowances. We drop the month of the first training in our analysis to ensure a clean difference between pre- and post-training months.

The surveys were conducted at three points of time: Just before the first training round, 2-3 months after the first training round, and six months after the last training round. Survey respondents were operators, line supervisors/line chiefs and managers.

A.2.2 Data accuracy

The factory data may not accurately reflect where the workers are actually working. Most of the salary sheets contain a line and floor number, on which a worker started working upon joining the factory, but this is not always updated with the current line/floor. Thus, we match the current line codes/floor in the survey data with the line codes/floor in the salary data for the month of the survey and calculate an average match rate across baseline, midline and endline surveys to get an additional indication of how accurate the salary data are. We could match around 90% of the individuals in the surveys. For those individuals, we know what line and floor they are working on with near certainty. Based on this, we identified one subset of

factories where we think the salary data are accurate with respect to the floor, and one subset of factories where we think the salary data are accurate with respect to the line code. Workers typically move across lines on the same floor, but not across lines on different floors. Hence, the match rate of floors between survey and salary data is a lot higher than of line codes. The subset of factories based on accuracy of the floor of workers consists of factories with a match rate of >75%. Only five factories do not fulfill this criteria. The subset of factories based on accuracy of the line code of workers includes factories with a match rate of >60%. 13 factories do not fulfill this criteria. We run regressions with the complete set of factories, and also show results for both subset of factories as a robustness check.

A.2.3 Main outcomes of interest using factory data

The factory data allows us to analyse two indices, an index related to human resource outcomes and an index related to production. For the HR index, we use monthly salary data to construct exit rates, turnover rates, absenteeism and promotion rates. For the PR index, we use weekly production data to construct efficiency, alteration rates and reject rates. Both indices are generated as the sum of each index component divided by the total number of index components based on Kling, Liebman & Katz (2007). The exact definitions of these variables are shown in figure 6.

Figure 6: Definition of outcome variables

Index	Variable	Definition
HR	Exit rates	Nb. exits within 2 months / Nb. workers joining per month
	Turnover rates	Nb. exits after 2 months / Nb. workers
	Absenteeism	Nb. workers absent / Nb. workers absent + Nb. workers present
	Promotion rates	Nb. promotions / Nb. workers
PR	Efficiency	Output minutes (smv*daily output) / Available minutes
	Alteration rates	Nb. alterations / Nb. pieces checked
	Reject rates	Nb. rejects / Nb. pieces checked

A.2.4 Main outcomes of interest using survey data

The survey data allows us to analyse four indices, an index related to human resource practices, to production practices, to worker wellbeing, and to communication practices. All four indices are constructed using Anderson's method of variance-covariance weighted indices (2008), and are available for each type of survey respondents: Line operators, line supervisors/line chiefs, and managers. The type of questions asked differed per respondent type. A detailed overview of the sub-indices included in each index, as well as a description of all variables is given in 7 for line operators, 8 for line supervisors/line chiefs, and 9 for managers.

Figure 7: Components of Line Operator Indices

Index	Sub-Index	Variable	Description
HR	Induction system	Induction	Worker was shown none, several or all of various important factory locations (Production Manager's office, Welfare office, Fire exit)
		Welfare officer	Welfare officer had conversation with worker during first week
	Buddy system	Paired	Operator was sitting next to experienced worker during first months at factory
		1st talk to Buddy	Buddy is first person to talk to if worker has work-related grievance
		Mentor useful	Buddy is most helpful during first weeks at the factory
		Have mentor	Buddy exists on the line
		Be mentor	Worker has even been assigned as mentor
		Questions	Frequency of being asked questions by new operators
		Teaching ability	Assessment of teaching and mentoring ability
	One-step leave policy	One-step	Only one person approached to request leave
		Time away	Time spend away to request leave
	Worker representative	Work rep known	Operator knows who worker representative is
		Satisfied	Frequency of adequate communication of concerns to management
	Promotion policy	Promotion requirements	Operator knows requirements for promotion
		Promotion beliefs	Worker believes effort or effort plus supervision is most important in determining the likelihood and timing of a promotion
	Attendance bonus	Amount of bonus	Knowledge of amount of attendance bonus at the factory
		Eligibility	Knowledge about eligibility of bonus (if 5 min. late for one day of the month or if 1 day announced leave taken)
PR	Up-skilling	Improve	Receive help in improving sewing machine skills
		Time and who	Duration, frequency and people involved in helping workers to improve sewing machine skills
		New skill	Belief regarding effect of mastering new skill in skill test
		Increased efficiency time	Time spent by supervisor or line chief instructing worker on how to perform sewing processes more efficiently last week
	Skills test	Test frequency	Frequency of formal skills test by superior
		Tests pattern	Is test done regularly or upon request
		Last test	Last time skills were tested
		Test duration	Duration of test
		Next test	Worker was told when next test will be
		Test feedback	Worker was given feedback on test
Wellbeing	Feelings of surveyed group	Conflict with MG	No perceived conflict between operators and managers
		Self-Assess.	Assessment of own feelings towards job
		Others	Assessment of feelings of others towards job
	Involvement of workers	Change	Own responsibility for changes on the line
		Sugg	Operator involvement in idea generation on the line
Commu-nication	Communication practices	Initiate	Variety of topics of initiated meetings with immediate superior (production capabilities, skills and/or work grievances)
		Approach	Frequency of approaching supervisors to tell them about issues that affect workers
		Discuss	Frequency of talking to other operators about how to make things better at the factory
	Knowledge about LS/LC	1st position	First position in the garment industry
		Married	Indicator for marriage
		Length	Length of marriage
		#Children	Number of children
		#Boys	Number of boys
		#Girls	Number of girls
		District	Home district
		Division	Home division
		Years	Tenure in the factory in years
		Months	Tenure in the factory in months

Notes: Figure 7 shows all sub-indices of the line operators' HR, PR, Wellbeing and Communication Index, including a detailed description of the components of the sub-indices.

Figure 8: Components of Line Supervisor/Line Chief Indices

Index	Sub-Index	Variable	Description
HR	One-step leave	Leave request last	Last time an operator requested to leave
	Job descriptions	Description	Ever seen copy of job description
		Description review	Last time job description was reviewed with managers
	Attendance bonus	Amount of bonus	Knowledge of amount of attendance bonus at the factory
		Eligibility	Knowledge about eligibility of bonus (if 5 min. late for one day of the month or if 1 day announced leave taken)
PR	Up-skilling	Time spent last week	Time spent improving operator skills last week
		Time spent normally	Time spent improving operator skills normally
		Skills to improve	Decision about which skills to improve
	Skills test	Skills matrix used	Skills matrix used to rebalance a line/resolve a bottleneck
		Availability of skills matrix	Skills matrix for operators available
		Involvement in update	In update of skills matrix involved
		Frequency of update	Frequency of updates of skills matrix
		Frequency of tests	Frequency of skills tests
		Regularity of tests	Tests scheduled regularly or upon request
	Quality practices	Changes quality checks	Change to quality checks in last 6 months
		What changes	What were these changes
		Inspection	Line uses endline inspection format
		File checks	Line maintains a file for tracking quantity of garments checked
		Flags	Flags used as method/aid in quality inspection
	Production-related practices	Efficiency level	Efficiency level on last day worked
		Stopwatch	Stopwatch used in the last month to time how long operator requires to complete task
		Job assignments	People involved in assigning operators to specific tasks
		Line layout	Collaborate with IE department or responsible people to design line layout
		Targets	In last style change, involved by IE department or people responsible in setting targets
		Efficiency of processes	Ever identified a process on current style that could be performed better with fewer motions
		Movement reduction	Ever attempted to reduce the movement required for operator to complete specific process
		Bottleneck solution	Select most probable solution offered to solve bottleneck on LSLC's line
		Efficiency training	Received training on how to improve efficiency in last 2 months
		Location efficiency training	Location of efficiency training
	Production-related tools	Bring to style meeting	What does LSLC bring to meeting on upcoming style
		Bring to performance meeting	What does LSLC bring to meeting on operator performance
		Bring to target meeting	What does LSLC bring to meeting on line's daily target
		Bring to individual targets meeting	What does LSLC bring to meeting on upcoming style
Wellbeing	Feelings of surveyed group	Collaboration	Agree/disagree that there will always be conflict between managers and workers
		Self	Attitude towards own work
		Peer	Attitude towards/belief about other supervisors' work
	Involvement of workers	Suggestions	Expectation in the factory that workers should make suggestions for improving the production process
Commu-nication	Communication practices	Initiate	In past month, initiated meeting with immediate superior to discuss none, one or several work related issues
		Targets	How are targets communicated to operators
		Meetings	Initiated meeting to discuss work related matters
		Training	Received communication training in last 2 months
		Location training	Location of communication training
	Knowledge about LS/LC	Section	Same section of the line
		Education	Education level
		Married	Indicator for marriage
		Length	Length of marriage
		#Children	Number of children
		#Boys	Number of boys
		#Girls	Number of girls
		Children's age	Age of youngest child
		Years	Tenure in the factory in years
		Months	Tenure in the factory in months
	Communication with industrial engineer	Styles	Frequency of meetings on upcoming style during the week before a new style
		Performance	Frequency of meetings on individual operator performance during the week before a new style
		Targets	How are targets communicated to operators
		Operator targets	Frequency of meetings on targets for individual operators during the week before a new style
		Organization	Meetings regularly scheduled or on needs-basis

Notes: Figure 8 shows all sub-indices of the line supervisor/line chiefs' HR, PR, Wellbeing and Communication Index, including a detailed description of the components of the sub-indices.

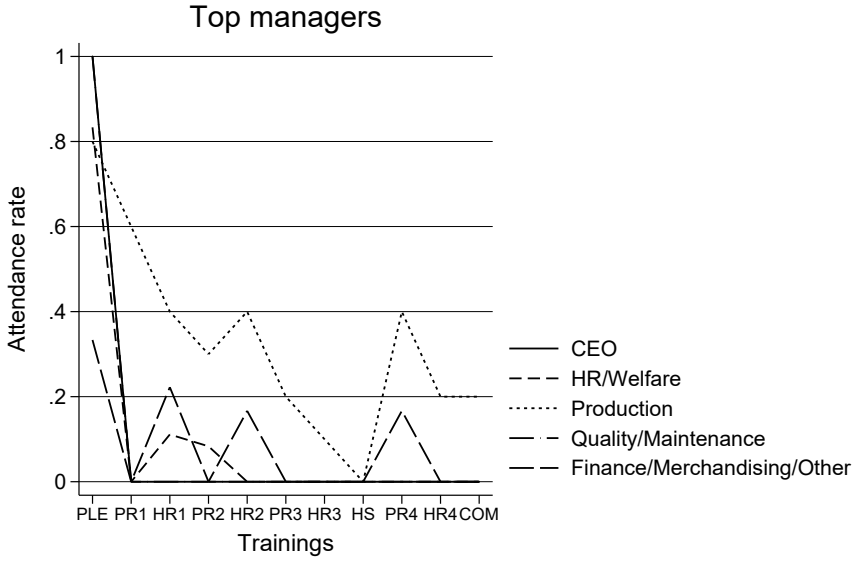
Figure 9: Components of Manager Indices

Index	Sub-Index	Variable	Description
HR	Buddy system	Buddy in line	Indicator for whether there is buddy on pilot line
		Number of lines with buddy	Number of lines with buddy
		Duration buddy system	Amount of time buddy system has been active
		Buddy issues	Indicator for whether buddies have approached the manager about worker issues
		Buddy issues frequency	Frequency of approaches by buddies to managers about worker issues
	One-step leave policy	Involved	Indicator for whether respondent is from HR and thus involved in approving leave
		Leave go-to person	Persons approached by operators in order to request leave
		Direct request	Indicator for whether operators request leave to respondent directly
		Indirect request	Indicator for supervisor requesting leave for operators
	Promotion policy	Promotion policy	Indicator for whether there is written promotion policy in factory
		Promotion awareness	Percentage of operators aware of promotion policy
		Promotion resources	Number of resources used to identify workers that should be promoted
		Percent promotions	Percentage of operators that get promotions in a year in the factory
		Promotion trend	Increase in number of promotions
	Exit interviews	Last exit	Indicator for time passed longer than one week since a worker left
		Numbers of exits	Indicator for less than five people left on that day
		Exit interview	Indicator for conducted exit interview with that person
		Percentage	Percentage of all leaving workers that had exit interview
		Duration	Duration of typical exit interview in minutes
		Format	Indicator for fixed format of exit interview
		Discussants	Number of people that discuss/have access to results
		Change	Indicator for change in practice since last exit interview
		Any changes	Indicator for any change in practices as a result of exit interviews
		Timing	Timing of last meeting to discuss exit interviews
		Follup up	Frequency of following up to see if change were actually made
	Attendance bonus	Awareness	Share of operators aware of attendance bonus
PR	Up-skilling	Involved in improvements	Indicator for whether manager is involved in improving operator skills
		Upskilling method	Indicator for change in method to improve worker skills
		Changes quality checks	Number of positive changes to such methods
		Upskill time	Time spent upskilling per week
		Upskill time 6 months ago	Time spent upskilling per week 6 months ago
		Upskilling location	Number of locations (e.g. off the line and on a running line) where upskilling takes place
	Skills test	Skills matrix	Indicator for whether factory maintains skill matrices for operators
		Skills matrix update	Frequency of updates of skill matrix
		Skills matrix last use	Last usage of skill matrix
		Skill matrix used for	Number of decisions or processes for which skill matrices are used
	Quality practices	New system	Indicator for whether factory has implemented new quality system in past 6 months
		New system additions	Number of new practices/systems added
		0 defect operators	Number of 0 defect operators on pilot lines
		0 defect lines	Number of 0 defect lines in the factory
	Production-related practices	Target high	Degree of flexibility in the factory for target recalibration
		Last layout change	Time passed since last line layout change
		Solution bottleneck	Probable solution in case of bottleneck
		Resources bottleneck	Number of resource types that would be used in case of bottleneck
Wellbeing	Feelings of surveyed group	Self-Assess.	Assessment of own feelings towards job
		Assessment of peers	Assessment of feelings of IE/HR/PR/WF/QL manager
	Operators' feelings	Assessment of operators	Assessment of feelings of operators
Commu-nication	Communication practices	Index communication	Index including sub-indices about general meetings, turnover meetings, quality meetings, efficiency meetings, upskilling meetings (incl. frequency, participants, duration and regularity)

Notes: Figure 9 shows all sub-indices of the managers' HR, PR, Wellbeing and Communication Index, including a detailed description of the components of the sub-indices.

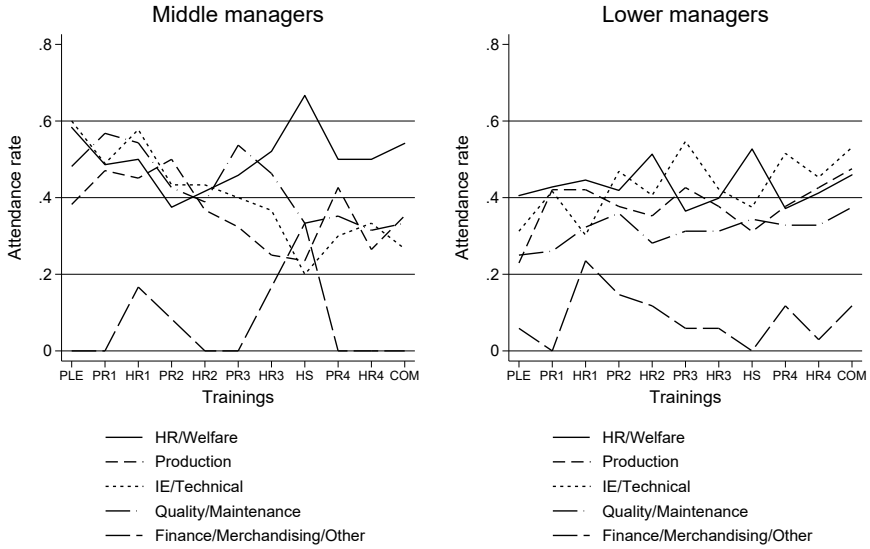
A.2.5 Attendance

Figure 10: Attendance of top-level managers by department



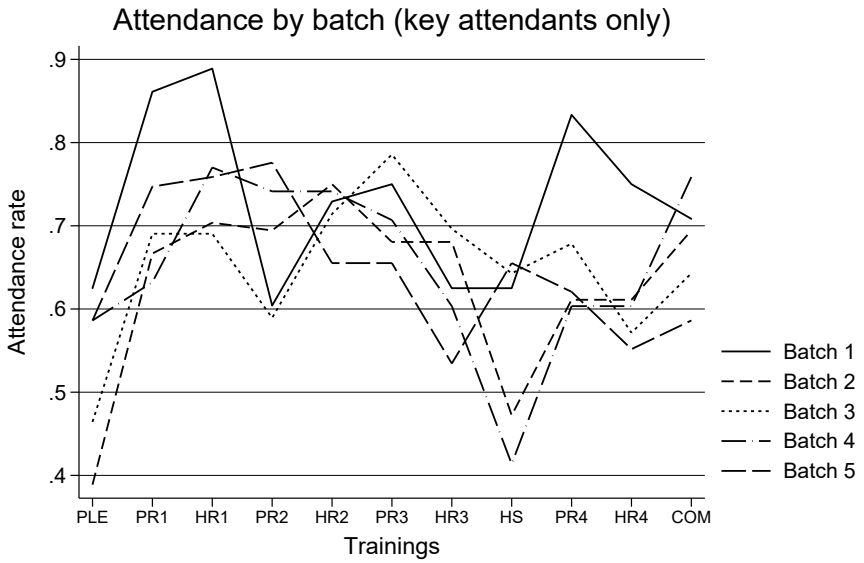
Notes: Figure 10 shows the attendance rate of high-level managers, i.e. CEO (General Managers and Assistant General Managers) and the heads of departments.

Figure 11: Attendance of middle- and low-level managers by department



Notes: Figure 11 shows the attendance rate of middle managers in the left panel and low-level managers in the right panel. Middle managers include Deputy Managers, Assistant Managers or Managers, whereas lower managers include Officers, (Senior) Executives, Supervisors or Floor-In-Charges.

Figure 12: Attendance of key attendants by batch



Notes: Figure 12 shows the attendance rate of key attendants by batch. Factories are grouped into five batches as outline in appendix section A.1.4. Key attendants are defined by the training provider. They are middle and/or lower managers at which the respective training modules are targeted.

A.3 Empirical specifications

A.3.1 Factory types

We split the total number of 25 factories into three different types of factories depending on the location of control lines. 14 factories are assigned to type A, which has control lines only on different floors than treatment lines. 3 factories are assigned to type B, which has control lines on both the same and a different floor than treatment lines. The remaining 8 factories are assigned to type C, which has control lines only on the same floor as treatment lines. The reason to classify factories as such is that it allows us to run regressions for different types of factories and to test our hypothesis of larger spillover effects to control lines on the same floor as treatment lines. We call production floors with one randomly selected treatment line as "treatment floor", and floors without treatment lines, but with at least one nominated non-selected line as "control floor".

A.3.2 Specifications for survey data

Figure 13: Illustration of empirical specifications

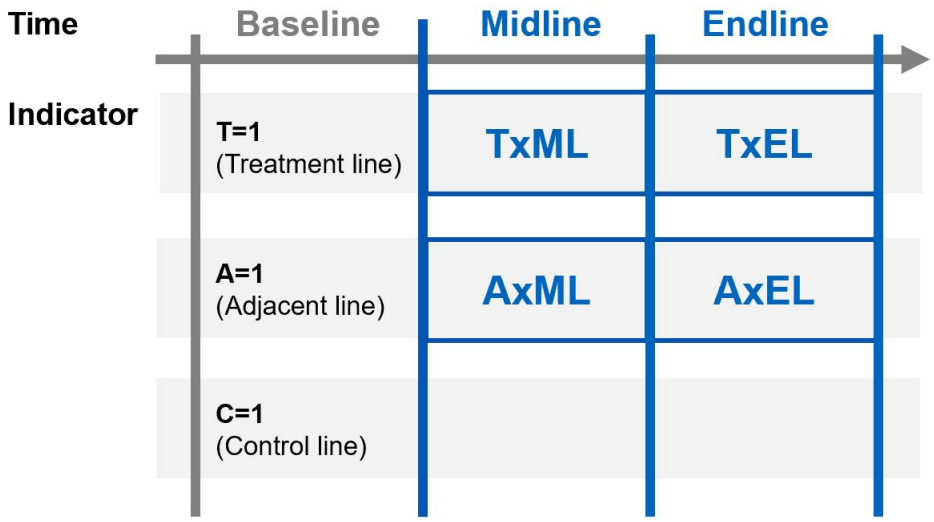
		All C-lines		C-lines on same floor	C-lines on diff floor
		Without adjacent lines	With adjacent lines		
Floor	Lines	(1)	(2)	(3)	(4)
Treat-ment	Treatment	T T T	T	T	T
	Control	C C	C	C	
	Adjacent		A	A	A
Control	Control	C C	C		C
Factory types		A + B + C	ABC	BC	AB
#Factories		14 + 3 + 8	25	11	17

Figure 13 illustrates which types of factories and lines are included in each empirical specification using survey data. The specification illustrated in the first column excludes adjacent lines, whereas the specifications illustrated in columns two to four include adjacent lines. Data from all three factory types is used in columns one and two, whereas only "BC" factories (with control lines on the same floor as treatment lines) and "AB" factories (with control lines on different floors than treatment lines) are included in column three and four, respectively. Column one and two correspond to regressions shown in table 4 and 5. The third column refers to regressions indicated as "Same" in table 6, as well as tables 9 and 10. The fourth column refers to regressions indicated as "Diff" in table 6, as well as tables 11 and 12.

The variables used for the empirical specification, $TxML$, $TxEL$, $AxML$, and $AxEL$, to analyse data from line operators and line supervisors/line chiefs are illustrated in figure 14. T is an indicator equal to one for treatment lines, A is an indicator equal to one for adjacent lines,

and ML and EL are indicators equal to one for Midline resp. Endline data. As managers are responsible for several production floors with treatment, adjacent and control lines, the analysis of manager data does not allow us to differentiate between responses by line. However, we can analyse the manager data over time, and see whether responses differ between Midline and Endline.

Figure 14: Illustration of independent variables



A.3.3 Specifications for factory data

Figure 13 illustrates which types of factories and lines are included in each empirical specification using factory data. Whereas survey data is only available for surveyed lines, factory data is collected for surveyed (treatment, adjacent and control lines) and non-surveyed lines on both treatment and control floors. We argue that non-surveyed lines on treatment floors are similar in expectation to non-surveyed lines on control floors, allowing us to include factory data from both surveyed and non-surveyed lines in our analysis. The first three specifications (1 to 6) compare treatment to control lines. The first column "All C-lines (ABC)" (1 and 2) indicates that all control lines in factories of all types are included. The second column "All C-lines (AB)" (3 and 4) indicates that only factories of type A and B with at least one control line on a different floor than the treatment line are included. We can then compare these results to column "Diff C-lines" (5 and 6) with control lines on different floors only. Specifications 7 to 12 include adjacent lines to better analyse spillover effects. The fourth column (7 and 8) indicates the comparison of treated and adjacent lines to control lines in all factories, whereas the fifth column (9 and 10) excludes factories with only control lines on the same floor as the treatment line, and only keeps control lines on different floors. The sixth column (11 and 12) shows the comparison of treated, adjacent and all other lines on the treatment floor in AB factories against the control floors. The last two columns (13 to 16) show a floor comparison, with a comparison of the treatment floor to either just the control floor (13 and 14) or to all floors in the whole factory (15 and 16). Summary table 7 shows the corresponding regression

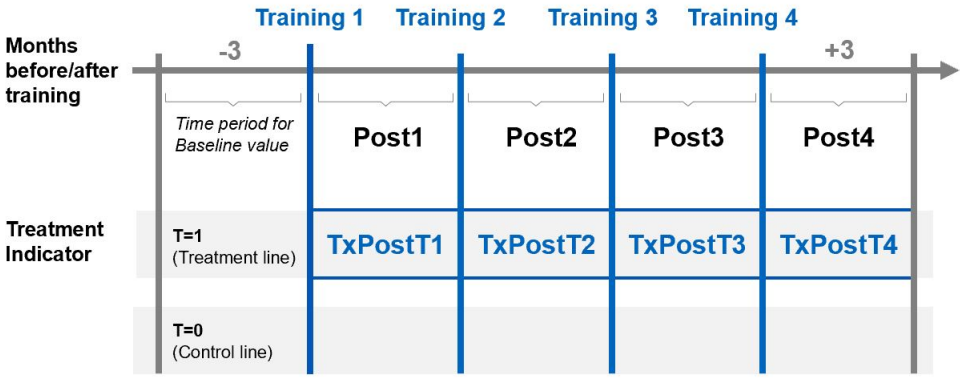
results for each of the specifications as described in figure 15 (the specification numbers in figure 15 from one to sixteen match with the column numbers in the summary regression table 7). Regressions results of individual survey components for each specification are shown in tables 24 to 28.

Figure 15: Illustration of empirical specifications

Floor	Lines	All C-lines *ABC Type* (1)(2)	All C-lines *AB Type* (3)(4)	Diff C-lines *AB Type* (5)(6)	Adj-lines *ABC Type* (7)(8)	Adj-lines *AB Type* (9)(10)	Adj+Other *AB Type* (11)(12)	C-floor *AB Type* (13)(14)	All floors *AB Type* (15)(16)
Treat-ment	Treatment	T T T	T	T	T	T	T	T	T
	Control	C C	C		C		Other	T	T
	Adjacent				Adjacent	Adjacent	Adjacent	T	T
	Non-survey						Other	T	T
Control	Control	C C	C	C	C	C	C	C	C
	Non-survey						C	C	C
Remaining	Non-survey								C
Factory types		A + B + C	AB	AB	ABC	AB	AB	AB	AB
#Factories		14 + 3 + 8	17	17	25	17	17	17	17

The variables used for the empirical specification, $PostX$ and $TxPostX$ (for X=1, 2, 3, 4), are illustrated in figure 16. $PostX$ is an indicator variable for the time period between the Xth and X+1th training. $Post4$ is an indicator variable for three months after the last training date. All $PostX$ variables are interacted with the treatment variable. We use HR training dates for HR indices and PR trainings dates for PR indices.

Figure 16: Illustration of independent variables



A.4 Tables

A.4.1 Survey data

Table 9: HR and PR index (control lines on same floor only)

	HR Index					PR Index				
	(1) LO	(2) LO	(3) LSLC	(4) LSLC	(5) MG	(6) LO	(7) LO	(8) LSLC	(9) LSLC	(10) MG
Endline	0.10	0.018	-0.37	-0.56		0.29	0.43	-0.96*	-0.79**	
	(0.44)	(0.41)	(0.95)	(0.80)		(0.50)	(0.38)	(0.49)	(0.39)	
MidlineXTreated	0.23	0.094	0.19	-0.17		-0.026	-0.13	0.49	0.45	
	(0.44)	(0.40)	(0.65)	(0.37)		(0.32)	(0.35)	(0.73)	(0.44)	
EndlineXTreated	-0.089	-0.16	0.29	0.17		-0.27	-0.57*	1.23*	0.96*	
	(0.45)	(0.44)	(0.69)	(0.68)		(0.40)	(0.30)	(0.64)	(0.50)	
MidlineXAdjacent		-0.10		-0.71**			-0.63*		-0.44	
		(0.41)		(0.33)			(0.34)		(0.40)	
EndlineXAdjacent		-0.36		0.074			-0.81**		0.33	
		(0.42)		(0.65)			(0.34)		(0.35)	
Treated					0.24**					-0.32**
					(0.11)					(0.12)
Constant	0.37	0.57*	0.23	0.48*	-0.11**	0.22	0.27	0.18	0.090	0.15**
	(0.34)	(0.32)	(0.48)	(0.25)	(0.053)	(0.22)	(0.28)	(0.56)	(0.33)	(0.056)
Observations	76	159	76	165	247	76	159	76	165	247
Line clusters	38	81	39	88	25	38	81	39	88	25
p: MLxT=MLxA		0.51		0.075			0.073		0.0093	
p: ELxT=ELxA		0.49		0.72			0.43		0.071	

Notes: Table 9 shows the main treatment effects on the HR index and PR index excluding control lines on a different floor than the treatment lines. All indices are based on Anderson (2008). Index components are different for Line operators (LO), Line supervisors/line chiefs (LSLC) and managers (MG) (see section A.2.4 in the appendix). Midline and Endline are indicator variables equal to one if responses are from midline and endline surveys, respectively. Adjacent lines are lines next to treatment lines. MidlineXTreated and EndlineXTreated are indicator variables equal to one if both the treatment indicator and the respective survey indicator are equal to one. MidlineXAdjacent and EndlineXAdjacent are indicator variables equal to one if the adjacent line indicator and the respective survey indicator are equal to one. Regressions include factory fixed effects and the error term is clustered at the line level. p-values are shown at the bottom of the table for testing the equality of coefficients on treatment and adjacent lines at Midline and Endline (MLxT=MLxA; ELxT=ELxA). Standard errors are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Wellbeing and communication index (control lines on same floor only)

	Wellbeing Index					Communication Index				
	(1) LO	(2) LO	(3) LSLC	(4) LSLC	(5) MG	(6) LO	(7) LO	(8) LSLC	(9) LSLC	(10) MG
Endline	0.55	0.42	0.67	0.82		0.99**	1.00**	-1.02	-0.74	
	(0.45)	(0.39)	(0.88)	(0.73)		(0.48)	(0.44)	(0.73)	(0.57)	
MidlineXTreated	0.032	-0.31	0.19	0.15		1.35***	1.22***	-0.46	-0.33	
	(0.32)	(0.33)	(0.63)	(0.63)		(0.38)	(0.34)	(0.52)	(0.34)	
EndlineXTreated	0.70**	0.53*	0.038	-0.14		0.95***	0.77**	0.88	0.65	
	(0.33)	(0.32)	(0.52)	(0.47)		(0.35)	(0.38)	(0.69)	(0.59)	
MidlineXAdjacent		-0.022		-0.077			1.47***		-0.84**	
		(0.33)		(0.61)			(0.38)		(0.35)	
EndlineXAdjacent		0.39		-0.31			0.30		0.58	
		(0.33)		(0.50)			(0.40)		(0.50)	
Treated					-0.039					0.14
					(0.16)					(0.16)
Constant	-0.53**	-0.27	-0.22	-0.25	0.018	-0.49*	-0.38	0.67	0.57**	-0.065
	(0.21)	(0.25)	(0.58)	(0.55)	(0.073)	(0.29)	(0.29)	(0.40)	(0.29)	(0.072)
Observations	76	159	76	165	247	78	159	76	165	247
Line clusters	38	81	39	88	25	40	81	39	88	25
p: MLxT=MLxA		0.33		0.41			0.42		0.016	
p: ELxT=ELxA		0.64		0.56			0.13		0.85	

Notes: Table 10 shows the main treatment effects on the Wellbeing and communication index. Control lines are only included if they are located on the same floor as treatment lines. All indices are based on Anderson (2008). Index components are different for Line operators (LO), Line supervisors/line chiefs (LSLC) and managers (MG) (see section A.2.4 in the appendix). Regressions include factory fixed effects and the error term is clustered at the line level. p-values are shown for testing the equality of coefficients on treatment and adjacent lines at Midline and Endline (MLxT=MLxA; ELxT=ELxA). Standard errors are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 11: HR and PR index (control lines on different floor only)

	HR Index					PR Index				
	(1) LO	(2) LO	(3) LSLC	(4) LSLC	(5) MG	(6) LO	(7) LO	(8) LSLC	(9) LSLC	(10) MG
Endline	-0.14	-0.31	0.085	0.025		-0.18	-0.14	0.23	0.12	
	(0.41)	(0.35)	(0.25)	(0.23)		(0.35)	(0.30)	(0.30)	(0.28)	
MidlineXTreated	0.56	0.70**	0.24	0.14		0.29	0.35	0.41	0.37	
	(0.36)	(0.32)	(0.24)	(0.25)		(0.35)	(0.33)	(0.26)	(0.29)	
EndlineXTreated	0.47	0.78**	-0.14	-0.15		0.51	0.48	-0.12	-0.082	
	(0.35)	(0.35)	(0.32)	(0.30)		(0.38)	(0.34)	(0.37)	(0.39)	
MidlineXAdjacent		0.50*		-0.42*			-0.16		-0.52*	
		(0.30)		(0.24)			(0.33)		(0.29)	
EndlineXAdjacent		0.58*		-0.24			0.25		-0.65**	
		(0.30)		(0.27)			(0.36)		(0.29)	
Treated					0.24**					-0.32**
					(0.11)					(0.12)
Constant	0.047	0.036	0.025	0.12	-0.11**	-0.070	-0.17	0.054	0.098	0.15**
	(0.24)	(0.21)	(0.14)	(0.14)	(0.053)	(0.19)	(0.24)	(0.18)	(0.18)	(0.056)
Observations	104	187	108	193	247	104	187	108	193	247
Line clusters	52	95	54	100	25	52	95	54	100	25
p: MLxT=MLxA		0.52		0.046			0.088		0.0074	
p: ELxT=ELxA		0.49		0.71			0.46		0.075	

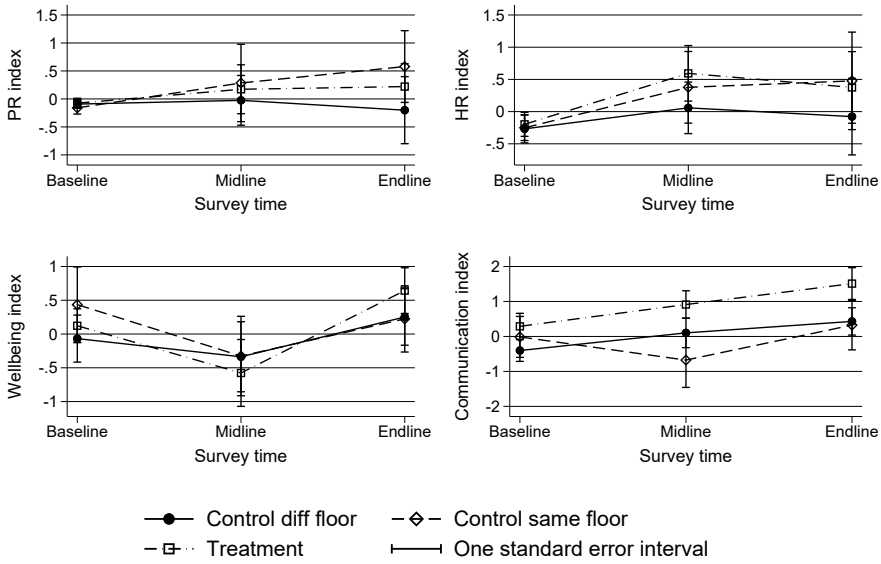
Notes: Table 11 shows the main treatment effects on the HR index and PR index excluding control lines on the same floor as treatment lines. All indices are based on Anderson (2008). Index components are different for Line operators (LO), Line supervisors/line chiefs (LSLC) and managers (MG) (see section A.2.4 in the appendix). Regressions include factory fixed effects and the error term is clustered at the line level. p-values are shown at the bottom of the table for testing the equality of coefficients on treatment and adjacent lines at Midline and Endline (MLxT=MLxA; ELxT=ELxA). Standard errors are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 12: Wellbeing and communication index (control lines on different floor only)

	Wellbeing Index					**Communication Index**				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	LO	LO	LSLC	LSLC	MG	LO	LO	LSLC	LSLC	MG
Endline	0.55	0.42	0.67	0.82		0.99**	1.00**	-1.02	-0.74	
	(0.45)	(0.39)	(0.88)	(0.73)		(0.48)	(0.44)	(0.73)	(0.57)	
MidlineXTreated	0.032	-0.31	0.19	0.15		1.35***	1.22***	-0.46	-0.33	
	(0.32)	(0.33)	(0.63)	(0.63)		(0.38)	(0.34)	(0.52)	(0.34)	
EndlineXTreated	0.70**	0.53*	0.038	-0.14		0.95***	0.77**	0.88	0.65	
	(0.33)	(0.32)	(0.52)	(0.47)		(0.35)	(0.38)	(0.69)	(0.59)	
MidlineXAdjacent		-0.022		-0.077			1.47***		-0.84**	
		(0.33)		(0.61)			(0.38)		(0.35)	
EndlineXAdjacent		0.39		-0.31			0.30		0.58	
		(0.33)		(0.50)			(0.40)		(0.50)	
Treated					-0.039					0.14
					(0.16)					(0.16)
Constant	-0.53**	-0.27	-0.22	-0.25	0.018	-0.49*	-0.38	0.67	0.57**	-0.065
	(0.21)	(0.25)	(0.58)	(0.55)	(0.073)	(0.29)	(0.29)	(0.40)	(0.29)	(0.072)
Observations	76	159	76	165	247	78	159	76	165	247
Line clusters	38	81	39	88	25	40	81	39	88	25
p: MLxT=MLxA		0.33		0.41			0.42		0.016	
p: ELxT=ELxA		0.64		0.56			0.13		0.85	

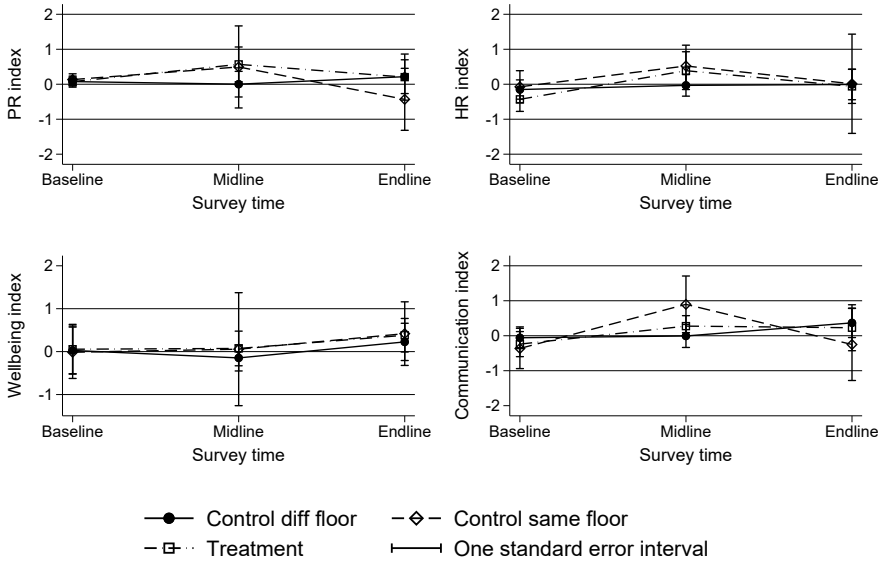
Notes: Table 11 shows the main treatment effects on the HR index and PR index. Control lines are only included if they are located on a different floor as treatment lines. All indices are based on Anderson (2008). Index components are different for Line operators (LO), Line supervisors/line chiefs (LSLC) and managers (MG) (see section A.2.4 in the appendix). Regressions include factory fixed effects and the error term is clustered at the line level. p-values are shown at the bottom of the table for testing the equality of coefficients on treatment and adjacent lines at Midline and Endline (MLxT=MLxA; ELxT=ELxA). Standard errors are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Figure 17: Dynamics over time for line operators



Notes: Figure 17 displays standard errors and means of the four main indices (PR, HR, Wellbeing and Communication) for line operators relative to the timing of the training programme by survey group. We differentiate among three survey groups: Operators on treatment lines, operators on control lines on the same floor as treatment lines and operators on control lines on different floors than treatment lines.

Figure 18: Dynamics over time for line supervisors/line chiefs



Notes: Figure 12 displays standard errors and means of the four main indices (PR, HR, Wellbeing and Communication) for line supervisors/line chiefs relative to the timing of the training programme by survey group. We differentiate among three survey groups: Line supervisors/line chiefs on treatment lines, line supervisors/line chiefs on control lines on the same floor as treatment lines and line supervisors/line chiefs on control lines on different floors than treatment lines.

Figure 19: Illustration of effects for indices and sub-indices

	Surveyed group				
	Line operators		Line supervisors and line chiefs		Managers
	Independent variables				
Dependent variables	(1) MidlineX Treated	(2) EndlineX Treated	(3) MidlineX Treated	(4) EndlineX Treated	(5) Endline
HR Index	0.52**	0.44	0.035	0.011	0.24**
Induction system	0.36	-0.020			
Buddy system	1.32***	0.51**			0.64***
One-step leave policy	0.11	0.54**	-0.074	0.17	0.075
Worker representative	-0.10	0.38			
Promotion policy	-0.27	-0.16			-0.16
Job descriptions			0.25	-0.16	
Exit interviews					-0.023
Attendance bonus	0.0035	-0.042	-0.070	-0.011	-0.13
PR Index	0.15	0.15	0.37	0.20	-0.32*
Up-skilling	-0.035	0.33	0.23	0.0031	-0.013
Skills test	0.19	-0.034	0.0086	0.40	0.20
Quality practices			0.72***	0.050	-0.68***
Production-related practices			0.26	-0.30	-0.20
Production-related tools			0.53	0.49	
Wellbeing Index	-0.26	0.47*	0.15	0.20	-0.039
Feelings of surveyed group	-0.20	0.46**	-0.27	-0.27	-0.072
Operators' feelings					0.0075
Involvement of workers	-0.11	0.098	0.38*	0.43*	
Communication Index	0.98***	0.98***	-0.038	0.24	0.14
Communication practices	0.86***	1.32***	0.29	0.16	0.14
Knowledge about LO/LS/LC	0.068***	0.033	-0.26	0.039	
Communication with Industrial Engineer			0.12	0.30	

Notes: Figure 19 illustrates the OLS estimates of treatment effects on the four indices HR, PR, Wellbeing and Communication, as well as their sub-indices including all control lines on both treatment and control floors. Outcome variables are listed on the left. Column (1) and (3) resp. (2) and (4) report the estimated treatment effects at Midline resp. Endline for line operators and line supervisors/chiefs from a regression of the outcome variables on the treatment indicator interacted with the survey time, including separate interaction terms for adjacent lines. Column (5) reports the estimated effects over time for managers from a regression of the outcome variables on the Endline indicator. Blank cells indicate that the sub-index is non-existant, i.e. the surveyed group was not asked any questions about that particular topic. All indices are constructed using Anderson (2008) variance-covariance weighted index. Comprehensive results of this illustration, including standard errors, line clusters and p-values for tests on the similarity of coefficients, are shown for overall indices in tables 4 and 5 (columns 2, 4, 5, 7, 9 and 10 each), and for sub-indices in tables 13 (line operators), 14 (line supervisors/chiefs) and 15 (managers). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 13: Sub-Indices for Line Operators (all control lines)

	HR Index						PR Index		Wellb Index		Comm Index	
	(1) Induction	(2) Buddy	(3) Leave	(4) WorkRep	(5) Promotion	(6) Bonus	(7) Up-Skill	(8) SkillTest	(9) Feeling	(10) Involve	(11) Practices	(12) Know
Endline	-0.056	0.075	-0.60***	-0.099	0.35	-0.051	0.11	-0.066	0.42*	0.21	-0.026	0.077***
	(0.31)	(0.30)	(0.23)	(0.26)	(0.23)	(0.28)	(0.29)	(0.19)	(0.24)	(0.24)	(0.22)	(0.022)
MidlineXTreated	0.36	1.32***	0.11	-0.10	-0.27	0.0035	-0.035	0.19	-0.20	-0.11	0.86***	0.068***
	(0.31)	(0.30)	(0.24)	(0.28)	(0.30)	(0.26)	(0.25)	(0.24)	(0.26)	(0.28)	(0.30)	(0.025)
EndlineXTreated	-0.020	0.51**	0.54**	0.38	-0.16	-0.042	0.33	-0.034	0.46**	0.098	1.32***	0.033
	(0.35)	(0.24)	(0.22)	(0.24)	(0.27)	(0.24)	(0.32)	(0.23)	(0.22)	(0.23)	(0.28)	(0.032)
MidlineXAdjacent	0.37	0.13	0.23	0.091	0.093	0.22	-0.61**	-0.026	-0.39	0.41	0.86**	0.10***
	(0.38)	(0.29)	(0.23)	(0.26)	(0.30)	(0.24)	(0.25)	(0.25)	(0.24)	(0.28)	(0.33)	(0.024)
EndlineXAdjacent	0.14	-0.081	0.38	0.15	0.16	-0.045	0.15	-0.19	0.25	0.11	0.71**	0.016
	(0.33)	(0.24)	(0.23)	(0.25)	(0.28)	(0.22)	(0.37)	(0.23)	(0.28)	(0.27)	(0.30)	(0.029)
Constant	-0.078	-0.045	0.28	0.0013	0.024	0.070	0.0021	0.010	-0.32*	-0.051	0.063	0.29***
	(0.20)	(0.19)	(0.18)	(0.17)	(0.18)	(0.15)	(0.15)	(0.16)	(0.17)	(0.20)	(0.19)	(0.016)
Observations	111	193	209	209	209	209	209	209	209	209	209	209
Line clusters	72	103	106	106	106	106	106	106	106	106	106	106
p: MLxT=MLxA	0.99	0.00026	0.58	0.51	0.27	0.44	0.047	0.41	0.47	0.052	0.99	0.19
p: ELxT=ELxA	0.68	0.013	0.47	0.32	0.23	0.99	0.59	0.52	0.43	0.96	0.070	0.60

Notes: Table 13 shows the OLS estimates of treatments effects on each sub-index of the HR, PR, Wellbeing and Communication index for line operators as illustrated in figure 19. All indices are constructed using Anderson's (2008) variance-covariance weighted index. A detailed description of each sub-index can be found in figure 7. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 14: Sub-Indices for Line Supervisors and Line Chiefs (all control lines)

	HR Index			PR Index					Wellb Index		Comm Index		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Leave	JobDesc	Bonus	Up-Skill	SkillTest	Quality	Practices	Tools	Feeling	Involve	Practices	Know	Comm IE
Endline	-0.37	0.045	-0.055	-0.95***	-0.10	0.099	0.90***	-0.23	0.66***	0.11	0.54**	-0.34*	-0.044
	(0.22)	(0.26)	(0.27)	(0.21)	(0.17)	(0.21)	(0.26)	(0.31)	(0.25)	(0.27)	(0.24)	(0.18)	(0.23)
MidlineXTreated	-0.074	0.25	-0.070	0.23	0.0086	0.72***	0.26	0.53	-0.27	0.38*	0.29	-0.26	0.12
	(0.23)	(0.24)	(0.23)	(0.33)	(0.20)	(0.25)	(0.27)	(0.52)	(0.36)	(0.23)	(0.23)	(0.19)	(0.27)
EndlineXTreated	0.17	-0.16	-0.011	0.0031	0.40	0.050	-0.30	0.49	-0.27	0.43*	0.16	0.039	0.30
	(0.26)	(0.28)	(0.26)	(0.27)	(0.27)	(0.29)	(0.36)	(0.46)	(0.33)	(0.22)	(0.33)	(0.30)	(0.27)
MidlineXAdjacent	-0.46**	-0.43*	-0.034	-0.51**	-0.20	-0.35	-0.093	-0.40	-0.27	0.084	-0.33*	-0.34	-0.32
	(0.22)	(0.22)	(0.22)	(0.24)	(0.19)	(0.26)	(0.23)	(0.31)	(0.28)	(0.25)	(0.19)	(0.23)	(0.22)
EndlineXAdjacent	-0.092	-0.18	0.12	-0.34**	-0.081	-0.50**	-0.24	-0.073	0.057	-0.058	0.31	0.071	0.13
	(0.25)	(0.23)	(0.21)	(0.15)	(0.24)	(0.25)	(0.24)	(0.33)	(0.29)	(0.28)	(0.30)	(0.18)	(0.27)
Constant	0.24**	0.19	0.031	0.49***	0.14	0.20	-0.55***	0.20	-0.25	-0.053	-0.22*	0.40***	0.069
	(0.12)	(0.13)	(0.14)	(0.16)	(0.12)	(0.15)	(0.17)	(0.19)	(0.18)	(0.19)	(0.12)	(0.14)	(0.13)
Observations	219	219	219	219	219	219	219	219	219	218	219	219	219
Line clusters	116	116	116	116	116	116	116	116	116	116	116	116	116
p: MLxT=MLxA	0.15	0.010	0.88	0.029	0.30	0.00026	0.19	0.078	0.98	0.11	0.0059	0.71	0.12
p: ELxT=ELxA	0.24	0.92	0.58	0.14	0.051	0.026	0.85	0.19	0.30	0.045	0.62	0.91	0.49

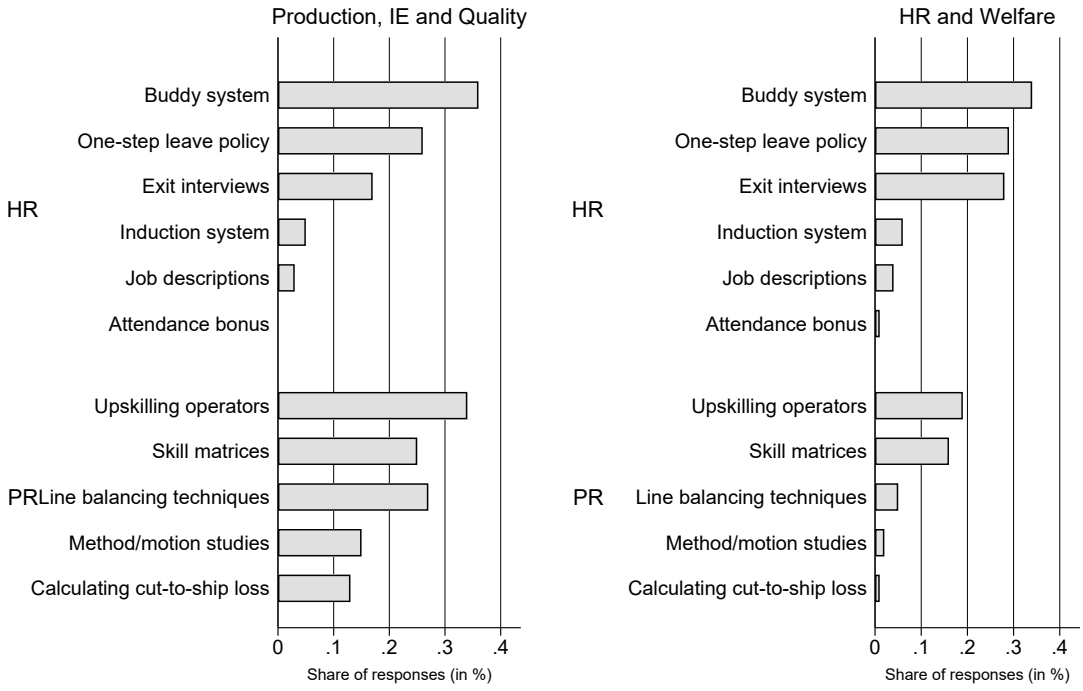
Notes: Table 14 shows the OLS estimates of treatments effects on each sub-index of the HR, PR, Wellbeing and Communication index for line supervisors / line chiefs as illustrated in figure 19. All indices are constructed using Anderson's (2008) variance-covariance weighted index. A detailed description of each sub-index can be found in figure 8. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 15: Sub-Indices for Managers (all control lines)

	HR Index					PR Index				Wellb Index		Comm Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Buddy	Leave	Promotion	Exit	Bonus	Up-Skill	Test	Quality	Practices	Feeling	Feeling LO	Practices
Treated	0.64***	0.075	-0.16	-0.023	-0.13	-0.013	0.20	-0.68***	-0.20	-0.072	0.0074	0.14
	(0.11)	(0.13)	(0.12)	(0.13)	(0.10)	(0.096)	(0.14)	(0.11)	(0.16)	(0.16)	(0.15)	(0.16)
Constant	-0.29***	-0.035	0.073	0.010	0.060	0.0060	-0.093	0.31***	0.091	0.033	-0.0034	-0.065
	(0.051)	(0.060)	(0.056)	(0.059)	(0.048)	(0.044)	(0.066)	(0.052)	(0.075)	(0.074)	(0.068)	(0.072)
Observations	247	247	247	247	246	247	247	247	247	247	247	247
Line clusters	25	25	25	25	25	25	25	25	25	25	25	25

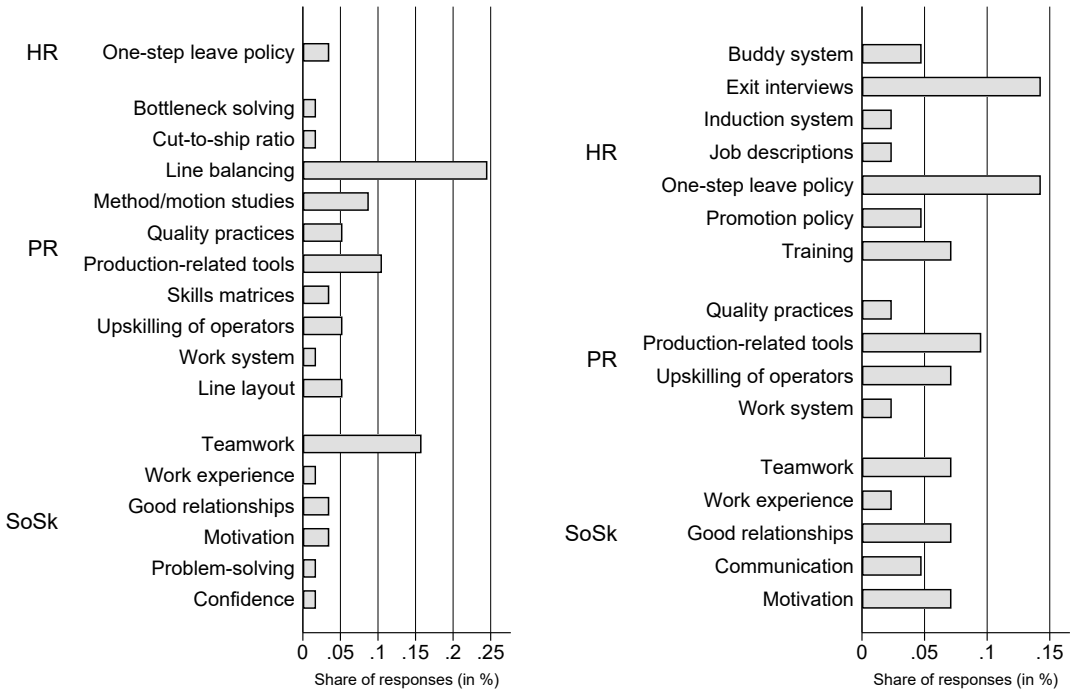
Notes: Table 15 shows the OLS estimates of treatments effects on each sub-index of the HR, PR, Wellbeing and Communication index for managers as illustrated in figure 19. All indices are constructed using Anderson's (2008) variance-covariance weighted index. A detailed description of each sub-index can be found in figure 9. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figure 20: Managers' perceptions about most important changes in policies or processes



Notes: Figure 20 displays the percentage share of responses of managers to the question "What are the most important changes in policies or processes that have resulted from BBW?". Managers could give several answer choices. The left graph displays the share of responses of managers in the production, IE or quality department per answer choice. The right graph displays the share of responses of managers in the HR or welfare department. Responses are clustered into HR- and PR-related topics.

Figure 21: Managers' perceptions about most important changes in their own job



Notes: Figure 20 displays the percentage share of responses of managers to the question "In your own job, what has changed the most as a result of BBW?". Managers could only give one answer choice. The left graph displays answer choices of managers in the production, IE or quality department. The right graph displays answer choices of managers in the HR or welfare department. Responses are clustered into HR-, PR- and communication/soft skills-related topics.

Table 16: Survey results of the buddy system (Respondents: Line operators)

	All	Only new LO (tenure < 60 days)				Only old LO	Only mentors	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Index	Paired	1st talk to buddy	Mentor useful	Have mentor	Be mentor	Questions	Teach. ability
Endline	0.075	-0.055	0.14	-0.20	0.26	-0.0081	-0.092	1.22**
	(0.30)	(0.20)	(0.26)	(0.22)	(0.33)	(0.28)	(1.12)	(0.54)
MidlineXTreated	1.32***	-0.40	0.99**	0.53	0.36	0.96***	0.64	0.75
	(0.30)	(0.28)	(0.40)	(0.35)	(0.32)	(0.25)	(0.64)	(0.45)
EndlineXTreated	0.51**	0.014	0.28	0.67*	-0.088	0.48**	0.36	-0.73*
	(0.24)	(0.27)	(0.34)	(0.36)	(0.36)	(0.22)	(0.64)	(0.42)
MidlineXAdjacent	0.13	0.094	-0.12	0.16	0.090	0.15	0.35	-0.15
	(0.29)	(0.24)	(0.27)	(0.45)	(0.40)	(0.27)	(0.57)	(0.61)
EndlineXAdjacent	-0.081	0.091	0.090	0.11	0.032	0.039	0.48	-0.73
	(0.24)	(0.45)	(0.27)	(0.31)	(0.46)	(0.25)	(0.73)	(0.70)
Observations	193	111	111	111	97	177	72	76
Line clusters	103	72	72	72	67	100	53	53

Notes: Table 16 presents the treatment effects after the Midline survey (MLxT) and the Endline survey (ELxT) on the buddy system. Column 1 shows the overall Anderson index, columns 2 to 8 the individual variables included in the index. Survey questions were asked to line operators only, where columns 2 to 5 only include new operators (with tenure <60 days), column 6 only old line operators (tenure >60 days) and columns 7 and 8 only mentors. The variables are defined as follows. "Paired": Operator was sitting next to experienced worker during first months at factory. "1st talk to buddy": Buddy is first person to talk to if worker has work-related grievance. "Mentor useful": Buddy is most helpful during first weeks at the factory. "Have mentor": Buddy exists on the line. "Be mentor": Worker has ever been assigned as buddy. "Questions": Frequency of being asked questions by new operators. "Teaching ability": Assessment of teaching and mentoring ability. Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 17: Survey results of the one-step leave policy (Respondents: Line operators)

	(1)	(2)	(3)
	Index	One-step	Time away
Endline	-0.60***	0.037	-0.86***
	(0.23)	(0.19)	(0.23)
MidlineXTreated	0.11	0.36	-0.14
	(0.24)	(0.25)	(0.22)
EndlineXTreated	0.54**	0.26	0.53**
	(0.22)	(0.22)	(0.21)
MidlineXAdjacent	0.23	0.28	0.094
	(0.23)	(0.26)	(0.20)
EndlineXAdjacent	0.38	0.19	0.36
	(0.23)	(0.22)	(0.25)
Observations	209	209	209
Line clusters	106	106	106

Notes: Table 17 presents the treatment effects after the Midline survey (MLxT) and the Endline survey (ELxT) on the one-step leave policy. Column 1 shows the overall Anderson index, columns 2 and 3 the individual variables included in the index. The variables are defined as follows. "One-step": Only one person approached to request leave. "Time away": Time spend away to request leave. Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 18: Survey results of operators' feelings (Respondents: Line operators)

	(1) Index	(2) Conflict with MG	(3) Self assessment	(4) Feelings of others
Endline	0.42*	-0.30	0.67***	0.73***
	(0.24)	(0.22)	(0.21)	(0.25)
MidlineXTreated	-0.20	0.13	-0.31*	-0.32
	(0.26)	(0.24)	(0.18)	(0.20)
EndlineXTreated	0.46**	0.29	0.39	0.056
	(0.22)	(0.18)	(0.25)	(0.24)
MidlineXAdjacent	-0.39	-0.19	-0.11	-0.35*
	(0.24)	(0.22)	(0.19)	(0.20)
EndlineXAdjacent	0.25	0.22	0.23	-0.080
	(0.28)	(0.23)	(0.25)	(0.28)
Observations	209	209	209	209
Line clusters	106	106	106	106

Notes: Table 18 presents the treatment effects after the Midline survey (MLxT) and the Endline survey (ELxT) on operators' feelings. Column 1 shows the overall Anderson index, columns 2 to 4 the individual variables included in the index. Survey questions were asked to line operators only. The variables are defined as follows. "Conflict with MG": No perceived conflict between workers and managers. "Self assessment": Assessment of own feelings towards job. "Feelings of others": Assessment of feelings of others towards job. Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 19: Survey results of communication practices (Respondents: Line operators)

	(1) Index	(2) Initiate meetings	(3) Approach supervisors	(4) Discuss suggestions
Endline	-0.026	-0.15	0.0073	0.099
	(0.22)	(0.19)	(0.18)	(0.17)
MidlineXTreated	0.86***	0.49**	0.47***	0.37
	(0.30)	(0.21)	(0.17)	(0.24)
EndlineXTreated	1.32***	0.80***	0.91***	0.44**
	(0.28)	(0.20)	(0.19)	(0.21)
MidlineXAdjacent	0.86**	0.56**	0.33	0.37
	(0.33)	(0.22)	(0.24)	(0.24)
EndlineXAdjacent	0.71**	0.47**	0.38*	0.27
	(0.30)	(0.23)	(0.22)	(0.20)
Observations	209	209	209	209
Line clusters	106	106	106	106

Notes: Table 19 presents the treatment effects after the Midline survey (MLxT) and the Endline survey (ELxT) on communication practices. Column 1 shows the overall Anderson index, columns 2 to 4 the individual variables included in the index. Survey questions were asked to line operators only. The variables are defined as follows. "Initiate meetings": Variety of topics for which worker initiate meetings with immediate superior (production capabilities, skills and/or work grievances). "Approach supervisor": Frequency of approaching supervisors to tell them about issues that affect workers. "Discuss suggestions": Frequency of talking to other operators about how to make things better at the factory. Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 20: Survey results of supervisors/line chief knowledge (Respondents: Line operators)

	(1) Index	(2) 1st position	(3) Married	(4) Length	(5) # Child.	(6) # Boys	(7) # Girls	(8) District	(9) Division	(10) Years	(11) Months
Endline	0.077***	-0.14	0.34	0.16	-0.065	-0.24	0.33	1.18***	-0.17	-0.064	0.34
	(0.022)	(0.16)	(0.23)	(0.34)	(0.27)	(0.24)	(0.31)	(0.21)	(0.20)	(0.19)	(0.24)
MidlineXTreated	0.068***	-0.038	0.43*	0.028	0.36	0.46*	0.52	0.029	-0.14	0.17	0.30
	(0.025)	(0.23)	(0.25)	(0.38)	(0.27)	(0.24)	(0.31)	(0.10)	(0.21)	(0.24)	(0.22)
EndlineXTreated	0.033	0.32	0.33	0.079	0.012	-0.022	-0.45	0.32	0.50**	0.16	-0.20
	(0.032)	(0.22)	(0.26)	(0.37)	(0.29)	(0.37)	(0.32)	(0.31)	(0.22)	(0.23)	(0.27)
MidlineXAdjacent	0.10***	0.33	0.88***	0.58*	0.16	0.097	0.32	-0.050	0.41*	-0.13	0.014
	(0.024)	(0.23)	(0.23)	(0.34)	(0.30)	(0.30)	(0.32)	(0.097)	(0.23)	(0.23)	(0.19)
EndlineXAdjacent	0.016	0.18	0.072	-0.57*	0.17	0.16	-0.23	0.062	0.20	0.37	-0.052
	(0.029)	(0.23)	(0.29)	(0.34)	(0.25)	(0.37)	(0.32)	(0.29)	(0.23)	(0.25)	(0.29)
Observations	209	209	209	113	158	139	139	209	209	209	209
Line clusters	106	106	106	80	100	87	87	106	106	106	106

Notes: Table 20 presents the treatment effects after the Midline survey (MLxT) and the Endline survey (ELxT) on the knowledge operators have about their line supervisors and line chiefs. Column 1 shows the overall index based on Katz et al. (2007), columns 2 to 11 the individual standardized variables which are aggregated into the index. Survey questions were asked to line operators only. The aim was to figure out how much private information operators know about the line supervisor/line chief (LS/LC) they have worked most with on the current line, in particular about their first position in the garment industry(column 1), marital status (column 2), length of marriage (column 3), number of children and if >0: number of boys and girls (column 5 to 7), home district and division (column 8 and 9) and tenure in the factory in years and months (column 10 and 11). Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 21: Survey results of quality practices (Respondents: Line supervisors/ Line chiefs)

	(1) Index	(2) Quality checks	(3) What changes	(4) Inspection	(5) File checks	(6) Flags
Endline	0.099	-0.22	-0.33*	0.21	0.19	0.064
	(0.21)	(0.21)	(0.19)	(0.17)	(0.22)	(0.20)
MidlineXTreated	0.72***	0.57**	0.78**	0.38	0.42*	0.090
	(0.25)	(0.25)	(0.30)	(0.23)	(0.23)	(0.26)
EndlineXTreated	0.050	0.049	0.30	-0.11	0.091	0.11
	(0.29)	(0.26)	(0.27)	(0.23)	(0.25)	(0.25)
MidlineXAdjacent	-0.35	-0.18	-0.30	-0.10	-0.20	-0.26
	(0.26)	(0.22)	(0.20)	(0.23)	(0.21)	(0.22)
EndlineXAdjacent	-0.50**	-0.59***	-0.43***	-0.30	0.10	-0.16
	(0.25)	(0.21)	(0.16)	(0.21)	(0.23)	(0.21)
Observations	219	219	219	219	219	219
Line clusters	116	116	116	116	116	116

Notes: Table 21 presents the treatment effects after the Midline survey (MLxT) and the Endline survey (ELxT) on quality practices. Column 1 shows the overall Anderson index, and columns 2 to 6 the individual standardized variables included in the index. "Quality checks": Change to quality checks in last six months. "What changes": Number of changes. "Inspection": Lines uses endline inspection format. "File checks": Line maintains a file for tracking quantity of garments checked. "Flags": Flags used as a method/aid in quality inspections. Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 22: Survey results of buddy system (Respondents: Managers)

	(1) Index	(2) Buddy in line	(3) Number of buddy lines	(4) Duration buddy system	(5) Buddy issues	(6) Buddy issues frequency
Treated	0.64***	-0.16	0.014	1.71***	0.092	-0.097
	(0.11)	(0.12)	(0.072)	(0.11)	(0.12)	(0.18)
Observations	247	247	226	223	247	133
Line clusters	25	25	25	25	25	25

Notes: Table 22 presents the treatment effects on the buddy system. Column 1 shows the overall Anderson index, and columns 2 to 6 the individual standardized variables included in the index. "Buddy in line": Indicator for buddy on pilot lines. "Number of buddy lines": Number of lines with buddy. "Duration buddy system": Amount of time buddy system has been active. "Buddy issues": Indicator for buddies approaching managers about worker issues. "Buddy issues frequency": Frequency of approaches by buddies to managers about worker issues. Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 23: Survey results of quality practices (Respondents: Managers)

	(1) Index	(2) New system	(3) Additions	(4) Zero defect operators	(5) Zero defect lines
Treated	-0.68***	-0.55***	-0.79***	-0.20	0.42
	(0.11)	(0.13)	(0.12)	(0.17)	(0.38)
Observations	247	247	247	108	99
Line clusters	25	25	25	22	21

*Notes:*Table 23 presents the treatment effects on quality practices. Column 1 shows the overall Anderson index, and columns 2 to 5 the individual standardized variables included in the index. "New system": Indicator for implementation of new quality system in past 6 months. "Additions": Number of new practices/systems added. "Zero defect operators": Number of zero defect operators on pilot lines. "Zero defect lines": Number of zero defect lines in factory. Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01

A.4.2 Factory data

All regressions in this section include time fixed effects to control for seasonal variations. We use weekly time dummies for the PR index and corresponding index components, and monthly time dummies for the HR index and corresponding index components. Factory fixed effects are also included to control for systematic differences across factories. The error term is clustered at the line level. At the bottom of each table, we report false discovery rate-adjusted q-values for HR-related and PR-related outcome families. We use the 'sharpened q value' approach based on the Benjamini-Hochberg procedure (Benjamini et al., 2006) to adjust for multiple outcome variables. For simplicity, tables do not report coefficients on the $PostX$ variables for $X = (1, 4)$. The baseline value of the dependent variable is also not shown.

Table 24: Overall effects on HR and PR indices and sub-indices

All C-lines (columns 3 and 4 in summary table 7)

	Index		HR Variables				PR Variables		
	(1) **HR**	(2) **PR**	(3) Exit	(4) Turnover	(5) Absenteeism	(6) Promotion	(7) Efficiency	(8) Alterations	(9) Rejects
TreatedXPost1	0.207	0.002	-0.030	-0.011	-0.001	0.004	0.045*	0.004	0.000
	(0.209)	(0.230)	(0.078)	(0.011)	(0.010)	(0.005)	(0.023)	(0.013)	(0.001)
			{1.000}	{1.000}	{1.000}	{1.000}	{0.195}	{1.000}	{1.000}
TreatedXPost2	0.447	-0.004	-0.133	-0.036	0.007	0.005	0.050	0.008	0.000
	(0.439)	(0.148)	(0.082)	(0.026)	(0.008)	(0.025)	(0.039)	(0.011)	(0.001)
			{0.548}	{0.548}	{0.548}	{0.726}	{1.000}	{1.000}	{1.000}
TreatedXPost3	0.396	0.005	0.105	0.003	0.000	0.034	0.006	0.002	-0.000
	(0.493)	(0.164)	(0.159)	(0.016)	(0.008)	(0.027)	(0.049)	(0.011)	(0.000)
			{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}
TreatedXPost4	-0.202	0.088	0.012	0.009	0.007	-0.006	0.016	0.002	-0.001**
	(0.229)	(0.121)	(0.056)	(0.012)	(0.007)	(0.005)	(0.028)	(0.010)	(0.000)
			{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{0.057}
Observations	200	1631	200	200	185	200	751	1630	1630
Clusters	35	52	35	35	32	35	30	52	52
R^2	0.34	0.33	0.28	0.33	0.52	0.21	0.51	0.30	0.32
Control mean	0.05	0.02	0.24	0.06	0.04	0.01	0.37	0.06	0.00
Factory FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Diff C-lines (columns 5 and 6 in summary table 7)

	Index		HR Variables				PR Variables		
	(1) **HR**	(2) **PR**	(3) Exit	(4) Turnover	(5) Absenteeism	(6) Promotion	(7) Efficiency	(8) Alterations	(9) Rejects
TreatedXPost1	0.282	0.016	-0.052	-0.012	-0.001	0.005	0.045*	0.003	0.000
	(0.219)	(0.237)	(0.082)	(0.012)	(0.011)	(0.005)	(0.025)	(0.014)	(0.001)
			{1.000}	{1.000}	{1.000}	{1.000}	{0.322}	{1.000}	{1.000}
TreatedXPost2	0.493	-0.057	-0.136	-0.045	0.003	0.003	0.055	0.010	0.000
	(0.450)	(0.154)	(0.087)	(0.029)	(0.008)	(0.026)	(0.040)	(0.012)	(0.001)
			{0.392}	{0.392}	{0.838}	{0.838}	{0.965}	{0.965}	{0.965}
TreatedXPost3	0.445	-0.009	0.123	0.002	-0.002	0.036	0.006	0.001	-0.000
	(0.513)	(0.168)	(0.160)	(0.017)	(0.009)	(0.027)	(0.049)	(0.012)	(0.000)
			{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}
TreatedXPost4	-0.166	0.070	0.002	0.005	0.008	-0.006	0.020	0.003	-0.001**
	(0.234)	(0.123)	(0.058)	(0.013)	(0.008)	(0.006)	(0.027)	(0.010)	(0.000)
			{1.000}	{1.000}	{1.000}	{1.000}	{0.843}	{0.975}	{0.132}
Observations	188	1511	188	188	173	188	710	1510	1510
Clusters	33	48	33	33	30	33	27	48	48
R^2	0.32	0.32	0.29	0.34	0.49	0.21	0.51	0.30	0.29
Control mean	0.07	0.02	0.25	0.07	0.04	0.01	0.37	0.06	0.00
Factory FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: Table 24 shows treatment effects on HR and PR indices in column one and two, and individual index components (exit, turnover, absenteeism and promotion rates for HR index, and efficiency, alteration rates and reject rates for PR index). The upper panel shows regression results in factories of type "AB", which have control lines on different floors. Columns one and two refer to columns 3 and 4 in the summary table 7. The lower panel shows regression results in those factories, but excludes control floors on the same floor as of treatment lines. Columns one and two refer to columns 5 and 6 in the summary table 7. Regressions include time fixed effects to control for seasonal variations. We use weekly time dummies for the PR index and corresponding index components, and monthly time dummies for the HR index and corresponding index components. Factory fixed effects are also included to control for systematic differences across factories. The error term is clustered at the line level. False discovery rate-adjusted p-values, also known as q-values, for HR-related and PR-related outcome families were used to adjust for multiple outcome variables. They are shown in curly brackets. We use the 'sharpened q value' approach based on the Benjamini-Hochberg procedure (Benjamini et al., 2006). For simplicity, the regression table does not report coefficients on the $PostX$ variables for $X = (1, 4)$, and the baseline value of the dependent variables. Standard errors are shown in round parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 25: Spillover effects, Adj-lines (ABC) (columns 7 and 8 in summary table 7)

	Index		**HR Variables**				**PR Variables**		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	HR	**PR**	Exit	Turnover	Absenteeism	Promotion	Efficiency	Alterations	Rejects
TreatedXPost1	0.450*	0.037	-0.076	-0.031*	-0.003	0.011	0.041**	-0.001	0.000
	(0.234)	(0.185)	(0.060)	(0.016)	(0.007)	(0.014)	(0.020)	(0.011)	(0.001)
			{0.449}	{0.303}	{0.704}	{0.704}	{0.156}	{1.000}	{1.000}
TreatedXPost2	0.464**	-0.000	-0.163**	-0.037*	0.000	0.002	0.059*	0.005	0.000
	(0.206)	(0.133)	(0.069)	(0.021)	(0.005)	(0.016)	(0.035)	(0.009)	(0.001)
			{0.089}	{0.148}	{0.947}	{0.947}	{0.388}	{1.000}	{1.000}
TreatedXPost3	0.018	0.010	0.173	-0.005	0.000	0.029	0.024	0.000	-0.000
	(0.400)	(0.139)	(0.165)	(0.016)	(0.007)	(0.022)	(0.041)	(0.009)	(0.000)
			{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}
TreatedXPost4	-0.116	0.093	-0.002	0.011	0.001	-0.006	0.025	-0.001	-0.001**
	(0.150)	(0.105)	(0.040)	(0.013)	(0.006)	(0.005)	(0.030)	(0.008)	(0.000)
			{1.000}	{1.000}	{1.000}	{1.000}	{0.718}	{1.000}	{0.105}
AdjacentXPost1	0.159	0.062	0.009	-0.017	-0.001	0.005	0.029	-0.002	0.000
	(0.191)	(0.150)	(0.068)	(0.015)	(0.006)	(0.008)	(0.020)	(0.009)	(0.000)
			{1.000}	{1.000}	{1.000}	{1.000}	{0.811}	{1.000}	{1.000}
AdjacentXPost2	-0.014	0.096	0.108	-0.045**	0.004	0.002	0.070**	-0.003	-0.000
	(0.242)	(0.100)	(0.087)	(0.020)	(0.006)	(0.016)	(0.030)	(0.006)	(0.000)
			{0.495}	{0.120}	{0.791}	{0.823}	{0.079}	{1.000}	{1.000}
AdjacentXPost3	-0.348	-0.070	0.033	0.081	0.004	0.020	0.009	0.005	-0.000
	(0.564)	(0.132)	(0.132)	(0.051)	(0.009)	(0.016)	(0.033)	(0.009)	(0.000)
			{0.890}	{0.848}	{0.890}	{0.848}	{1.000}	{1.000}	{1.000}
AdjacentXPost4	0.006	0.059	-0.034	0.008	-0.001	-0.003	-0.010	-0.004	-0.000
	(0.114)	(0.094)	(0.041)	(0.011)	(0.004)	(0.005)	(0.024)	(0.006)	(0.000)
			{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}
Observations	469	3397	469	469	383	469	1406	3396	3396
Clusters	83	112	83	83	67	83	56	112	112
R^2	0.29	0.31	0.23	0.25	0.51	0.23	0.50	0.27	0.34
Control mean	0.04	-0.05	0.22	0.06	0.03	0.01	0.41	0.06	0.00
Factory FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: Table 25 shows treatment effects on HR and PR indices in column one and two, which refer to columns 7 and 8 in the summary table 7, and individual index components (exit, turnover, absenteeism and promotion rates for HR index, and efficiency, alteration rates and reject rates for PR index). Regressions include time fixed effects to control for seasonal variations. We use weekly time dummies for the PR index and corresponding index components, and monthly time dummies for the HR index and corresponding index components. Factory fixed effects are also included to control for systematic differences across factories. The error term is clustered at the line level. False discovery rate-adjusted p-values, also known as q-values, for HR-related and PR-related outcome families were used to adjust for multiple outcome variables. They are shown in curly brackets. We use the 'sharpened q value' approach based on the Benjamini-Hochberg procedure (Benjamini et al., 2006). For simplicity, the regression table does not report coefficients on the $PostX$ variables for $X = (1, 4)$, and the baseline value of the dependent variables. Standard errors are shown in round parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 26: Spillover effects, Adj-lines (columns 9 and 10 in summary table 7)

	Index		HR Variables				PR Variables		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	HR	**PR**	Exit	Turnover	Absenteeism	Promotion	Efficiency	Alterations	Rejects
TreatedXPost1	0.287	0.016	-0.054	-0.012	-0.002	0.005	0.047**	0.002	0.000
	(0.207)	(0.232)	(0.077)	(0.011)	(0.011)	(0.005)	(0.021)	(0.014)	(0.001)
			{1.000}	{1.000}	{1.000}	{1.000}	{0.093}	{1.000}	{1.000}
TreatedXPost2	0.509	-0.050	-0.143	-0.045	0.003	0.003	0.058	0.009	0.000
	(0.423)	(0.150)	(0.087)	(0.028)	(0.007)	(0.025)	(0.037)	(0.011)	(0.001)
			{0.315}	{0.315}	{0.818}	{0.829}	{0.592}	{0.592}	{0.592}
TreatedXPost3	0.459	-0.004	0.111	0.002	-0.001	0.036	0.008	0.000	-0.000
	(0.525)	(0.166)	(0.155)	(0.016)	(0.008)	(0.027)	(0.046)	(0.012)	(0.000)
			{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}
TreatedXPost4	-0.153	0.084	-0.003	0.005	0.007	-0.006	0.029	0.002	-0.001*
	(0.225)	(0.122)	(0.057)	(0.013)	(0.007)	(0.006)	(0.032)	(0.010)	(0.000)
			{1.000}	{1.000}	{1.000}	{1.000}	{0.586}	{1.000}	{0.184}
AdjacentXPost1	-0.022	0.011	0.074	0.004	-0.002	0.004	0.034	0.002	0.000
	(0.219)	(0.189)	(0.091)	(0.012)	(0.009)	(0.004)	(0.021)	(0.012)	(0.001)
			{1.000}	{1.000}	{1.000}	{1.000}	{0.530}	{1.000}	{1.000}
AdjacentXPost2	0.386	0.046	-0.023	-0.048*	0.003	0.008	0.075**	0.000	0.000
	(0.440)	(0.112)	(0.103)	(0.027)	(0.008)	(0.024)	(0.032)	(0.008)	(0.000)
			{1.000}	{0.486}	{1.000}	{1.000}	{0.071}	{1.000}	{1.000}
AdjacentXPost3	0.331	-0.001	-0.021	0.028*	0.003	0.023	0.018	-0.002	-0.000
	(0.531)	(0.146)	(0.130)	(0.015)	(0.009)	(0.019)	(0.040)	(0.010)	(0.000)
			{0.770}	{0.381}	{0.770}	{0.477}	{1.000}	{1.000}	{1.000}
AdjacentXPost4	0.120	0.036	-0.081	-0.006	0.003	-0.003	-0.001	-0.001	-0.000
	(0.144)	(0.107)	(0.048)	(0.010)	(0.005)	(0.006)	(0.026)	(0.007)	(0.000)
			{0.689}	{0.873}	{0.873}	{0.873}	{1.000}	{1.000}	{1.000}
Observations	297	2486	297	297	272	297	1184	2485	2485
Clusters	52	79	52	52	47	52	44	79	79
R^2	0.31	0.32	0.24	0.32	0.48	0.21	0.48	0.31	0.30
Control mean	0.17	-0.01	0.22	0.06	0.03	0.01	0.40	0.06	0.00
Factory FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: Table 26 shows treatment effects on HR and PR indices in column one and two, which refer to columns 9 and 10 in the summary table 7, and individual index components (exit, turnover, absenteeism and promotion rates for HR index, and efficiency, alteration rates and reject rates for PR index). Regressions include time fixed effects to control for seasonal variations. We use weekly time dummies for the PR index and corresponding index components, and monthly time dummies for the HR index and corresponding index components. Factory fixed effects are also included to control for systematic differences across factories. The error term is clustered at the line level. False discovery rate-adjusted p-values, also known as q-values, for HR-related and PR-related outcome families were used to adjust for multiple outcome variables. They are shown in curly brackets. We use the 'sharpened q value' approach based on the Benjamini-Hochberg procedure (Benjamini et al., 2006). For simplicity, the regression table does not report coefficients on the $PostX$ variables for $X = (1, 4)$, and the baseline value of the dependent variables. Standard errors are shown in round parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 27: Spillover effects, Adj+Other (columns 11 and 12 in summary table 7)

	Index		**HR Variables**				**PR Variables**		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	HR	**PR**	Exit	Turnover	Absenteeism	Promotion	Efficiency	Alterations	Rejects
TreatedXPost1	0.204	0.045	-0.086*	-0.010	0.000	0.001	0.035**	0.001	-0.000
	(0.129)	(0.220)	(0.049)	(0.007)	(0.008)	(0.003)	(0.017)	(0.012)	(0.001)
			{0.484}	{0.484}	{0.980}	{0.980}	{0.126}	{1.000}	{1.000}
TreatedXPost2	0.470	-0.120	-0.162***	-0.032*	0.001	0.003	0.018	0.013	0.000
	(0.354)	(0.133)	(0.051)	(0.017)	(0.005)	(0.020)	(0.032)	(0.011)	(0.000)
			{0.007}	{0.089}	{0.811}	{0.811}	{1.000}	{1.000}	{1.000}
TreatedXPost3	0.602	-0.053	0.019	-0.037	0.000	0.027	-0.001	0.003	-0.000
	(0.496)	(0.154)	(0.125)	(0.024)	(0.006)	(0.026)	(0.046)	(0.009)	(0.000)
			{1.000}	{0.971}	{1.000}	{0.971}	{1.000}	{1.000}	{1.000}
TreatedXPost4	-0.054	0.076	0.007	-0.008	0.003	-0.003	0.001	-0.001	-0.001*
	(0.191)	(0.104)	(0.047)	(0.010)	(0.007)	(0.004)	(0.025)	(0.010)	(0.000)
			{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{0.275}
AdjacentXPost1	-0.128	0.055	0.054	0.006	0.001	0.000	0.015	-0.001	-0.000
	(0.155)	(0.162)	(0.072)	(0.008)	(0.006)	(0.003)	(0.018)	(0.010)	(0.001)
			{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}
AdjacentXPost2	0.337	-0.054	-0.041	-0.037**	0.001	0.008	0.031	0.003	0.001*
	(0.382)	(0.084)	(0.075)	(0.014)	(0.005)	(0.020)	(0.024)	(0.006)	(0.000)
			{1.000}	{0.051}	{1.000}	{1.000}	{0.237}	{0.402}	{0.235}
AdjacentXPost3	0.410	-0.049	-0.094	-0.012	0.004	0.015	0.013	0.002	-0.000
	(0.479)	(0.128)	(0.091)	(0.024)	(0.008)	(0.018)	(0.033)	(0.008)	(0.000)
			{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}
AdjacentXPost4	0.195*	0.042	-0.062*	-0.020***	-0.001	-0.000	-0.008	-0.004	-0.000
	(0.104)	(0.084)	(0.036)	(0.007)	(0.003)	(0.004)	(0.028)	(0.006)	(0.000)
			{0.147}	{0.009}	{0.898}	{0.898}	{1.000}	{1.000}	{1.000}
OtherXPost1	0.144	0.176	-0.067	-0.012*	-0.001	-0.001	0.004	-0.011*	-0.000
	(0.109)	(0.122)	(0.045)	(0.007)	(0.004)	(0.003)	(0.013)	(0.006)	(0.001)
			{0.396}	{0.396}	{0.750}	{0.657}	{0.972}	{0.304}	{0.653}
OtherXPost2	-0.067	0.005	-0.034	-0.032*	0.003	-0.013	0.009	0.001	-0.000
	(0.220)	(0.067)	(0.054)	(0.018)	(0.003)	(0.010)	(0.020)	(0.005)	(0.000)
			{0.647}	{0.453}	{0.647}	{0.453}	{1.000}	{1.000}	{1.000}
OtherXPost3	0.860***	-0.042	-0.064	-0.018	-0.010**	0.034*	0.042**	0.004	0.000
	(0.326)	(0.075)	(0.077)	(0.025)	(0.004)	(0.017)	(0.019)	(0.005)	(0.000)
			{0.315}	{0.315}	{0.060}	{0.083}	{0.099}	{0.766}	{0.766}
OtherXPost4	0.131	0.084	-0.010	-0.020***	-0.002	0.000	0.002	-0.008*	-0.000
	(0.085)	(0.057)	(0.029)	(0.006)	(0.003)	(0.003)	(0.015)	(0.004)	(0.000)
			{1.000}	{0.004}	{1.000}	{1.000}	{1.000}	{0.307}	{0.661}
Observations	1080	8107	1077	1077	986	1077	4663	8104	8104
Clusters	193	257	192	192	173	192	165	257	257
R^2	0.26	0.31	0.20	0.22	0.56	0.18	0.42	0.28	0.27
Control mean	0.08	0.05	0.23	0.07	0.03	0.01	0.41	0.05	0.00
Factory FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: Table 27 shows treatment effects on HR and PR indices in column one and two, which refer to columns 11 and 12 in the summary table 7, and individual index components (exit, turnover, absenteeism and promotion rates for HR index, and efficiency, alteration rates and reject rates for PR index). Regressions include time fixed effects to control for seasonal variations. We use weekly time dummies for the PR index and corresponding index components, and monthly time dummies for the HR index and corresponding index components. Factory fixed effects are also included to control for systematic differences across factories. The error term is clustered at the line level. False discovery rate-adjusted p-values, also known as q-values, for HR-related and PR-related outcome families were used to adjust for multiple outcome variables. They are shown in curly brackets. We use the 'sharpened q value' approach based on the Benjamini-Hochberg procedure (Benjamini et al., 2006). For simplicity, the regression table does not report coefficients on the $PostX$ variables for $X = (1, 4)$, and the baseline value of the dependent variables. Standard errors are shown in round parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Table 28: Spillover effects

C-floor (columns 13 and 14 in summary table 7)

	Index		HR Variables				PR Variables		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	HR	**PR**	Exit	Turnover	Absenteeism	Promotion	Efficiency	Alterations	Rejects
TreatedXPost1	0.111	0.119	-0.053	-0.008	0.000	-0.001	0.012	-0.006	-0.000
	(0.095)	(0.104)	(0.040)	(0.006)	(0.004)	(0.002)	(0.011)	(0.006)	(0.000)
			{0.567}	{0.567}	{0.984}	{0.928}	{0.850}	{0.850}	{0.850}
TreatedXPost2	0.121	-0.023	-0.053	-0.033**	0.002	-0.005	0.015	0.003	0.000
	(0.202)	(0.060)	(0.046)	(0.014)	(0.003)	(0.010)	(0.017)	(0.004)	(0.000)
			{0.591}	{0.095}	{0.844}	{0.844}	{1.000}	{1.000}	{1.000}
TreatedXPost3	0.687**	-0.035	-0.048	-0.021	-0.003	0.029**	0.031*	0.002	0.000
	(0.297)	(0.072)	(0.068)	(0.023)	(0.004)	(0.013)	(0.017)	(0.005)	(0.000)
			{0.569}	{0.569}	{0.569}	{0.124}	{0.263}	{1.000}	{1.000}
TreatedXPost4	0.110	0.070	-0.017	-0.018***	-0.001	-0.000	-0.001	-0.006	-0.000
	(0.074)	(0.051)	(0.025)	(0.005)	(0.003)	(0.002)	(0.013)	(0.004)	(0.000)
			{1.000}	{0.005}	{1.000}	{1.000}	{0.534}	{0.534}	{0.534}
Observations	1080	8107	1077	1077	986	1077	4663	8104	8104
Clusters	193	257	192	192	173	192	165	257	257
R^2	0.25	0.31	0.19	0.21	0.56	0.18	0.42	0.28	0.27
Control mean	0.01	0.00	0.25	0.08	0.04	0.01	0.40	0.06	0.00
Factory FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

All floors (columns 15 and 16 in summary table 7)

	Index		HR Variables				PR Variables		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	HR	**PR**	Exit	Turnover	Absenteeism	Promotion	Efficiency	Alterations	Rejects
TreatedXPost1	0.045	0.044	-0.038	-0.010*	0.002	-0.003	0.021*	-0.001	-0.000
	(0.091)	(0.093)	(0.036)	(0.006)	(0.004)	(0.002)	(0.011)	(0.005)	(0.000)
			{0.371}	{0.371}	{0.398}	{0.371}	{0.191}	{1.000}	{1.000}
TreatedXPost2	0.272	0.004	-0.081*	-0.033**	0.002	-0.000	0.019	0.002	0.000
	(0.185)	(0.055)	(0.044)	(0.013)	(0.003)	(0.009)	(0.016)	(0.004)	(0.000)
			{0.109}	{0.046}	{0.578}	{0.931}	{1.000}	{1.000}	{1.000}
TreatedXPost3	0.814***	0.016	-0.046	-0.051*	-0.002	0.027**	0.042**	-0.000	0.000
	(0.301)	(0.067)	(0.064)	(0.028)	(0.004)	(0.013)	(0.017)	(0.004)	(0.000)
			{0.392}	{0.156}	{0.392}	{0.156}	{0.039}	{1.000}	{1.000}
TreatedXPost4	0.117	0.052	-0.025	-0.016***	0.001	-0.001	-0.005	-0.006	-0.000
	(0.073)	(0.049)	(0.024)	(0.005)	(0.003)	(0.002)	(0.013)	(0.004)	(0.000)
			{0.786}	{0.005}	{1.000}	{1.000}	{0.849}	{0.587}	{0.800}
Observations	1245	9689	1245	1245	1154	1245	5579	9684	9684
Clusters	224	306	224	224	205	224	198	306	306
R^2	0.21	0.29	0.17	0.19	0.52	0.17	0.39	0.26	0.28
Control mean	0.02	-0.00	0.24	0.07	0.03	0.01	0.39	0.05	0.00
Factory FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: Table 28 shows treatment effects on HR and PR indices in column one and two, and individual index components (exit, turnover, absenteeism and promotion rates for HR index, and efficiency, alteration rates and reject rates for PR index). The upper panel shows regression results in factories of type "AB", which have control lines on different floors, and compares treatment floors to control floors. Columns one and two refer to columns 13 and 14 in the summary table 7. The lower panel shows regression results in those factories as well, but compares treatment floors to all other floors in the factory. Columns one and two refer to columns 15 and 16 in the summary table 7. Regressions include time fixed effects to control for seasonal variations. We use weekly time dummies for the PR index and corresponding index components, and monthly time dummies for the HR index and corresponding index components. Factory fixed effects are also included to control for systematic differences across factories. The error term is clustered at the line level. False discovery rate-adjusted p-values, also known as q-values, for HR-related and PR-related outcome families were used to adjust for multiple outcome variables. They are shown in curly brackets. We use the 'sharpened q value' approach based on the Benjamini-Hochberg procedure (Benjamini et al., 2006). For simplicity, the regression table does not report coefficients on the $PostX$ variables for $X = (1, 4)$, and the baseline value of the dependent variables. Standard errors are in round brackets. * p<0.1, ** p<0.05, *** p<0.01

Table 29: Robustness check: Summary table of overall effects of factories with high match rates of floor information

	All C-lines (ABC)		All C-lines		Diff C-lines		Adj-lines (ABC)		Adj-lines		Adj+Other		C-floor		All floors	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	HR	**PR**	**HR**	**PR**	**HR**	**PR**	**HR**	**PR**	**HR**	**PR**	**HR**	**PR**	**HR**	**PR**	**HR**	**PR**
TreatedXPost1	0.39	0.014	0.31	0.013	0.41	0.055	0.41	0.0052	0.42	0.054	0.32**	0.053	0.23**	0.14	0.12	0.045
	(0.26)	(0.20)	(0.26)	(0.30)	(0.27)	(0.31)	(0.25)	(0.20)	(0.25)	(0.30)	(0.16)	(0.28)	(0.11)	(0.14)	(0.11)	(0.12)
TreatedXPost2	0.46*	0.0026	0.55	0.0083	0.63	-0.048	0.49**	0.0020	0.64	-0.043	0.53	-0.12	0.18	-0.032	0.36	0.013
	(0.26)	(0.16)	(0.52)	(0.15)	(0.53)	(0.15)	(0.24)	(0.15)	(0.50)	(0.15)	(0.42)	(0.13)	(0.24)	(0.060)	(0.22)	(0.053)
TreatedXPost3	0.26	0.0059	0.37	0.028	0.50	-0.0011	0.29	-0.0087	0.51	-0.0047	0.76*	-0.079	0.80***	-0.068	0.88***	0.0012
	(0.34)	(0.17)	(0.39)	(0.19)	(0.41)	(0.20)	(0.35)	(0.16)	(0.43)	(0.19)	(0.41)	(0.18)	(0.28)	(0.084)	(0.30)	(0.076)
TreatedXPost4	-0.11	0.17	-0.23	0.15	-0.20	0.12	-0.094	0.17	-0.18	0.13	-0.12	0.11	0.089	0.052	0.11	0.047
	(0.19)	(0.12)	(0.28)	(0.14)	(0.29)	(0.14)	(0.18)	(0.12)	(0.28)	(0.14)	(0.24)	(0.12)	(0.081)	(0.061)	(0.083)	(0.055)
AdjacentXPost1							0.092	0.031	0.096	0.040	-0.022	0.059				
							(0.21)	(0.17)	(0.26)	(0.25)	(0.17)	(0.21)				
AdjacentXPost2							0.047	0.12	0.52	0.026	0.41	-0.069				
							(0.27)	(0.11)	(0.51)	(0.11)	(0.43)	(0.083)				
AdjacentXPost3							0.057	-0.060	0.30	-0.0013	0.49	-0.065				
							(0.30)	(0.14)	(0.37)	(0.17)	(0.32)	(0.15)				
AdjacentXPost4							0.049	0.13	0.14	0.066	0.18	0.070				
							(0.11)	(0.11)	(0.15)	(0.13)	(0.11)	(0.10)				
OtherXPost1											0.28**	0.23				
											(0.12)	(0.16)				
OtherXPost2											-0.031	-0.0045				
											(0.27)	(0.067)				
OtherXPost3											1.06***	-0.086				
											(0.29)	(0.088)				
OtherXPost4											0.12	0.027				
											(0.091)	(0.065)				
Base	0.062	0.46***	-0.035	0.45***	-0.11	0.44***	0.054	0.36***	-0.097	0.38***	0.11**	0.11***	0.11**	0.11***	0.072	0.18***
	(0.086)	(0.098)	(0.12)	(0.13)	(0.12)	(0.13)	(0.071)	(0.059)	(0.095)	(0.080)	(0.048)	(0.032)	(0.049)	(0.032)	(0.049)	(0.042)
Observations	255	1697	182	1368	170	1275	408	2789	273	2144	969	6649	969	6649	1134	8231
R^2	0.44	0.35	0.43	0.39	0.40	0.40	0.40	0.33	0.40	0.39	0.34	0.36	0.34	0.36	0.28	0.33
Line clusters	45	56	32	43	30	40	72	92	48	67	174	208	174	208	205	257
Control Mean	-0.067	-0.069	-0.052	-0.0050	-0.019	-0.0044	0.016	-0.077	0.12	-0.013	0.042	0.016	-0.033	-0.033	-0.011	-0.0078
Factory Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: Regressions exclude five factories with a match rate of less than 75% of floor information between survey and salary data. All indices are based on Kling, Liebman & Katz, 2007. Columns 1 to 6 show regression results of treatment lines (T) compared to control lines, out of which columns 3 to 6 exclude factories with control lines only on the same floor as treatment lines. Columns 7 to 10 compare treatment lines (T) and adjacent lines (A) to control lines, out of which columns 9 and 10 exclude factories with control lines only on the same floor as treatment lines and only keep control lines on control floors. Columns 11 and 12 compare treatment lines (T), adjacent lines (A) and and other lines on the treatment floor (O) to all lines on the control floor. Columns 13 and 14 compare treatment floors to the control floors, and columns 15 and 16 against all lines on all other floors in the factory. Standard errors are shown in round parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 30: Robustness check: Overall effects, All C-lines (ABC) (columns 1 and 2 in summary table 29)

	Index		**HR Variables**				**PR Variables**		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	HR	**PR**	Exit	Turnover	Absenteeism	Promotion	Efficiency	Alterations	Rejects
TreatedXPost1	0.390	0.014	-0.081	-0.018*	-0.002	0.010	0.045*	0.002	0.000
	(0.257)	(0.204)	(0.063)	(0.009)	(0.008)	(0.016)	(0.025)	(0.011)	(0.001)
			{0.453}	{0.296}	{0.712}	{0.712}	{0.301}	{1.000}	{1.000}
TreatedXPost2	0.456*	0.003	-0.162**	-0.029	0.001	0.002	0.018	0.004	0.000
	(0.255)	(0.156)	(0.067)	(0.019)	(0.006)	(0.019)	(0.034)	(0.010)	(0.001)
			{0.088}	{0.256}	{0.854}	{0.854}	{1.000}	{1.000}	{1.000}
TreatedXPost3	0.263	0.006	-0.045	-0.015	-0.000	0.008	0.002	0.003	-0.000
	(0.338)	(0.167)	(0.171)	(0.014)	(0.008)	(0.013)	(0.045)	(0.010)	(0.000)
			{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}
TreatedXPost4	-0.112	0.167	0.028	0.004	0.002	-0.003	0.018	-0.003	-0.001**
	(0.193)	(0.124)	(0.041)	(0.008)	(0.006)	(0.006)	(0.030)	(0.009)	(0.000)
			{1.000}	{1.000}	{1.000}	{1.000}	{0.938}	{0.938}	{0.051}
Observations	255	1697	255	255	228	255	747	1696	1696
Clusters	45	56	45	45	40	45	32	56	56
R^2	0.44	0.35	0.31	0.39	0.53	0.25	0.56	0.30	0.34
Control mean	-0.07	-0.07	0.22	0.06	0.04	0.01	0.40	0.06	0.00
Factory FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: Table 30 shows treatment effects on HR and PR indices in column one and two, which refer to columns 1 and 2 in the summary table 29, and individual survey components (exit, turnover, absenteeism and promotion rates for HR index, and efficiency and alteration rates for PR index). Regressions include time fixed effects to control for seasonal variations. We use weekly time dummies for the PR index and corresponding index components, and monthly time dummies for the HR index and corresponding index components. Factory fixed effects are also included to control for systematic differences across factories. The error term is clustered at the line level. False discovery rate-adjusted p-values, also known as q-values, for HR-related and PR-related outcome families were used to adjust for multiple outcome variables. They are shown in curly brackets. We use the 'sharpened q value' approach based on the Benjamini-Hochberg procedure (Benjamini et al., 2006). For simplicity, the regression table does not report coefficients on the $PostX$ variables for $X = (1, 4)$, and the baseline value of the dependent variables. Regressions exclude five factories with a match rate of less than 75% of floor information between survey and salary data. Standard errors are shown in round parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 31: Robustness check: Summary table of overall effects of factories with high match rates of line information

	All C-lines (ABC)		All C-lines		Diff C-lines		Adj-lines (ABC)		Adj-lines		Adj+Other		C-floor		All floors	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	HR	**PR**	**HR**	**PR**	**HR**	**PR**	**HR**	**PR**	**HR**	**PR**	**HR**	**PR**	**HR**	**PR**	**HR**	**PR**
TreatedXPost1	0.25	0.098	0.18	0.038	0.29	0.12	0.28	0.100	0.28	0.13	0.24	0.10	0.26**	0.18	0.20*	0.12
	(0.22)	(0.41)	(0.23)	(0.49)	(0.25)	(0.49)	(0.21)	(0.41)	(0.22)	(0.49)	(0.15)	(0.43)	(0.10)	(0.17)	(0.10)	(0.16)
TreatedXPost2	0.43	0.098	0.53	0.11	0.61	0.096	0.47	0.10	0.59	0.10	0.47	-0.0055	0.22	-0.010	0.36	-0.020
	(0.43)	(0.17)	(0.53)	(0.18)	(0.55)	(0.19)	(0.40)	(0.17)	(0.52)	(0.18)	(0.44)	(0.16)	(0.24)	(0.065)	(0.22)	(0.061)
TreatedXPost3	-0.082	0.085	0.16	0.087	0.32	0.061	0.0094	0.089	0.29	0.068	0.56	-0.018	0.79***	-0.088	0.82***	-0.063
	(0.42)	(0.23)	(0.39)	(0.25)	(0.43)	(0.25)	(0.39)	(0.22)	(0.43)	(0.25)	(0.37)	(0.24)	(0.28)	(0.093)	(0.28)	(0.088)
TreatedXPost4	-0.18	0.11	-0.25	0.14	-0.22	0.11	-0.14	0.11	-0.22	0.10	-0.17	0.16	0.069	0.065	0.053	0.081
	(0.21)	(0.19)	(0.29)	(0.21)	(0.29)	(0.21)	(0.21)	(0.19)	(0.29)	(0.21)	(0.26)	(0.18)	(0.082)	(0.074)	(0.085)	(0.071)
AdjacentXPost1							0.044	0.067	0.12	0.039	0.072	0.023				
							(0.18)	(0.31)	(0.23)	(0.37)	(0.17)	(0.30)				
AdjacentXPost2							0.21	0.096	0.74	0.083	0.60	-0.017				
							(0.41)	(0.12)	(0.48)	(0.13)	(0.41)	(0.095)				
AdjacentXPost3							-0.65	-0.042	0.063	0.016	0.34	-0.055				
							(0.58)	(0.20)	(0.32)	(0.21)	(0.28)	(0.19)				
AdjacentXPost4							0.094	0.11	0.11	0.13	0.12	0.19				
							(0.13)	(0.16)	(0.16)	(0.18)	(0.11)	(0.14)				
OtherXPost1											0.35***	0.26				
											(0.12)	(0.20)				
OtherXPost2											0.0068	-0.0090				
											(0.27)	(0.071)				
OtherXPost3											1.05***	-0.12				
											(0.29)	(0.094)				
OtherXPost4											0.11	-0.0018				
											(0.092)	(0.078)				
Base	0.030	0.32*	-0.066	0.29	-0.15	0.29	0.011	0.31***	-0.13	0.30***	0.11**	0.077**	0.12**	0.078**	0.090	0.14***
	(0.094)	(0.16)	(0.14)	(0.19)	(0.15)	(0.20)	(0.089)	(0.092)	(0.12)	(0.11)	(0.053)	(0.032)	(0.053)	(0.032)	(0.055)	(0.043)
Observations	196	1028	155	857	143	797	312	1626	224	1247	807	4701	807	4701	918	5364
R^2	0.40	0.38	0.45	0.40	0.43	0.42	0.38	0.36	0.43	0.42	0.37	0.37	0.36	0.37	0.32	0.35
Line clusters	34	34	27	27	25	25	54	54	39	39	144	147	144	147	165	168
Control Mean	0.013	-0.0076	-0.011	0.010	0.017	-0.021	0.082	-0.0037	0.14	-0.020	0.061	0.0031	-0.021	-0.045	0.019	-0.013
Factory Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: Regressions exclude 13 factories with a match rate of less than 60% of line information between survey and salary data. All indices are based on Kling, Liebman & Katz, 2007. Standard errors are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Columns 1 to 6 show regression results of treatment lines (T) compared to control lines, out of which columns 3 to 6 exclude factories with control lines only on the same floor as treatment lines. Columns 7 to 10 compare treatment lines (T) and adjacent lines (A) to control lines, out of which columns 9 and 10 exclude factories with control lines only on the same floor as treatment lines and only keep control lines on control floors. Columns 11 and 12 compare treatment lines (T), adjacent lines (A) and and other lines on the treatment floor (O) to all lines on the control floor. Columns 13 and 14 compare treatment floors to the control floors, and columns 15 and 16 against all lines on all other floors in the factory. Standard errors are shown in round parentheses. * p<0.1, ** p<0.05, *** p<0.01

Table 32: Robustness checks: Overall effects, All C-lines (ABC) (columns 1 and 2 in summary table 31)

	Index		HR Variables				PR Variables		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	HR	**PR**	Exit	Turnover	Absenteeism	Promotion	Efficiency	Alterations	Rejects
TreatedXPost1	0.245	0.098	-0.057	-0.013	0.003	0.004	0.043	-0.006	0.001
	(0.215)	(0.414)	(0.075)	(0.010)	(0.009)	(0.005)	(0.027)	(0.051)	(0.002)
			{1.000}	{1.000}	{1.000}	{1.000}	{0.536}	{1.000}	{1.000}
TreatedXPost2	0.431	0.098	-0.211**	-0.034	0.008	0.000	0.050	0.009	-0.000
	(0.433)	(0.170)	(0.093)	(0.025)	(0.008)	(0.025)	(0.038)	(0.025)	(0.001)
			{0.142}	{0.362}	{0.494}	{0.788}	{1.000}	{1.000}	{1.000}
TreatedXPost3	-0.082	0.085	0.139	-0.015	-0.003	0.002	0.012	-0.005	-0.001
	(0.418)	(0.225)	(0.210)	(0.015)	(0.009)	(0.011)	(0.052)	(0.031)	(0.000)
			{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}
TreatedXPost4	-0.179	0.108	0.013	0.012	0.007	-0.004	0.006	0.000	-0.001*
	(0.214)	(0.186)	(0.049)	(0.011)	(0.007)	(0.005)	(0.023)	(0.027)	(0.001)
			{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{1.000}	{0.232}
Observations	196	1028	196	196	173	196	527	1027	1027
Clusters	34	34	34	34	30	34	24	34	34
R^2	0.40	0.38	0.33	0.39	0.55	0.23	0.56	0.38	0.27
Control mean	0.01	-0.01	0.26	0.06	0.04	0.01	0.37	0.08	0.00
Factory FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: Table 32 shows treatment effects on HR and PR indices in column one and two, which refer to columns 1 and 2 in the summary table 31, and individual survey components (exit, turnover, absenteeism and promotion rates for HR index, and efficiency and alteration rates for PR index). Regressions include time fixed effects to control for seasonal variations. We use weekly time dummies for the PR index and corresponding index components, and monthly time dummies for the HR index and corresponding index components. Factory fixed effects are also included to control for systematic differences across factories. The error term is clustered at the line level. False discovery rate-adjusted p-values, also known as q-values, for HR-related and PR-related outcome families were used to adjust for multiple outcome variables. They are shown in curly brackets. We use the 'sharpened q value' approach based on the Benjamini-Hochberg procedure (Benjamini et al., 2006). For simplicity, the regression table does not report coefficients on the $PostX$ variables for $X = (1, 4)$, and the baseline value of the dependent variables. Regressions exclude 13 factories with a match rate of less than 60% of line information between survey and salary data. Standard errors are shown in round parentheses. * p<0.1, ** p<0.05, *** p<0.01