



**WOMEN IN FACTORIES
FOUNDATIONAL TRAINING
SOUTH ASIA
ENDLINE REPORT**

Laura Babbitt
Drusilla Brown
Negin Toosi
Elyse Voegeli

Dirayati Djaya
Ana Antolin
Alexis Tatore
Ananya Ganesh
Jade Woo

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Foundational Training

- Women in Factories (WIF) is an initiative of the Walmart Foundation's Women's Economic Empowerment (WEE) Program.
- The Foundational Training curriculum was developed by CARE International.
- The FT course requires 9 hours of training.
- There are 7 modules covering communication, managing work and career, gender awareness, personal hygiene and reproductive health.
- The WIF Foundational Training was introduced in India and Bangladesh in 2012.
- The Walmart Foundation's delivery partners are CARE in Bangladesh and Swasti in India.
- The Bangladesh factories are located in Dhaka and Chittagong. The factories in India are located in Tamil Nadu, Karnataka and Gujarat.

Experimental Design

- A randomized controlled trial was conducted in seven factories in Bangladesh and seven factories in India.
- Workers participating in training were randomly assigned to one of two training batches.
- The study began with a baseline survey of both batches of workers, supervisors and managers.
- After the baseline, batch 1 was trained.
- Following batch 1 training, workers, supervisors and managers were resurveyed.
- Following the midline, batch 2 was trained.
- The study concluded with an endline survey of workers, supervisors and managers.
- 1025 participants completed the baseline survey, 942 completed the midline survey and 859 completed the endline survey.
- Factories also tracked six key performance indicators: late-coming, absenteeism, efficiency, product defects, accidents and separations.
- Data collection was conducted by Nielsen in Bangladesh and the Institute for Financial Management Research (IFMR) in India.
- The research was conducted under Tufts SBER IRB protocol 1407012 and funded by a grant from the Walmart Foundation.

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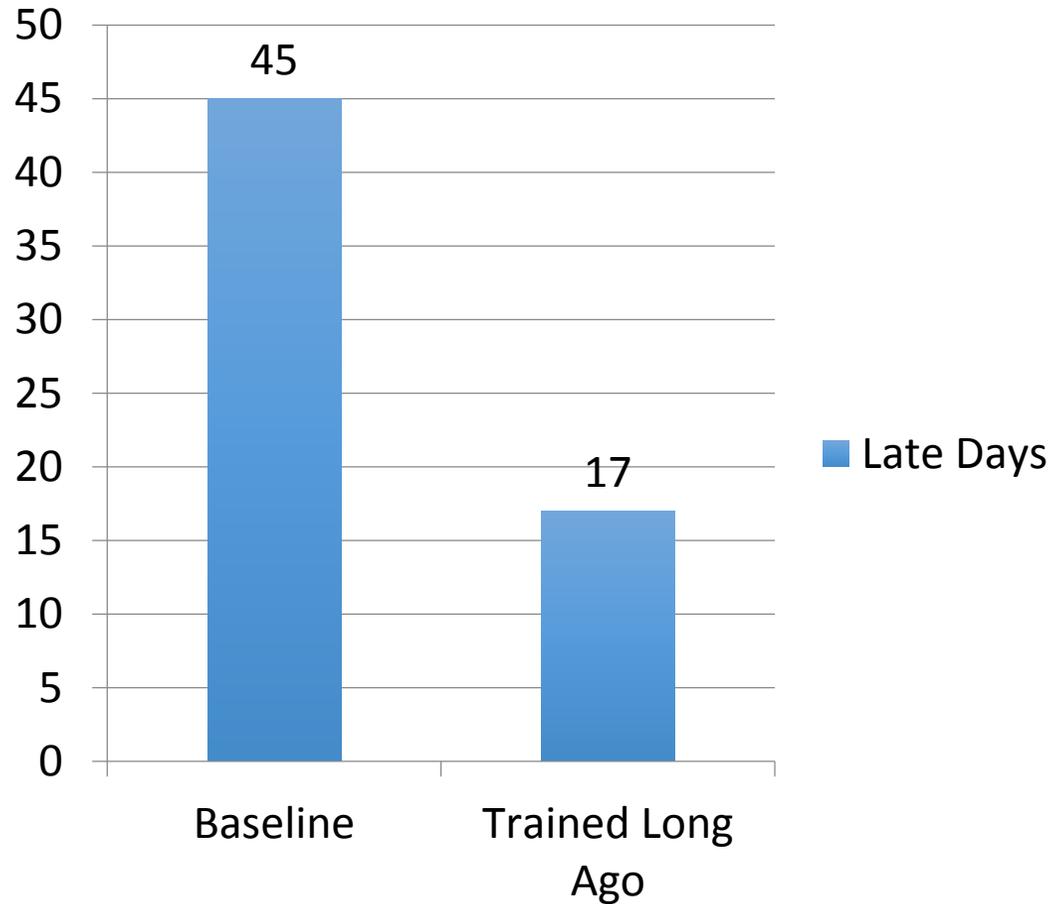
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Part I Key Performance Indicators

Six KPIs were tracked

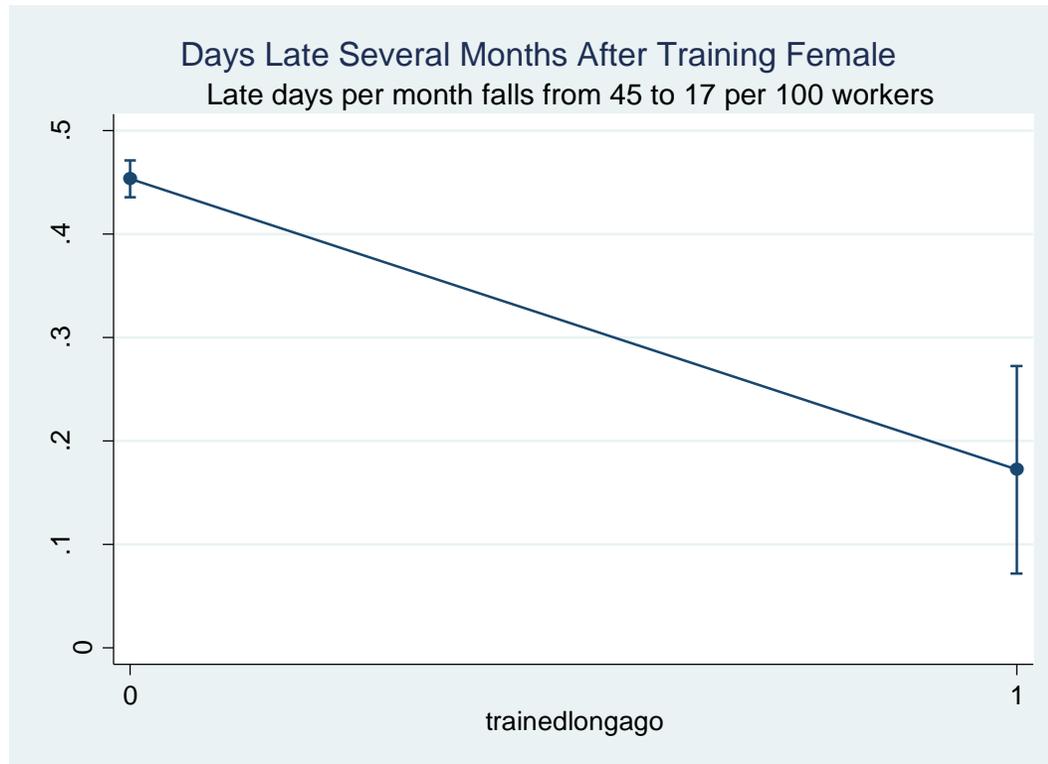
- Late-coming
- Absenteeism
- Production Defects
- Production Efficiency
- Separation (Workforce Turnover)
- Accidents

Female Late Person Days per Month per 100 Workers



- At the baseline without training, out of 100 female workers, there will typically be 45 late worker days per month.
- After training has cured, there will be only 17 late days per month.

Female employees responded more systematically to training



- Limiting the analysis to female employees,
- Women report 45 late days per month per 100 workers.
- In the months after training, late days declines to 17.
- The effect is statistically significant at the 0.05 level.

	(1)	(2)	(3)
VARIABLES	Late Days	Late Days India	Late Days Female
justtrained	-0.00122 (0.0260)	0.0464 (0.0884)	0.00900 (0.127)
trainedlongago	-0.0529 (0.0457)	-0.0120 (0.160)	-0.281** (0.0920)
midline	0.113 (0.261)	0.0782 (0.213)	0.0471 (0.188)
endline	-0.221 (0.256)	-0.457 (0.443)	-0.393 (0.502)
Constant	0.426* (0.233)	0.489*** (0.108)	0.555*** (0.133)
Observations	1,522	1,522	1,047
R-squared		0.060	0.076
Number of participant	804	804	597

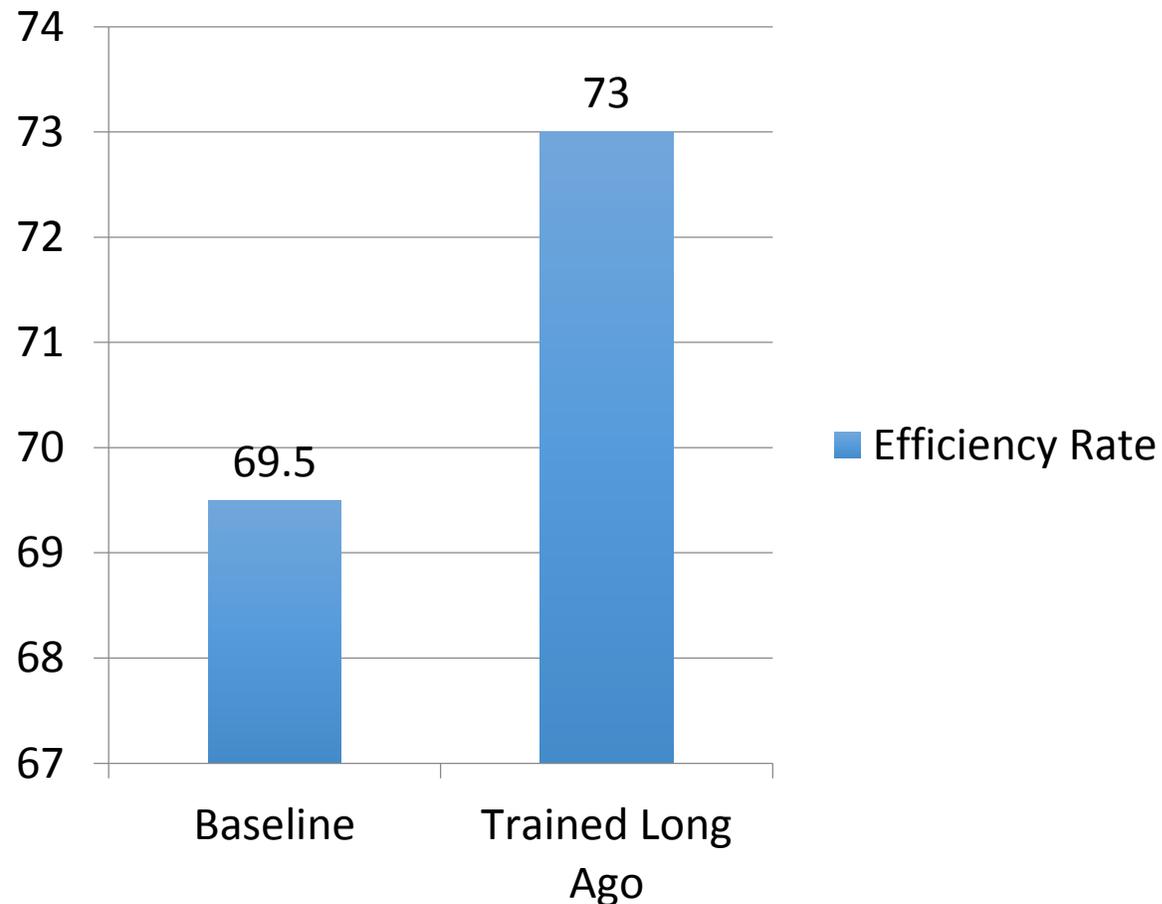
Worker fixed effects, Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1, ++ p<0.15, + p<0.20

Efficiency Rate Treatment Effect by Gender

- At the baseline, the efficiency rate for females was 69.5 percent.
- The efficiency rate for females was 8.3 percentage points lower than for males.
- In the months after training, the efficiency rate for females rose by 3.5 percentage points.
- That is, productivity for female employees rose by 5.0 percent as a consequence of training.

Efficiency Rate Female Participants

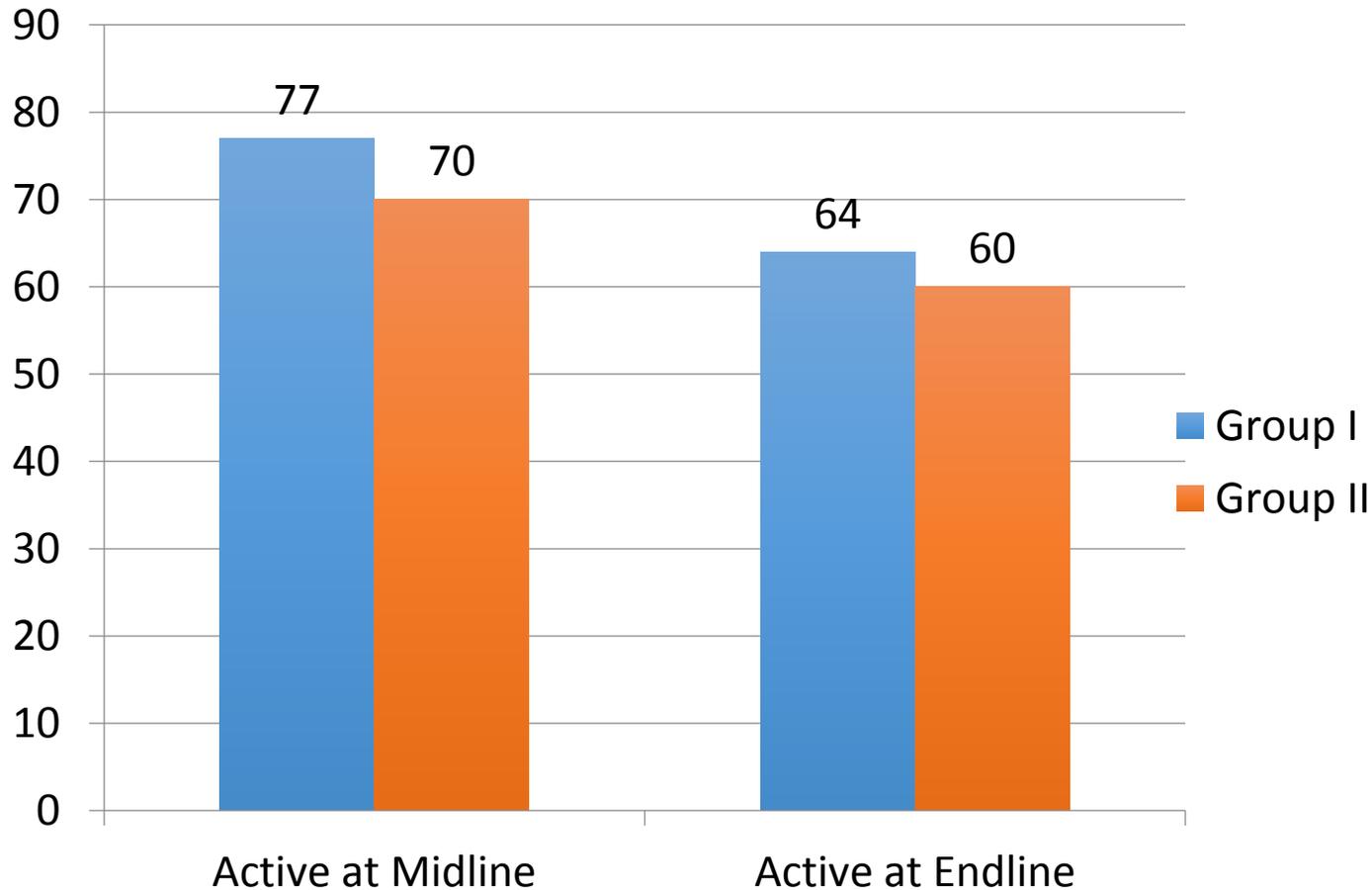


- At the baseline without training, women have an efficiency rate of 69.5.
- After training has cured, the efficiency rate rises to 73.0.
- The net effect is a 5.0 percent increase in productivity for females.

	(1)
VARIABLES	Efficiency Rate
justtrained	0.905 (1.729)
female	-8.331*** (2.554)
justtrained#female	2.379 (4.132)
trainedlongago	-5.500 (4.759)
trainedlongago#female	14.48* (7.656)
midline	-4.641+ (3.141)
endline	-6.053+ (4.220)
Production_Target	6.78e-05+ (4.89e-05)
Constant	78.38*** (2.601)
Observations	900
Number of participant	622
R-squared	0.077

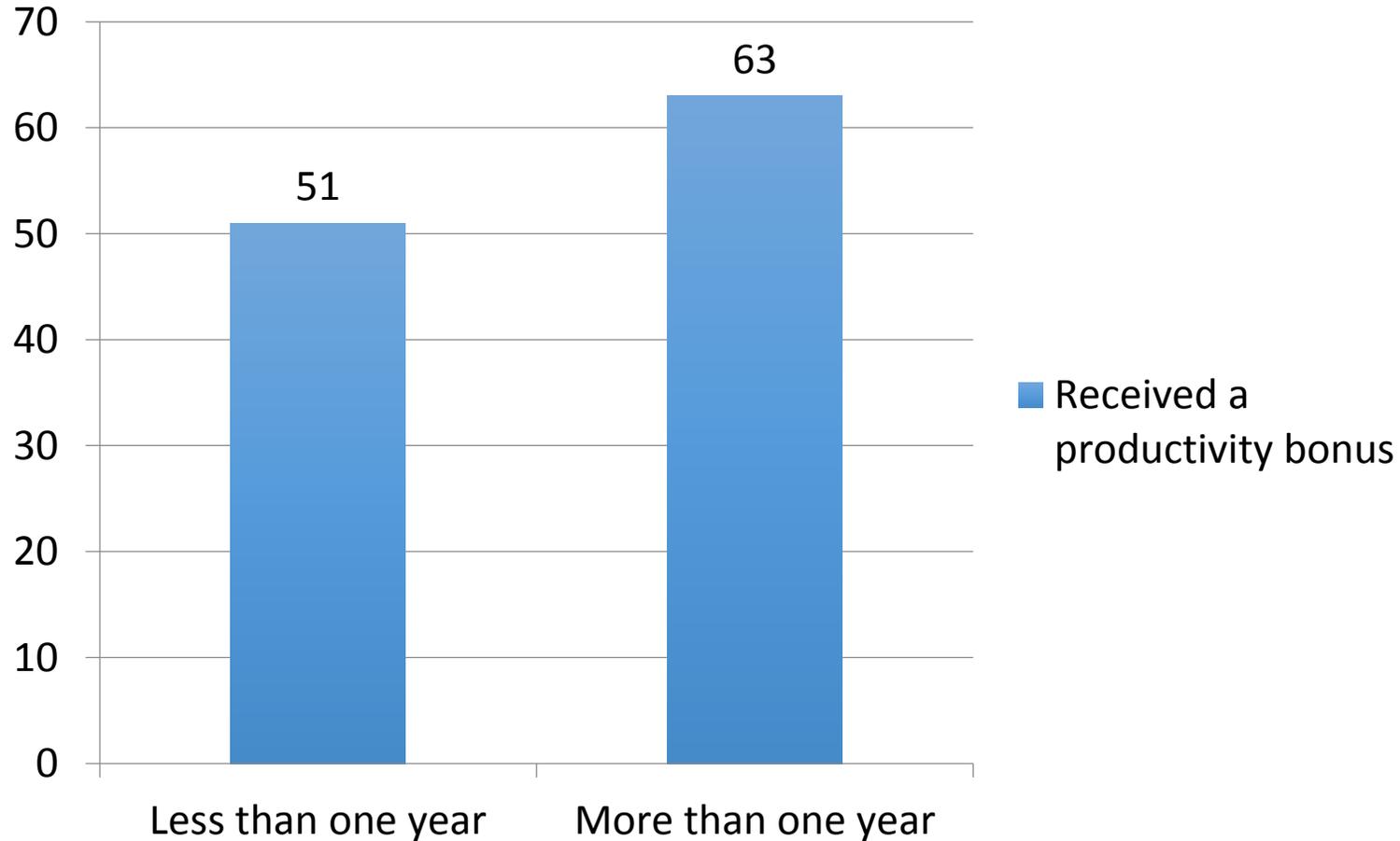
Worker Fixed Effects.
Clustered Standard Errors by Factory
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Workforce Turnover



- Training reduced workforce turnover.
- Beginning with 100 workers at the baseline, 77 workers in Foundational Training were still employed at the midline, as compared to 70 not in training.
- The treatment effect persists. At the endline 64 workers in the first group were still employed, compared to 60 who did not receive training until after the midline.
- There is no gender effect.

Experienced workers are more productive



- Out of 100 workers with less than one year of experience, 51 will be sufficiently productive to earn a productivity bonus.
- But once these workers have one or more years of experience, 63 will be productive enough to earn a productivity bonus.

WIF helps firms invest in skills

- One benefit of training is to reduce workforce turnover.
- Lowering turnover potentially affects the firm by retaining human capital developed through work experience.
- High turnover can reduce the skill investments factories might make in their workers.
- Under-investment occurs when firms believe that workers with newly acquired skills will seek alternative higher paying employment.
- A program like WIF helps firms retain their best workers. Increased retention incentivizes factories to make further investments in the skills of their workers.
- More skill investments raise productivity and pay.

Product Defect Rate

- Analysis of the impact of FT on the defect rate is inconclusive.
- Defects declined for the first training group after training.
- And the treatment effect persisted to the endline.
- However, the product defect rate for the second group did not decline with training.
- As a consequence, it is difficult to attribute the decline in defects for the first group to the training.

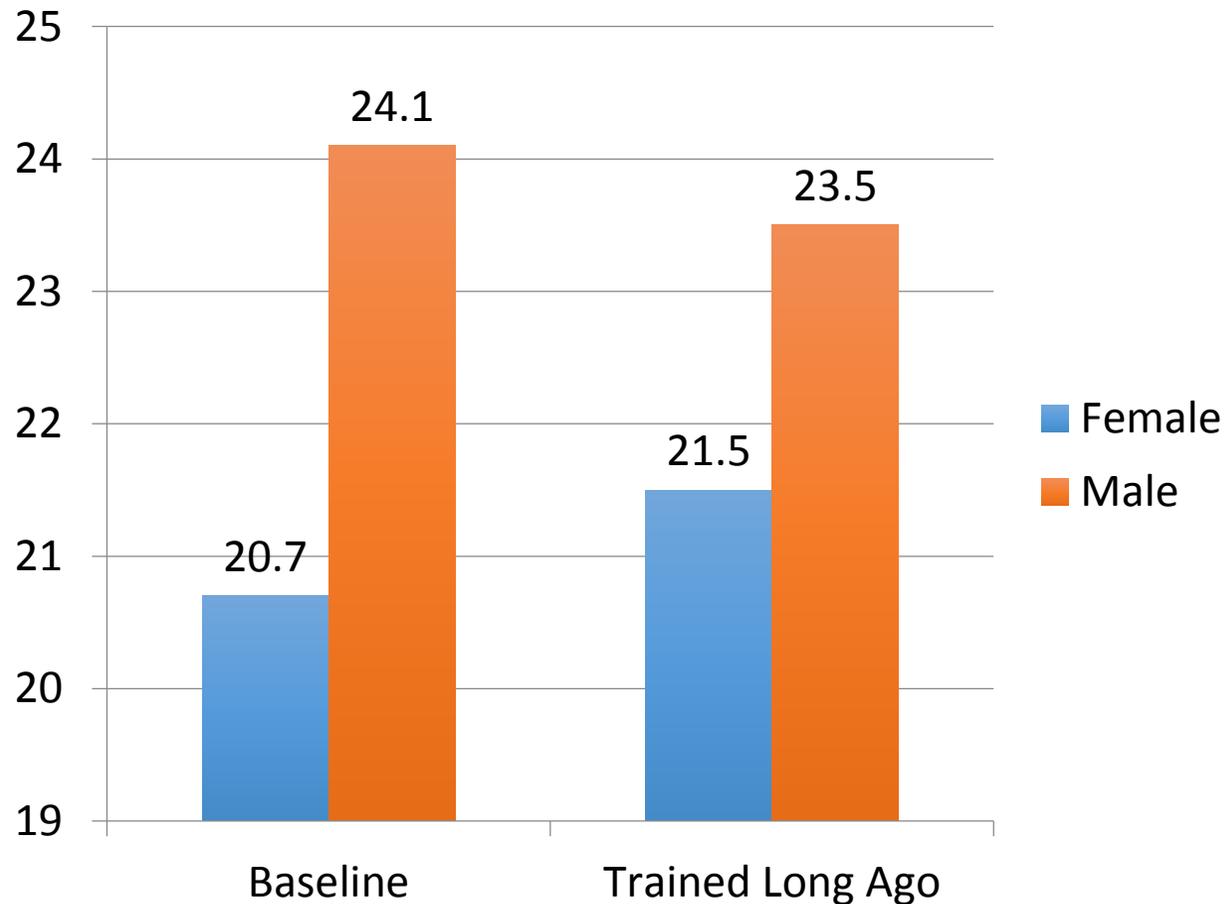
Product Defect Rate Bangladesh

- However, if the analysis is confined to Bangladesh, training is associated with a very large reduction in defects.
- Most workers in Bangladesh have a defect rate of 3 percent or less.
- However, there is a set of workers for whom the factory reports a very large defect rate.
- Among these workers making a large number of work errors, the defect rate drops precipitously.

	(1)
VARIABLES	Defect Rate Bangladesh
justtrained	-9.771* (3.681)
trainedlongago	-11.43* (4.541)
midline	-26.27 (24.45)
endline	-3.348 (6.484)
Constant	25.11 (12.15)
Observations	387
Number of participant	253
R-squared	0.413

Participant Fixed Effects
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Closing the Gender Gap in Weekly Pay USD



- At the baseline males earn about 3.4 USD more per week than females, controlling for job, skills and experience.
- The gap narrows by USD 1.35 at the end of training.
- At the baseline, women earned 86 cents for each dollar a man earned. At the endline, the ratio had risen to 91 cents on the dollar.

Part II Return on Investment (ROI) training female

- Training reduced late days for females from 45 to 17 per month per 100 workers.
- Training increased productivity of females by 5.0 percent.
- Assume that late workers are one hour late on an eight hour day.
- Assume that workers work 25 days per month.
- The reduction in late days, conservatively estimated, increases the “at work” time by a factor of 0.00347.
- The increase in productivity increases the value of time at work by a factor of 0.05.
- In the months after training, 64 percent of trained workers will still be employed.
- Taken together, these three effects of training increase the implicit monthly “at work” time by $641 = 8 * 25 * 100 * 1.0014 * 0.05 * 0.64$ hours.
- By comparison, FT costs approximately 10 hours for each of 100 workers, or 1000 hours.
- **Foundational Training pays for itself in less than 1.7 months in the months after training is complete.**

Part III Training and Worker Perceptions of Work

How does training affect productivity?

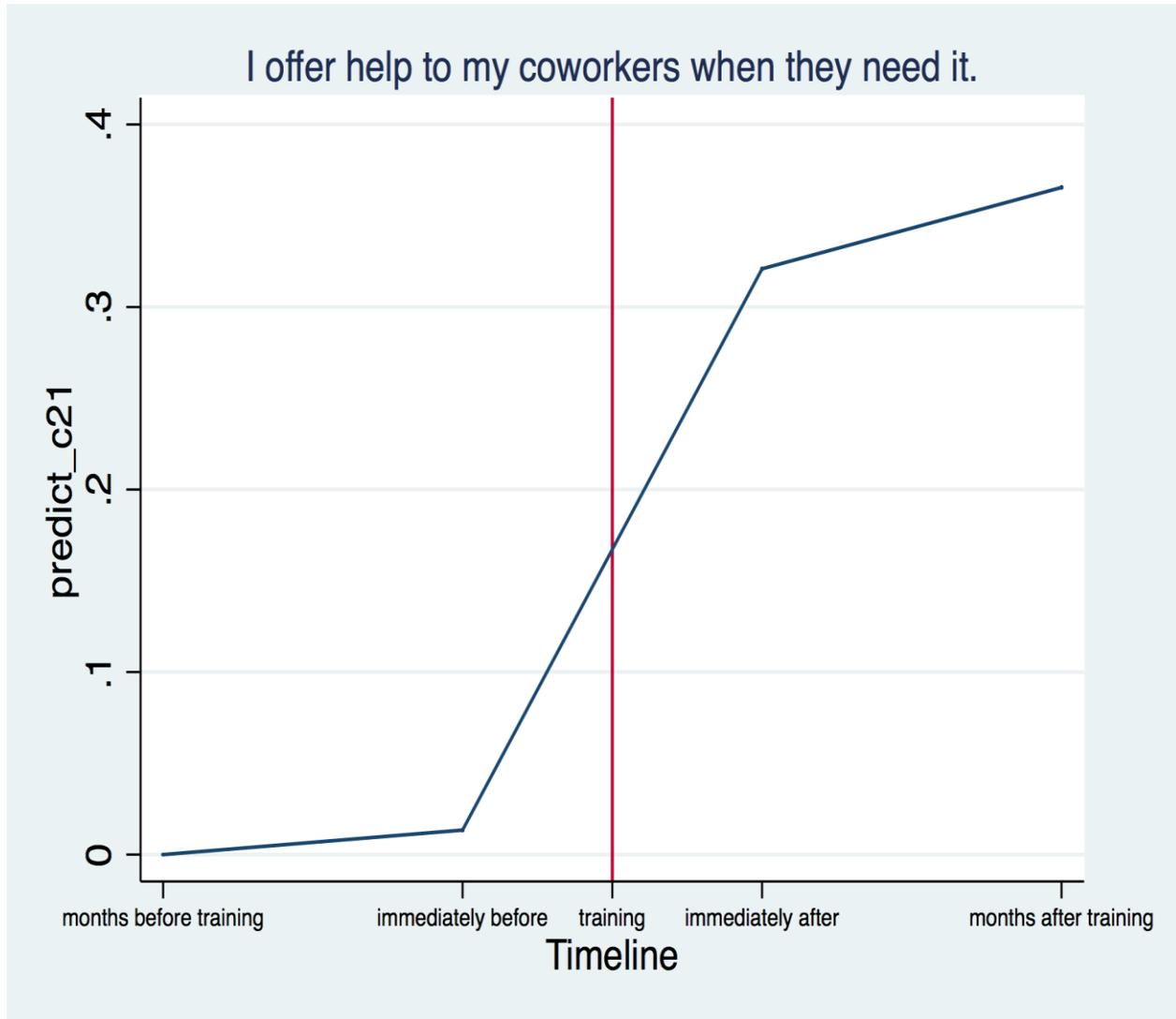
Training increased the intrinsic value of work, teamwork and problem-solving.

India Training increases intrinsic value of work, with curing.



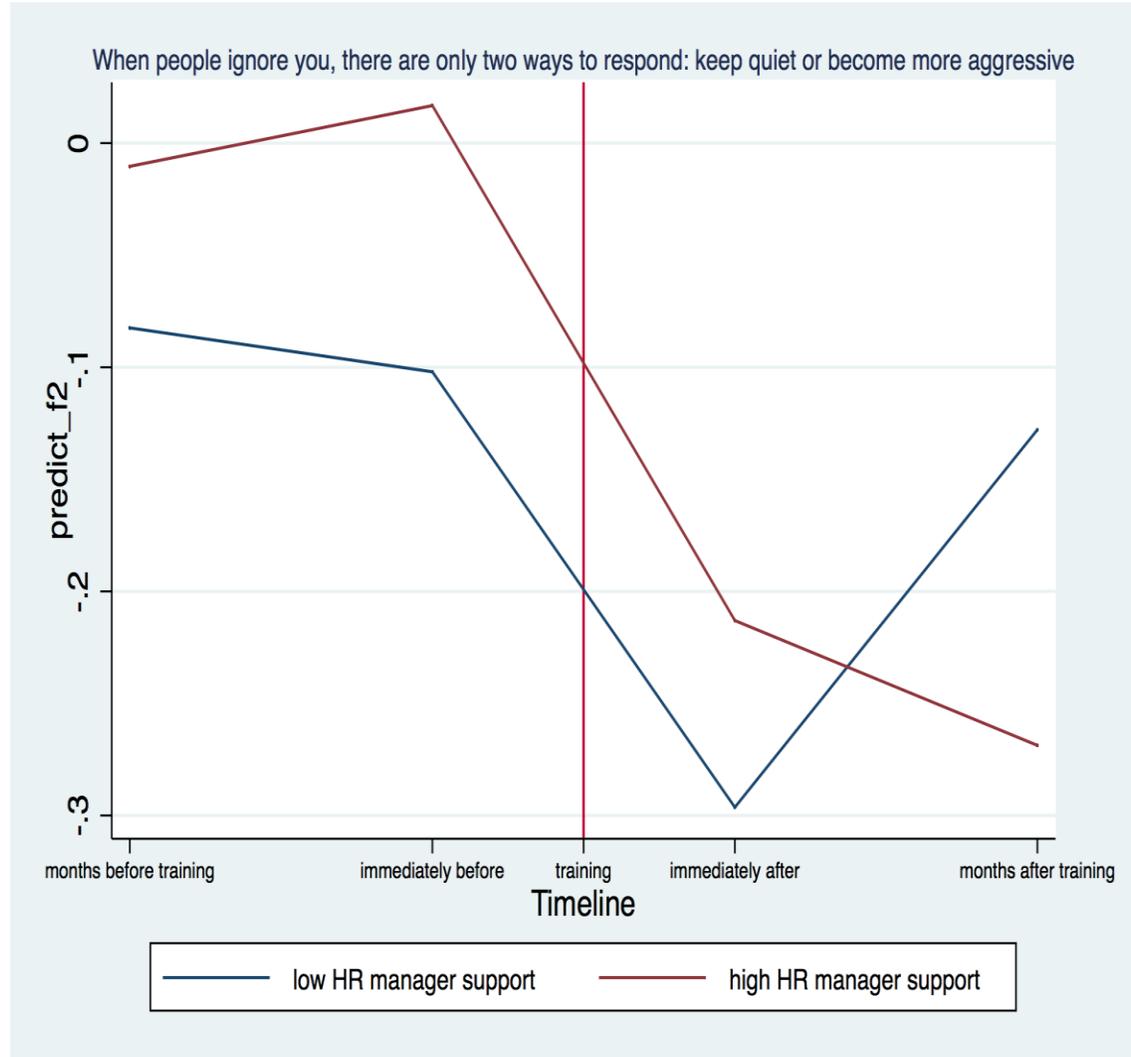
- Workers were surveyed on whether they are proud of the work they do in the factory.
- The graph to the left shows the impact of training on the response to this item.
- In the months before training, there is no treatment effect. So the graph starts at zero.
- In the time just after training, workers increase their reported sense of pride at work.
- The effect cures with time so that in the months after training is complete, workers further increase their sense of pride at work.

India Training increases teamwork, with persistence.



- Trained workers are also more likely to report that they offer help to their coworkers.
- As in the previous graph, the treatment effect is zero before treatment.
- There is a sudden increase at the time of training.
- The treatment effect cures over time with workers several months after training increasing their reports of helping coworkers.

India Training improves problem solving.



- Humans have a tendency to engage in “fight or flight” when confronted with conflict.
- That is, we tend to either be too aggressive or too passive.
- FT is designed to help workers understand that it is possible to engage with a coworker or a supervisor during a disagreement by looking for an agreed-upon solution.
- So, when asked how they respond to being ignored, workers increasingly reported that they have more options than keeping quiet or becoming more aggressive.
- The ability of workers to learn these lessons depends on the extent to which managers support the training.
- In factories with high manager support for the FT program (red line), workers developed better problem-solving skills and the treatment effect persisted in the months after training.

India Training increases perceived interdependence.

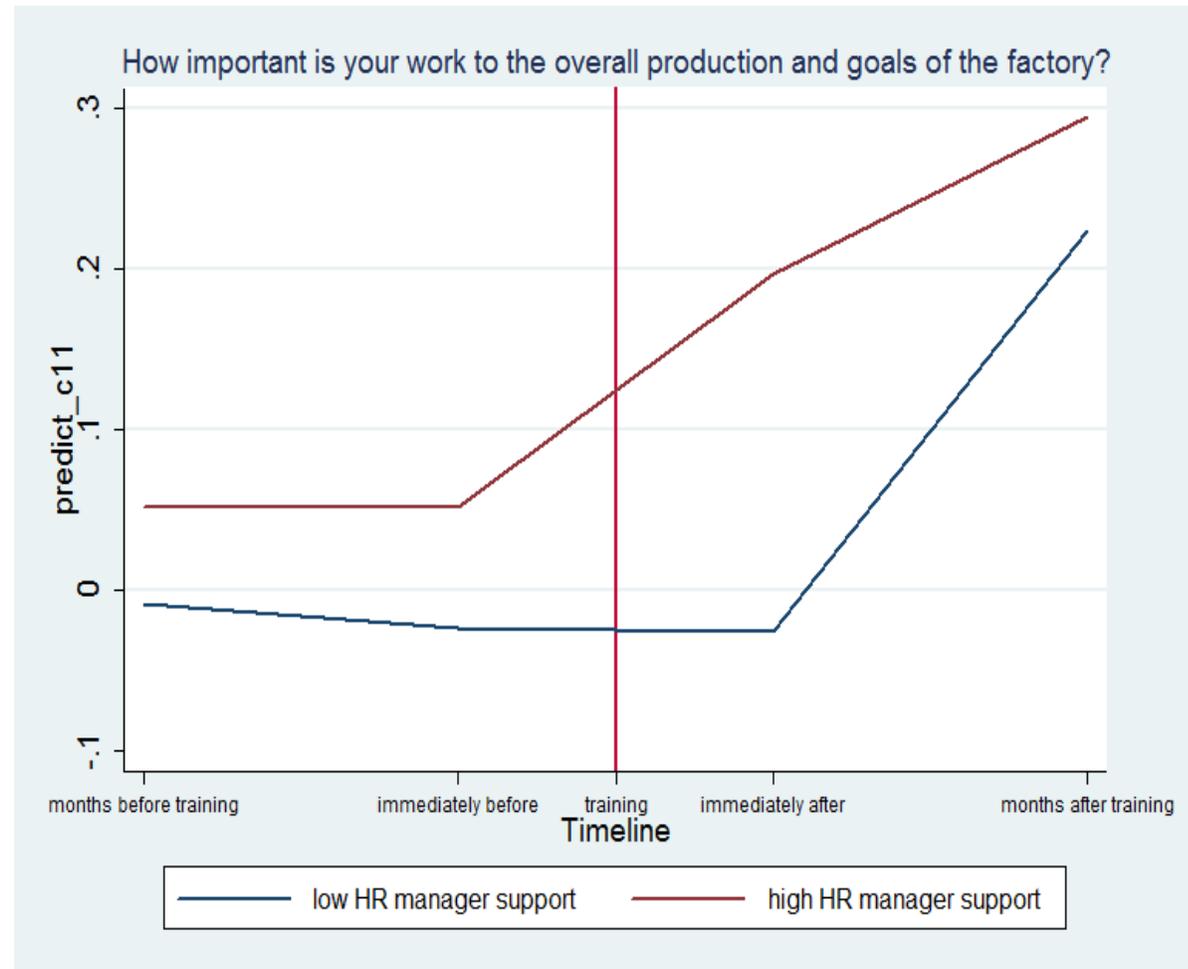


- Workers are often unaware of the fact that their absence at work affects the productivity of other workers.
- One aim of training is to increase awareness of the interdependence of workers on a production line.
- Workers were asked if it makes a difference to the factory whether they miss work or not.
- With training, workers in factories where managers supported the training (red line) were more likely to reduce their belief that their absence at work does not affect the factory.
- Workers in factories where managers did not support the objectives of training showed no training effect.

Part IV Enabling Environment

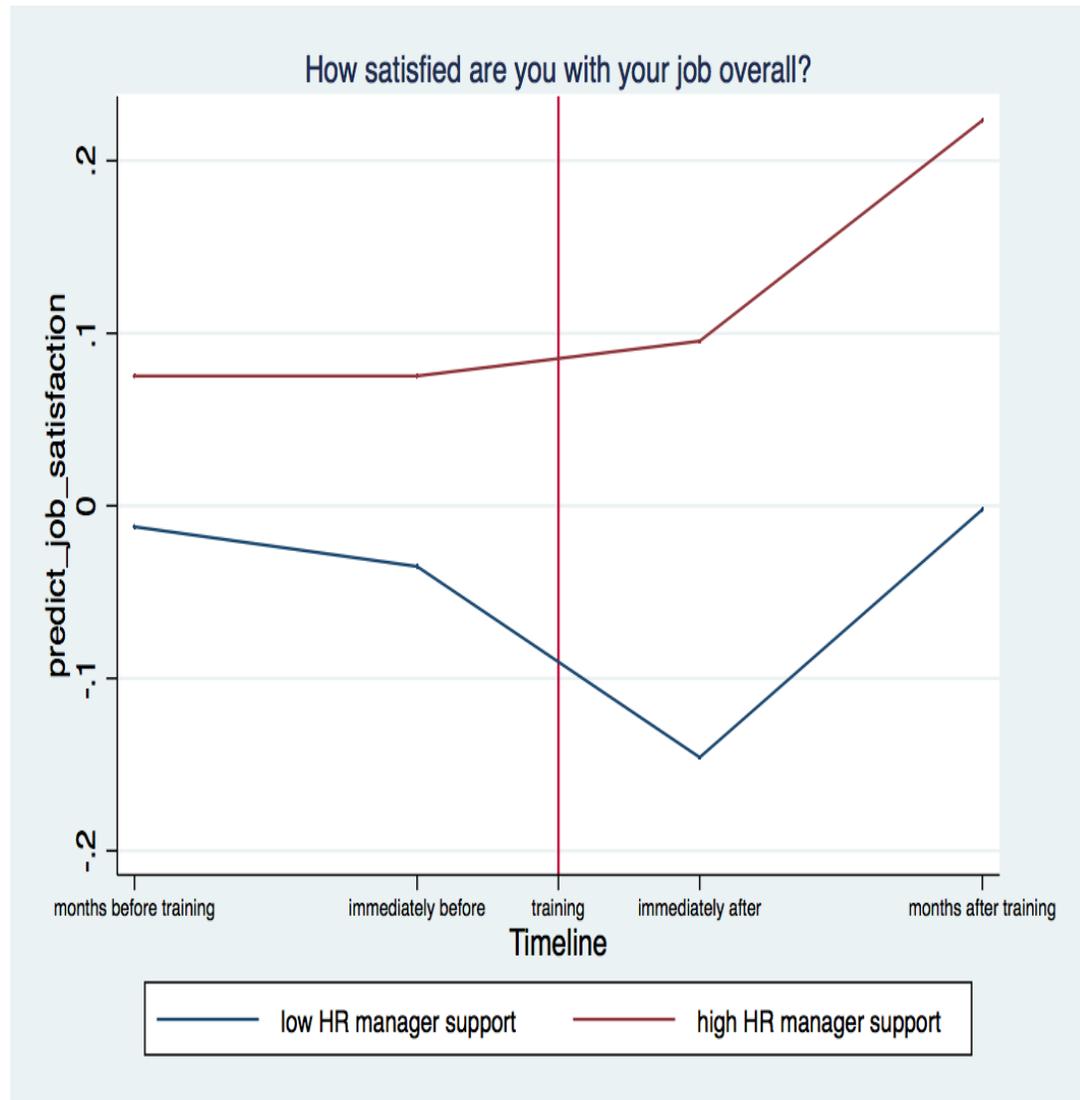
Training is particularly effective if managers and supervisors support the training. In supportive environments, training increased job satisfaction, use of safety equipment and belief that work is important to the factory and reduced dizziness and episodes of fainting.

Bangladesh Managerial context matters



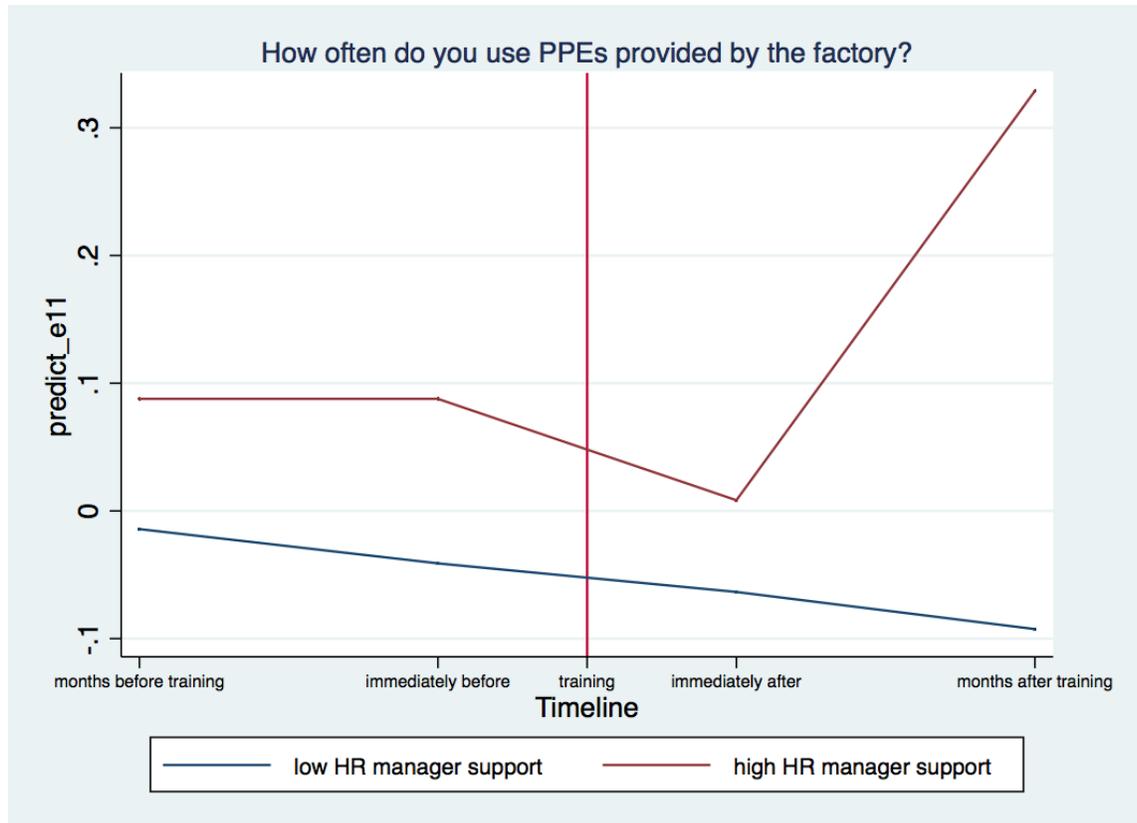
- Workers were asked about the importance of their work for the overall goals of the factory.
- Training significantly affected a worker's perception of the importance of her effort for goals of the factory.
- The effect was particularly strong for workers in factories with high manager support for training.
- The effect cured over time.

Bangladesh Training increases job satisfaction if high manager support



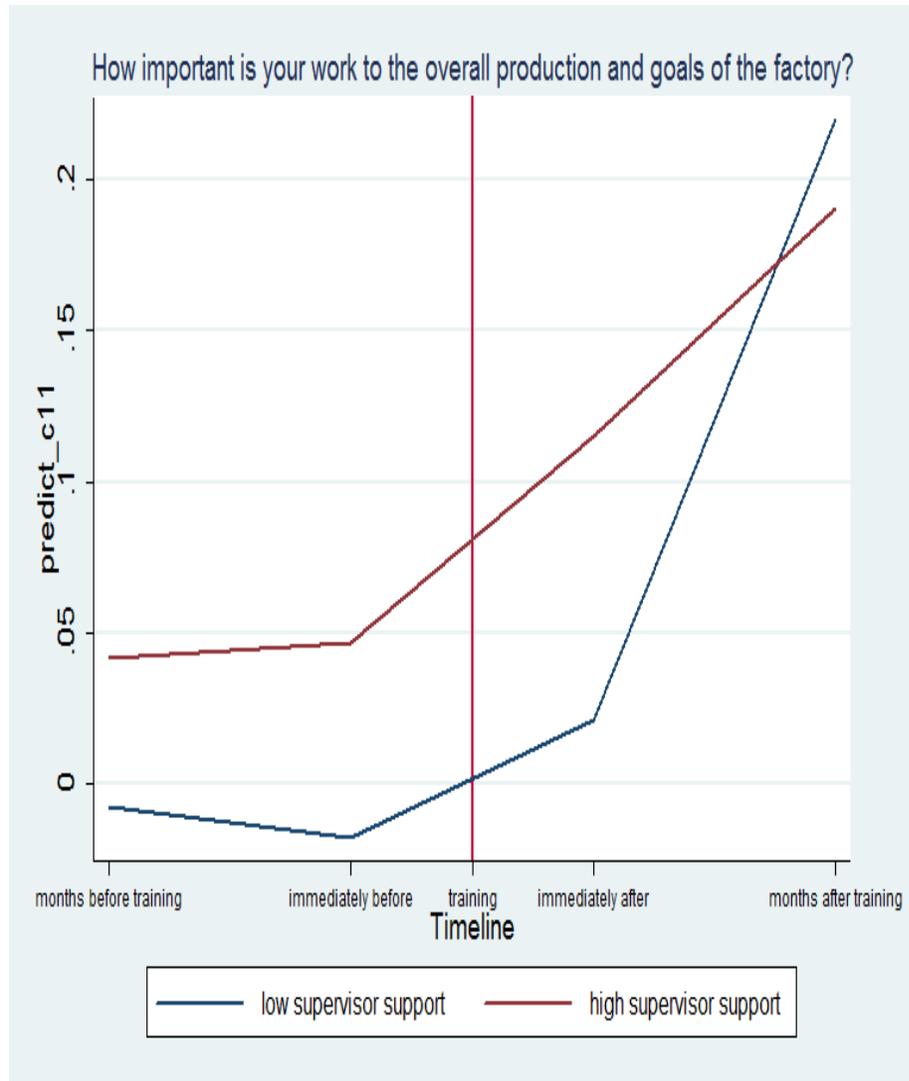
- Job satisfaction is important for retaining workers.
- Firms often lose their most productive workers to competitors due to low job satisfaction.
- Workers were asked how satisfied they are with their job.
- In factories with high manager support for the training (red line), workers reported higher job satisfaction in the months after training.
- Higher job satisfaction will lower worker turnover.

Bangladesh Training increases safety, if high manager support



- Workers in training are encouraged to be safe at work.
- When asked about the use of personal protective equipment (PPEs), workers in the months after training reported increased use.
- The WIF impact of training on the use of PPEs is particularly notable.
- It is often the case that workers who become more productive do so by taking more safety risks. The use of PPEs declines and workers are more likely to be injured.
- However, while WIF training increased productivity, it did not reduce the use of PPEs or increase accidents.

Bangladesh Training can offset weak managerial support



- Training is usually more effective if managers and supervisors support the goals of training.
- But sometimes, training can offset weakness in managerial function.
- Workers were asked about the importance of their work to the overall goals of the factory.
- Workers with supervisors who do not support the training (blue line) scored lower on this item than other workers before training.
- Training closed the gap, bringing workers with low supervisor support up equal to those with high supervisor support.
- Training significantly affected a worker's perception of the contribution of her effort to production goals of the factory.
- The effect was particularly strong for workers in factories with low supervisor support.

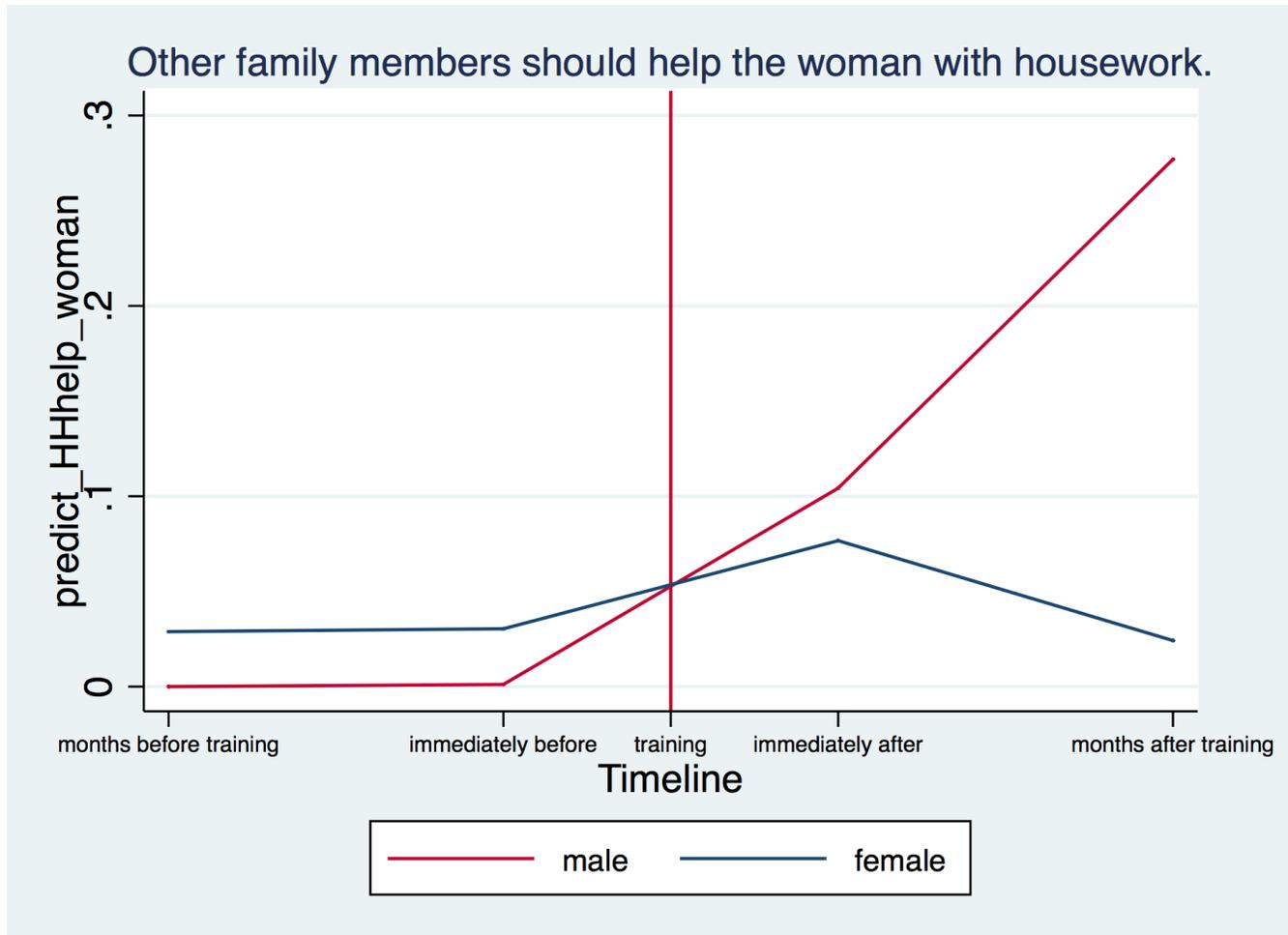
Part V Beliefs, Practices and Life Outcomes

Bangladesh Sometimes training had a greater effect on men.



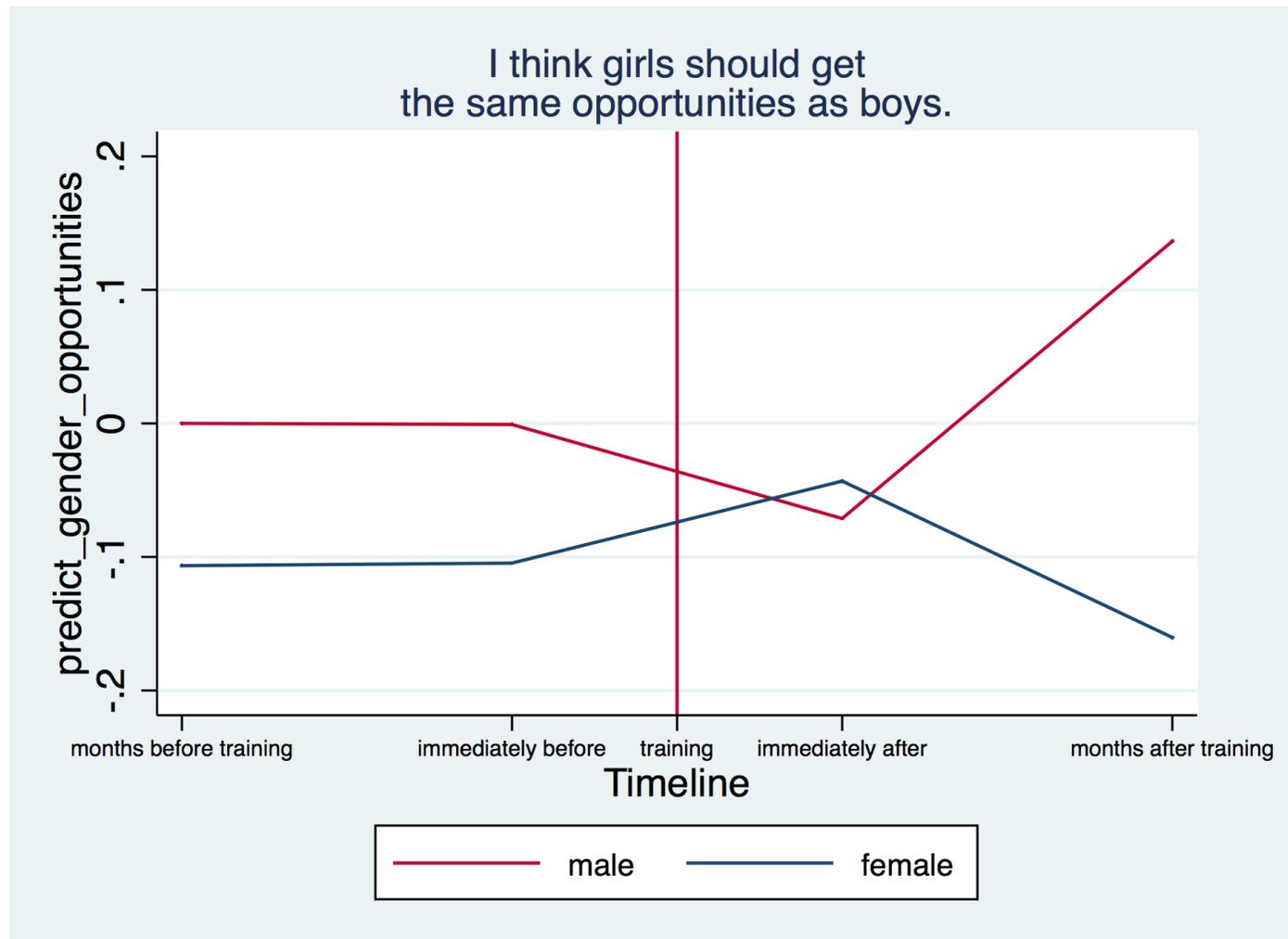
- The FT program was not limited to women. Men were trained, as well, in co-ed groups.
- Training sometimes had a stronger effect on men than women.
- Workers were asked whether they are proud of the work they do in the factory.
- In the picture to the left, the blue line shows the treatment effect for men. The red line shows the treatment effect for women.
- Males exhibit a strong treatment effect in their sense of pride at work.
- There is no effect for females in Bangladesh.

Gender Stereotypes and Job Segregation



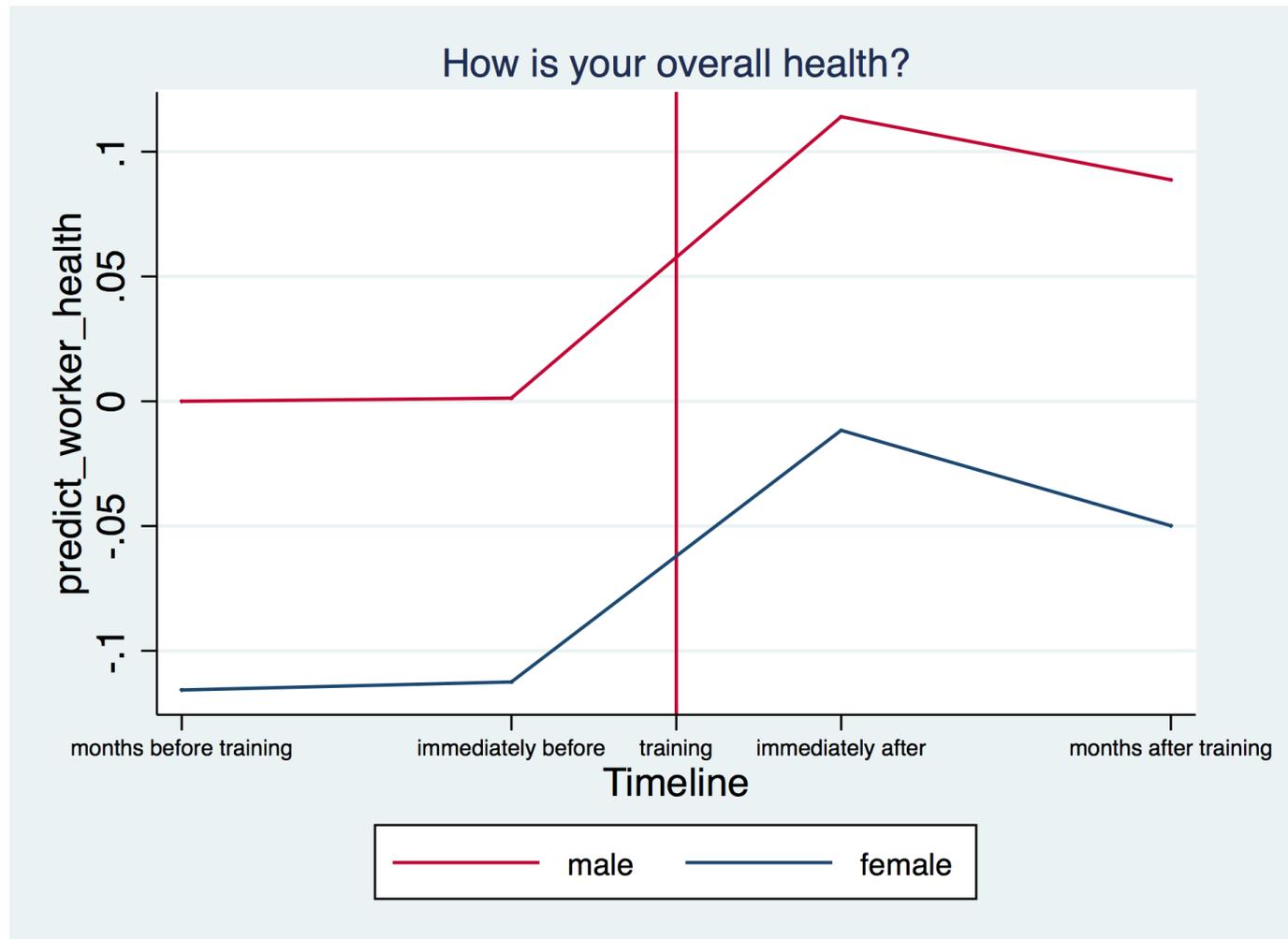
- Gender awareness is one of the 7 modules in the FT curriculum.
- One common belief is that household work is the responsibility of women in the household.
- FT promotes the idea that other family members should help women with household chores.
- Training affects the beliefs of men, causing a significant increase in the belief that other family members should help with housework.

Gender Stereotypes and Human Capital Formation



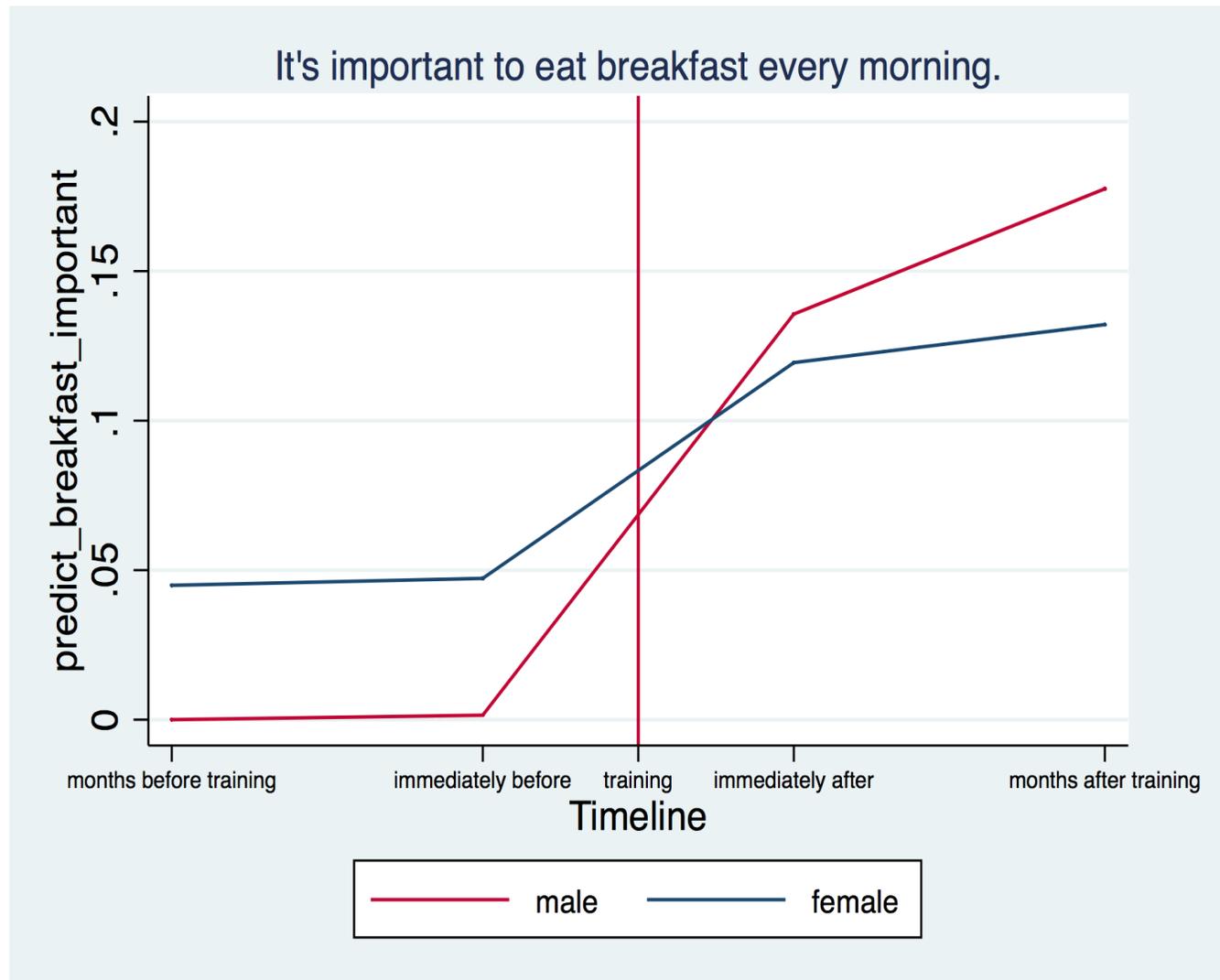
- Gender stereotypes also affect the investments parents make in their children.
- Boys often get more opportunities than girls.
- FT encourages parents to offer daughters the same opportunities as sons.
- Men in training increase agreement with the idea that girls should get the same opportunities as boys.

Health Status



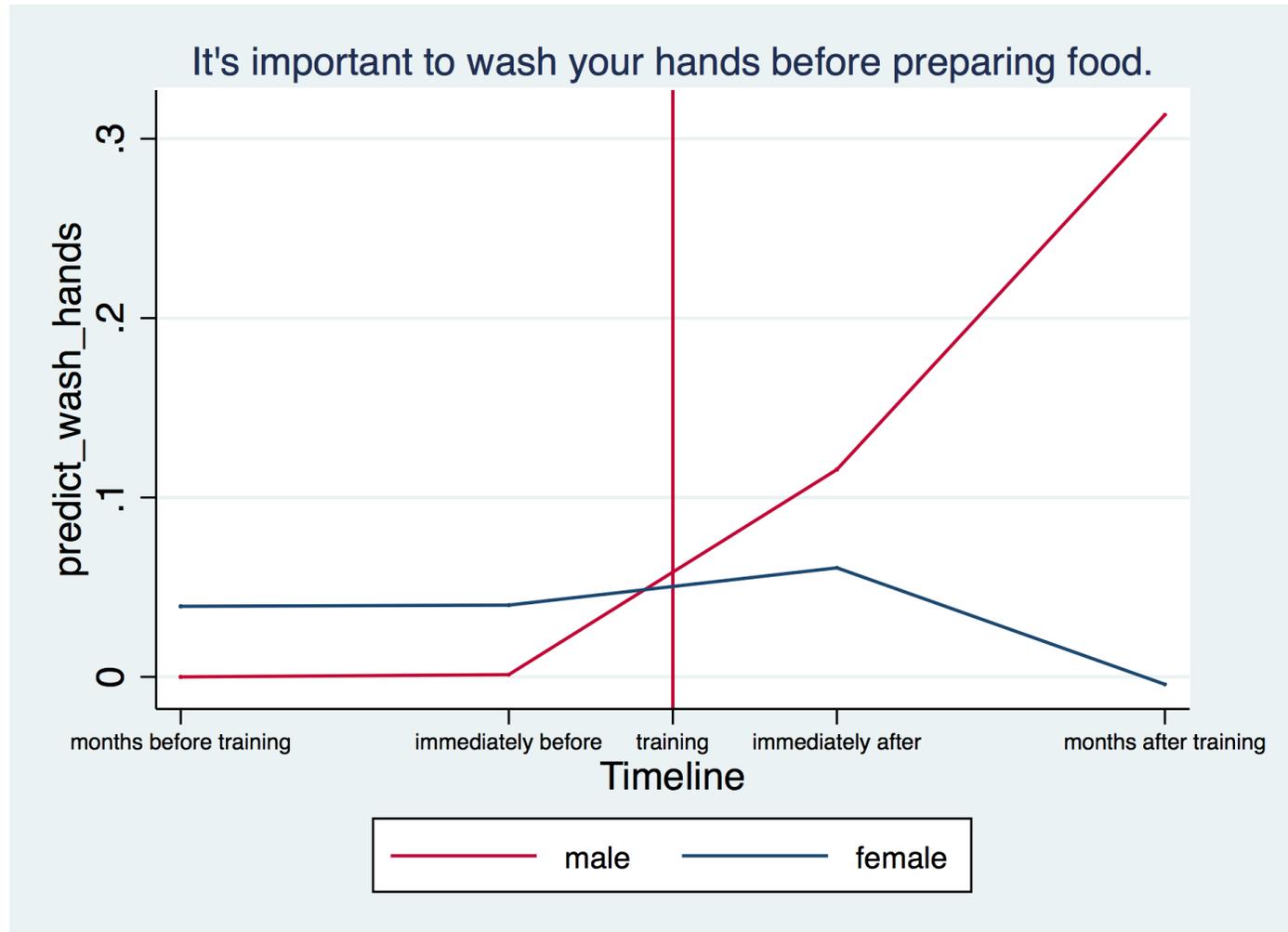
- Workers are trained on several behaviors that might affect their own health.
- These include boiling water, choosing healthy foods and using sanitary napkins.
- Participants are asked to rate their health from 1=Very poor to 5 = Excellent.
- Overall health improved.
- Both males and females report a small but statistically significant increase in health.

Beliefs about Health



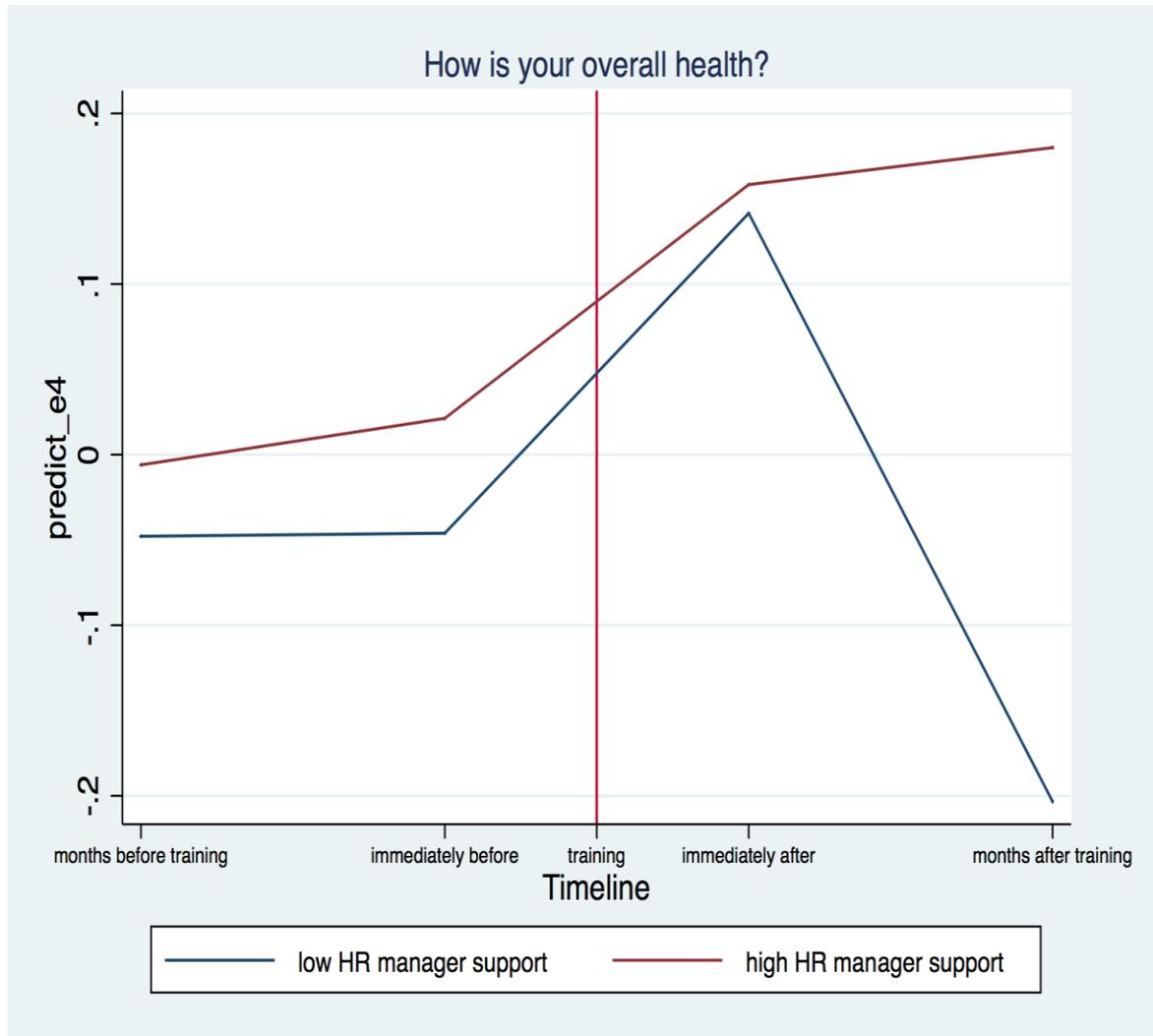
- Among the health behaviors taught in FT is the importance of eating breakfast.
- Eating breakfast is associated with reduced dizziness and fainting at work.
- Both females and males report increased incidence of eating breakfast.
- The effect cures over time.

Washing hands before handling food



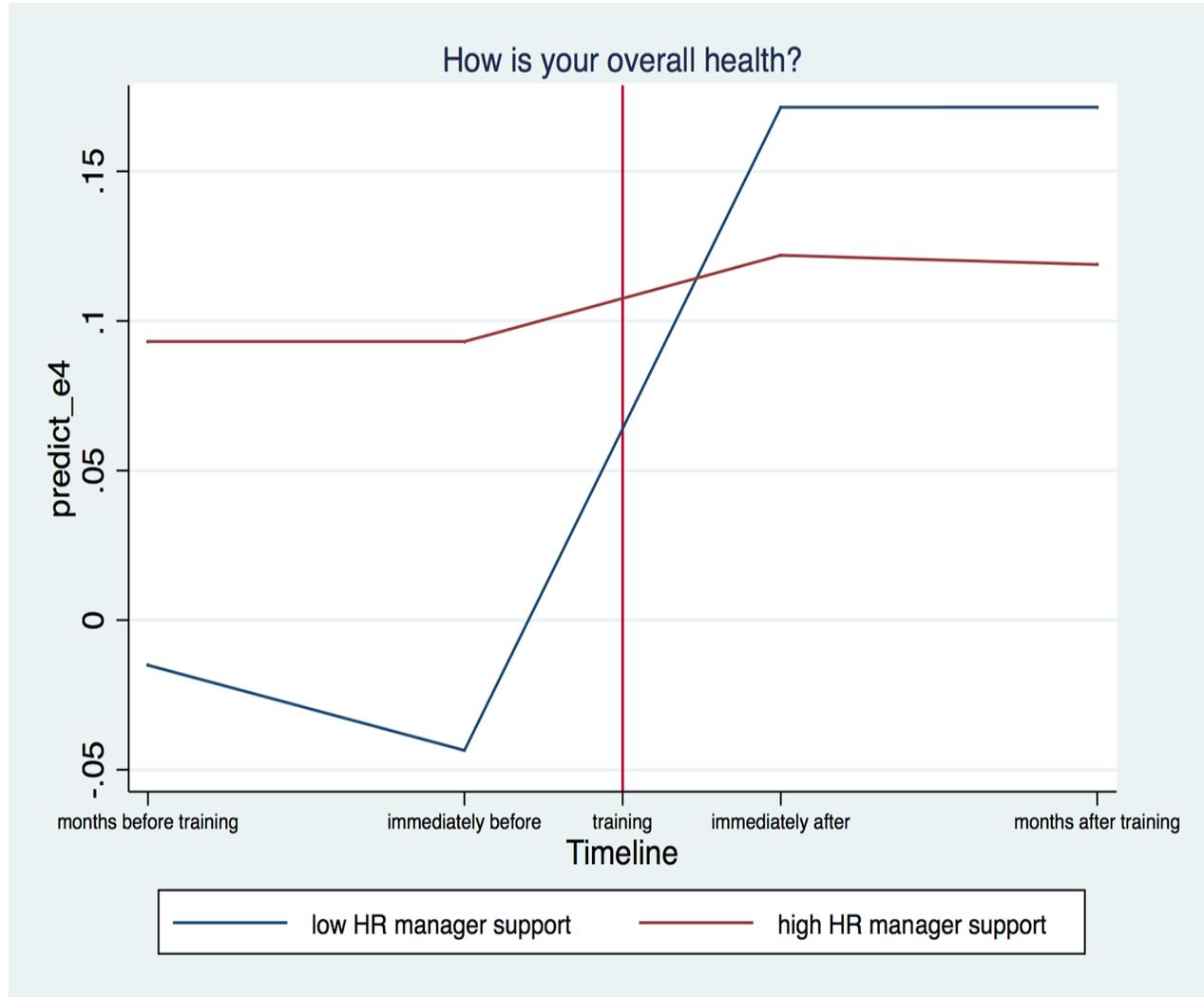
- FT also emphasizes the safe handling of food and water.
- Participants are asked the extent to which they agree with the importance of hand washing before handling food.
- Men significantly increased their agreement with handwashing.

India Training improves worker health if high manager support



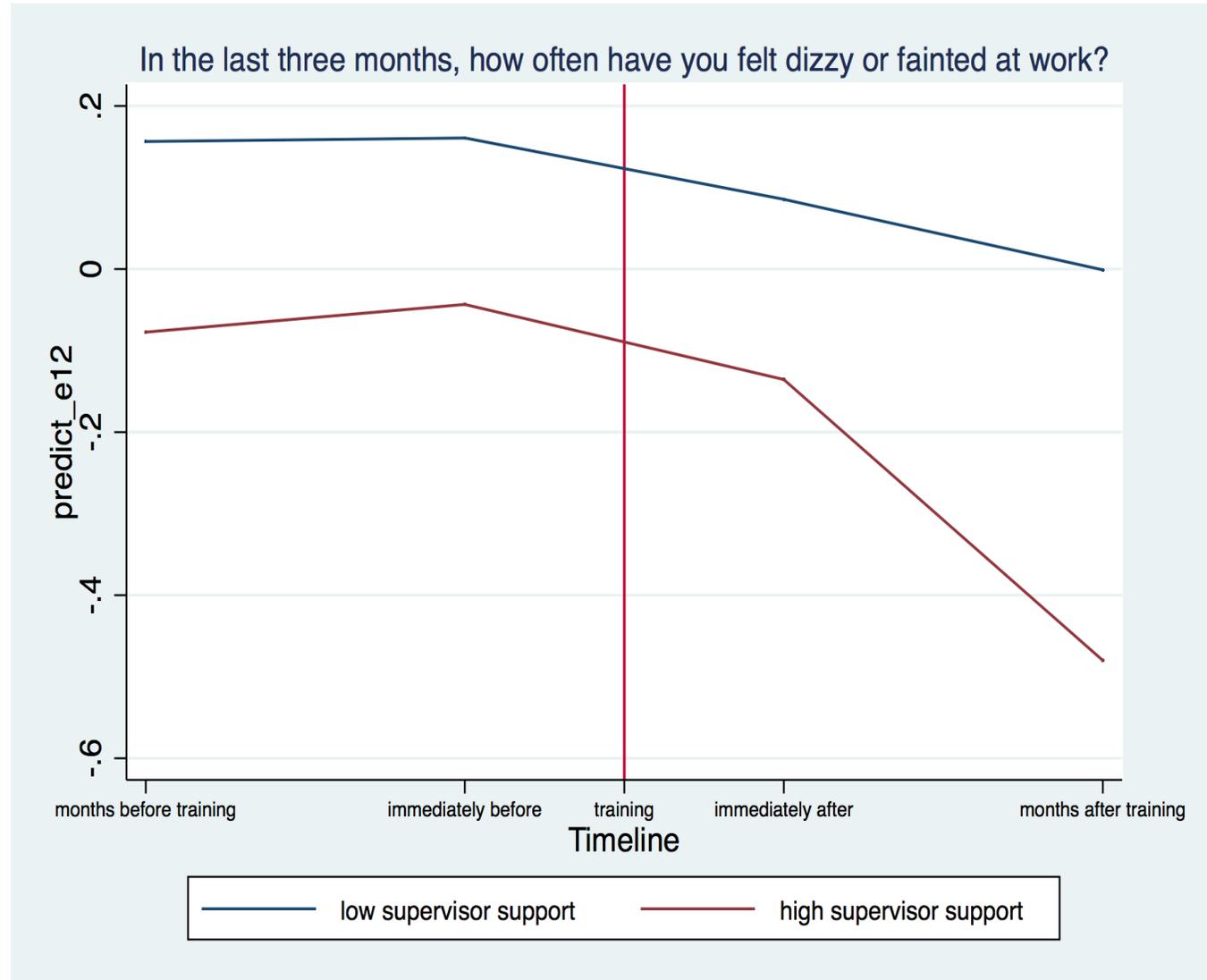
- Training had a very strong effect on health perceptions in factories where the training was supported by the managers (red line). The effect grows stronger with time.
- By contrast, workers in factories with low manager support see significant decay in their health in the months after training.

Bangladesh Training can offset weak managerial function



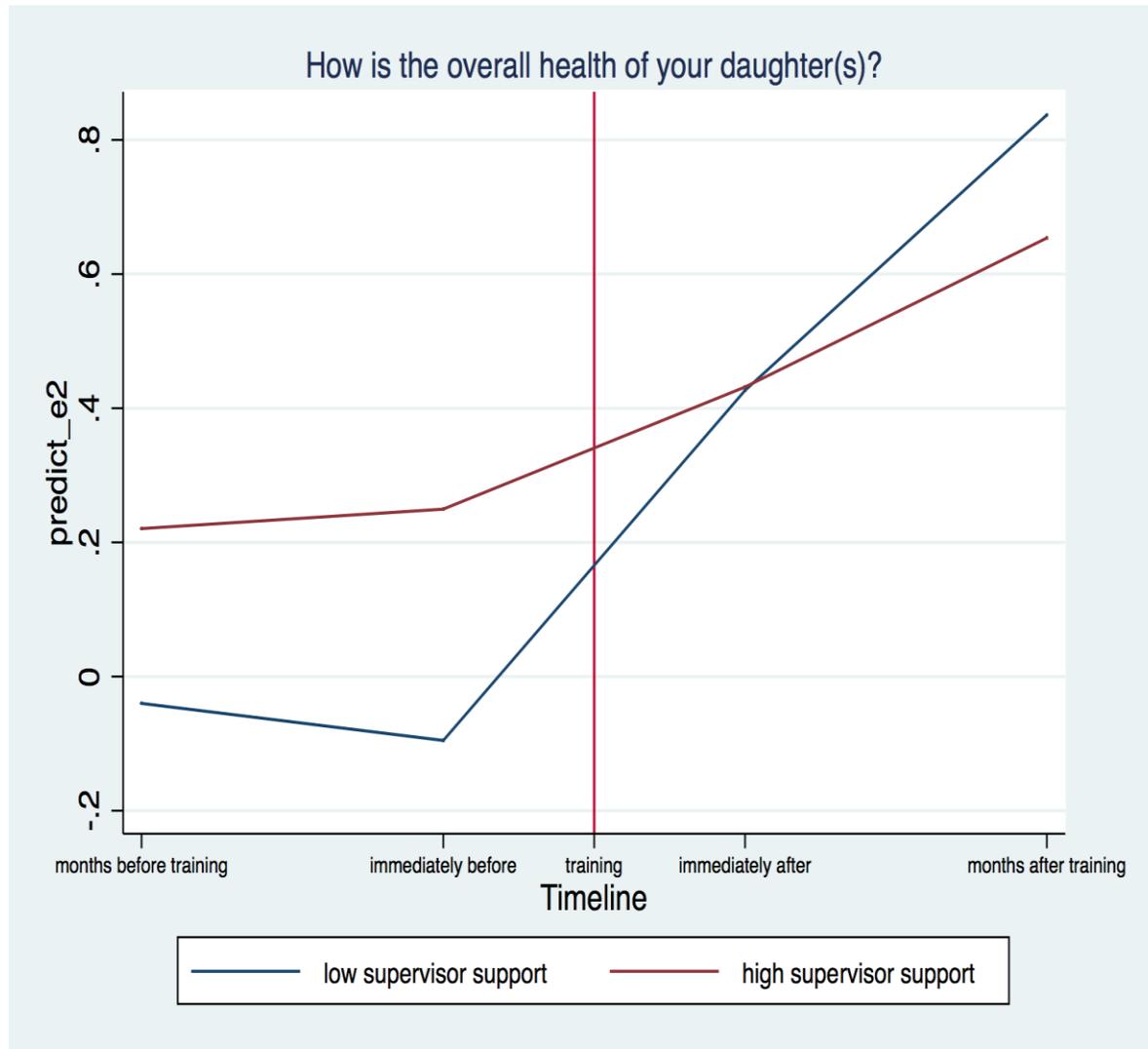
- Training can sometimes offset weak HR systems.
- Workers in factories in which HR support for training was low (blue line) have poorer health in the baseline than workers in factories with high manager support (red line).
- But the largest gain in overall health is for workers in factories with low managerial support.
- In fact, the treatment effect for this latter group is so strong that after treatment they rate their health higher than workers in other factories.

India But training is more effective when managers and supervisors are supportive of its goals.



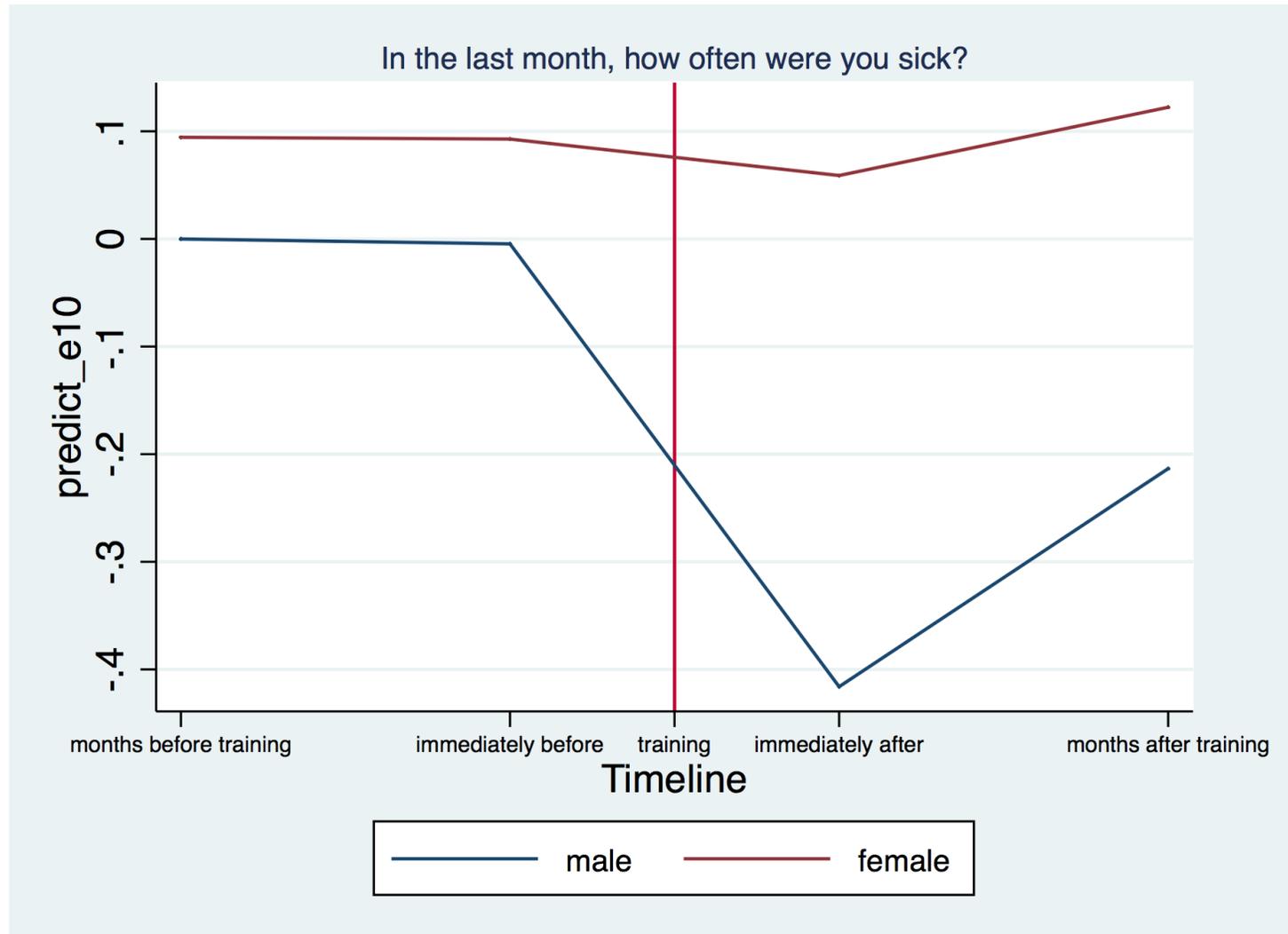
- However, it is usually the case that we observe stronger training effects in factories with high supervisor support for the FT program.
- Workers are asked how often they feel dizzy or faint at work.
- Workers in high support factories have lower reports of faintness in the baseline. (Red line)
- The difference becomes larger with training.

Bangladesh Training improves health of girls



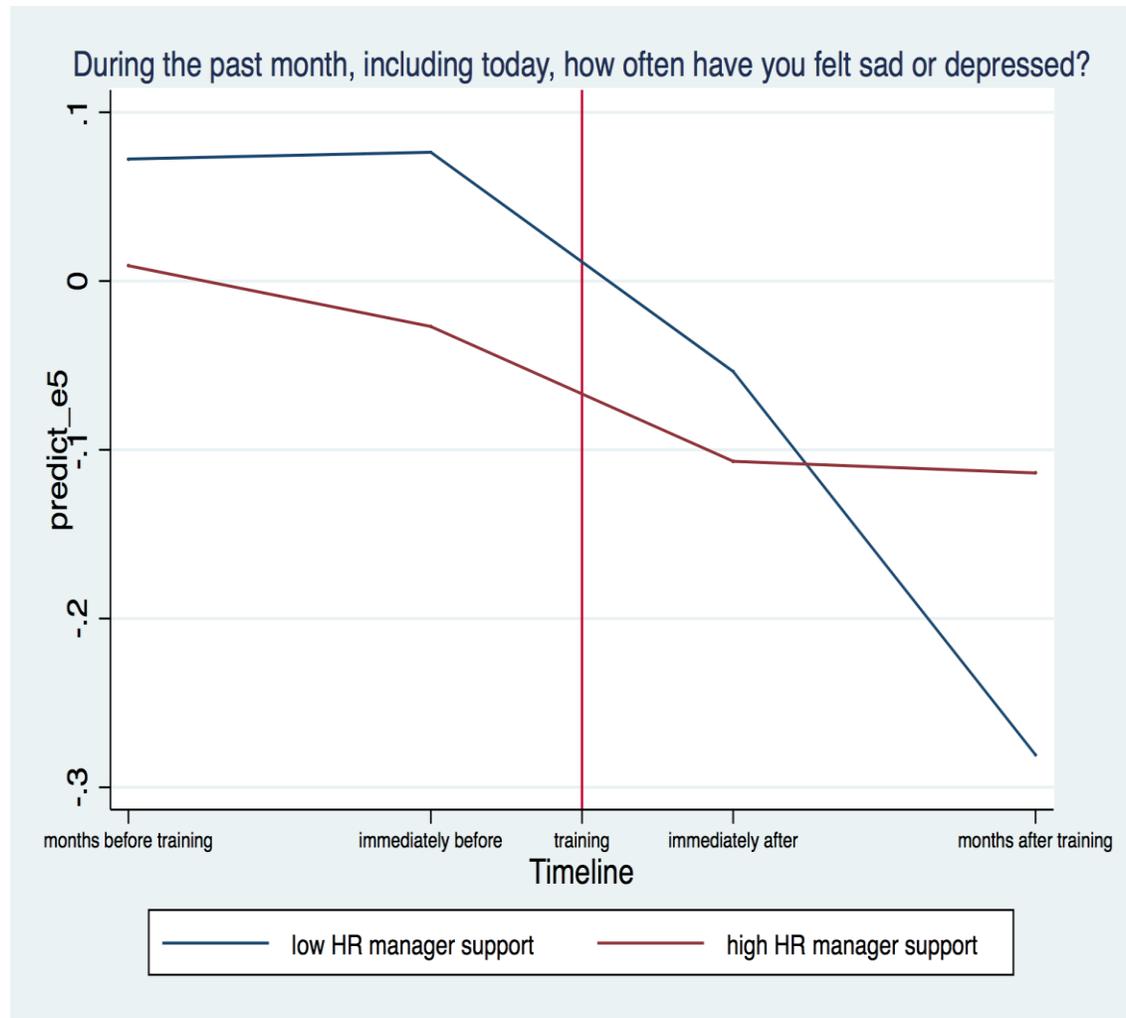
- Workers are trained on several behaviors that might affect the health of their children.
- These include breast-feeding, boiling water, choosing healthy foods and using sanitary napkins.
- Workers were asked to rate the overall health of their daughters.
- Training had a very strong effect on the perception of the health of daughters as reported by mothers.
- The effect was particularly strong in factories in which supervisors did not support the objectives of training.

India Sometimes training had a greater effect on men.



- Men also reported a significant decline in sick days attributable to training as compared to women.

India Training improves mental health

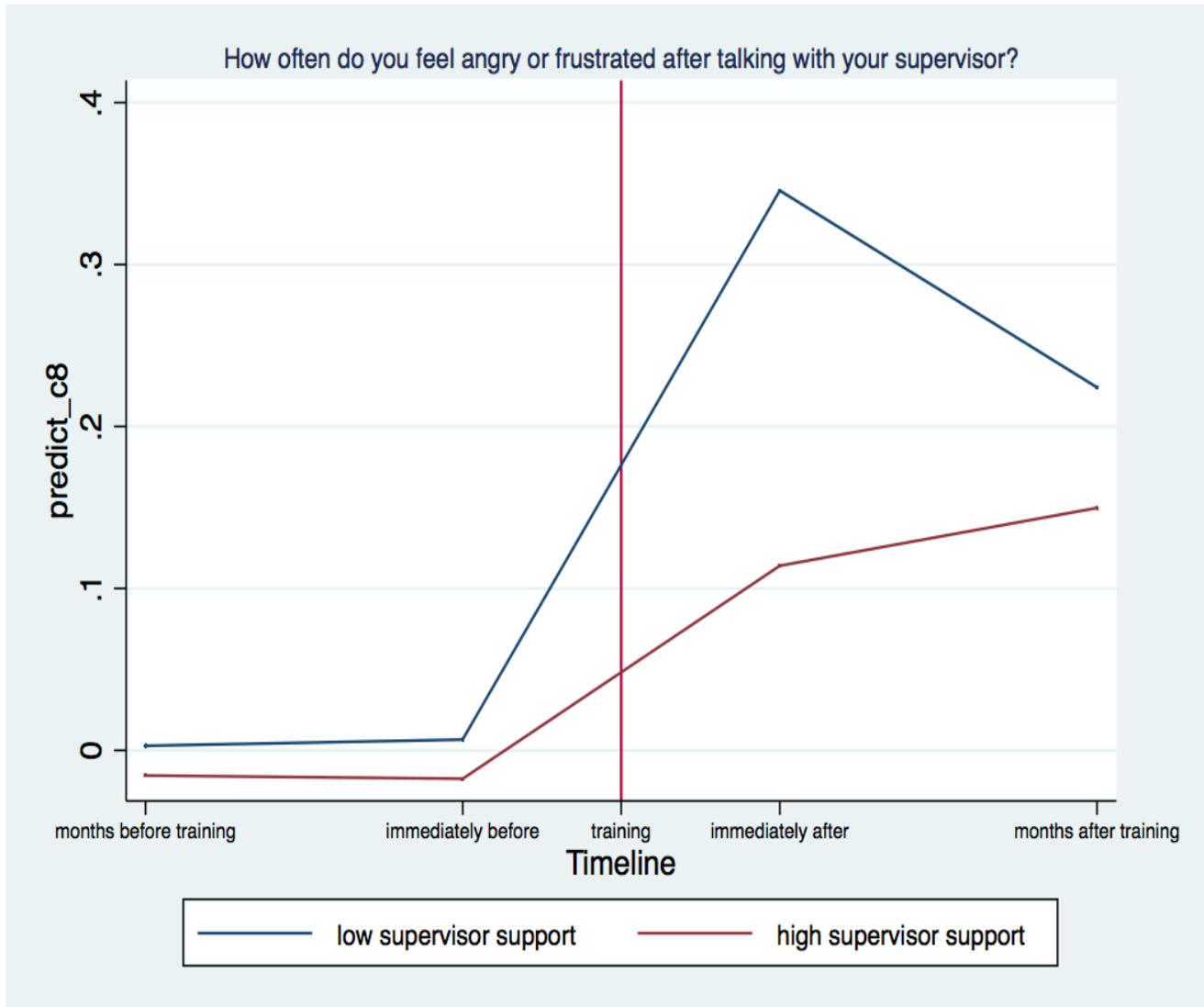


- Poor mental health has been shown in many studies to adversely affect productivity.
- The FT program can improve mental health by giving workers a greater sense of their personal value at work and providing them with skills to manage interpersonal conflict and stress.
- Workers are asked how often they feel sad or depressed. 1=never,..., 5=all of the time.
- Workers in factories with low manager support show a significant decline in reports of the incidence of poor mental health due to training.

Part VI Worker & Supervisor Interactions

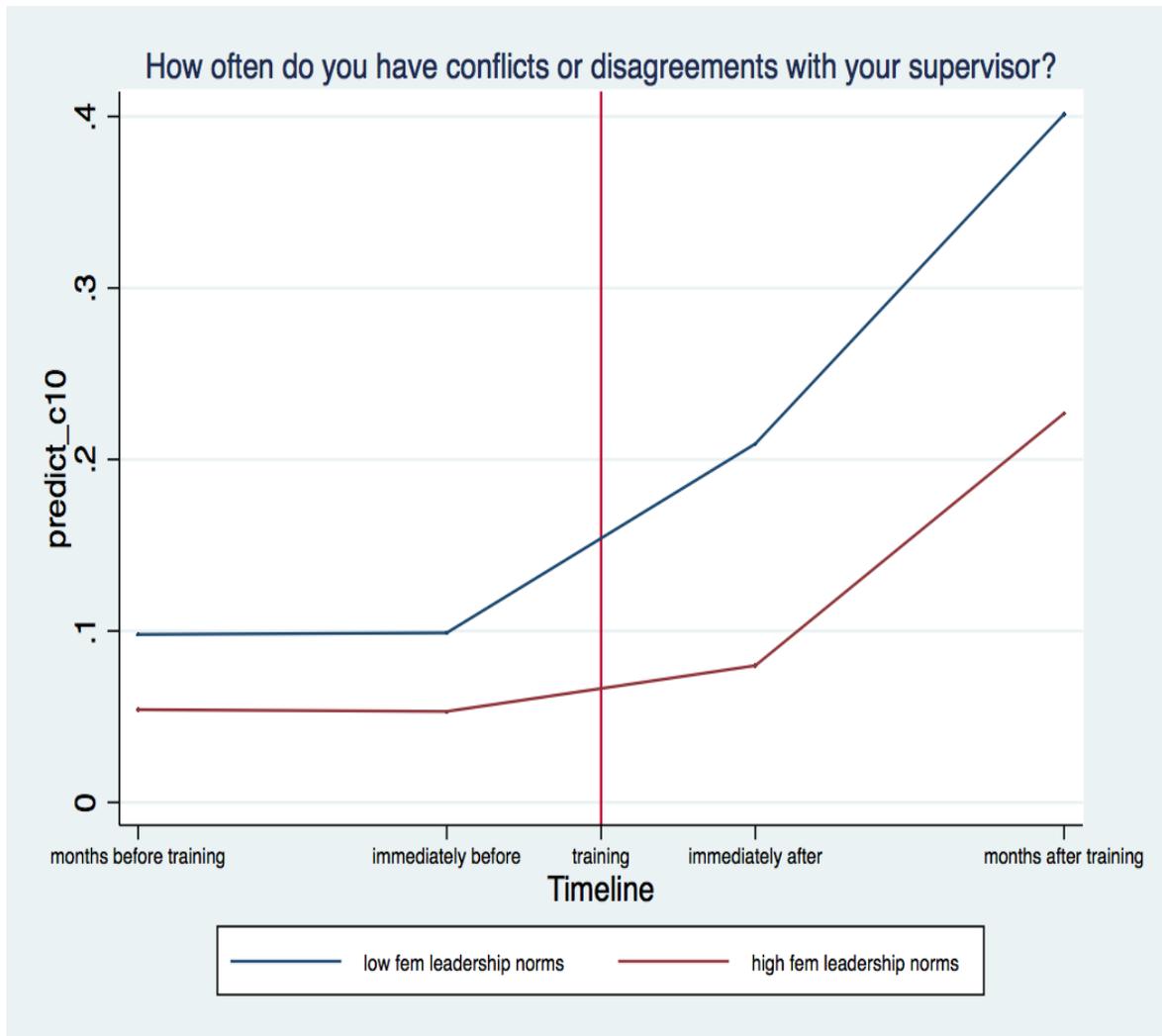
Human Resource Management Systems

Bangladesh Change is hard particularly when supervisors are not supportive of the goals of the training.

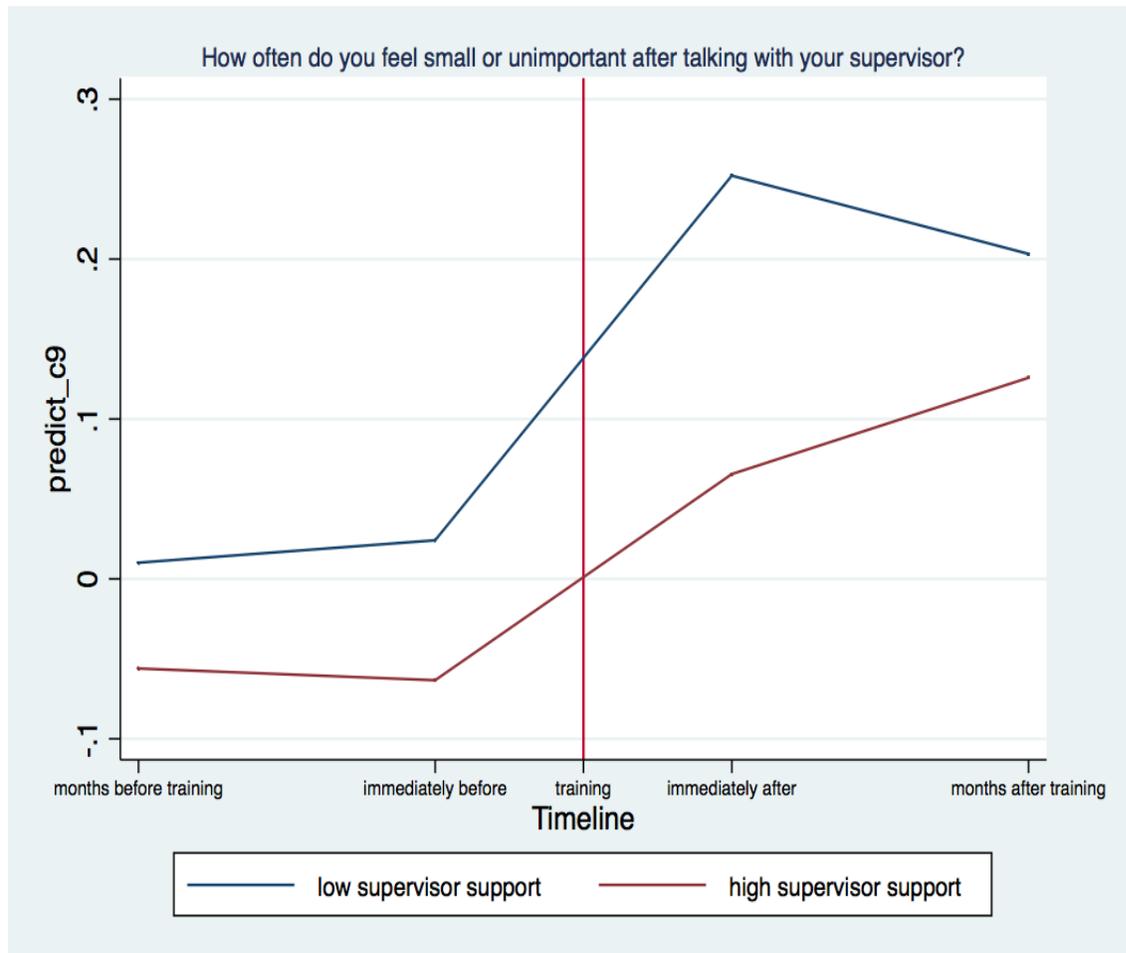


- Improving interactions between workers and supervisors can be very challenging.
- Sometimes conflict increases before workers and their supervisors find a more constructive way to interact.
- Negative effects can be particularly pronounced when supervisors are not supportive of the training.
- Workers are asked how often they feel angry or frustrated after talking to their supervisor.
- Training makes workers more assertive.
- Just after training, conflict with unsupportive supervisors rises.

Bangladesh Empowering workers can create more conflict particularly with supervisors who do not support the objectives of training.

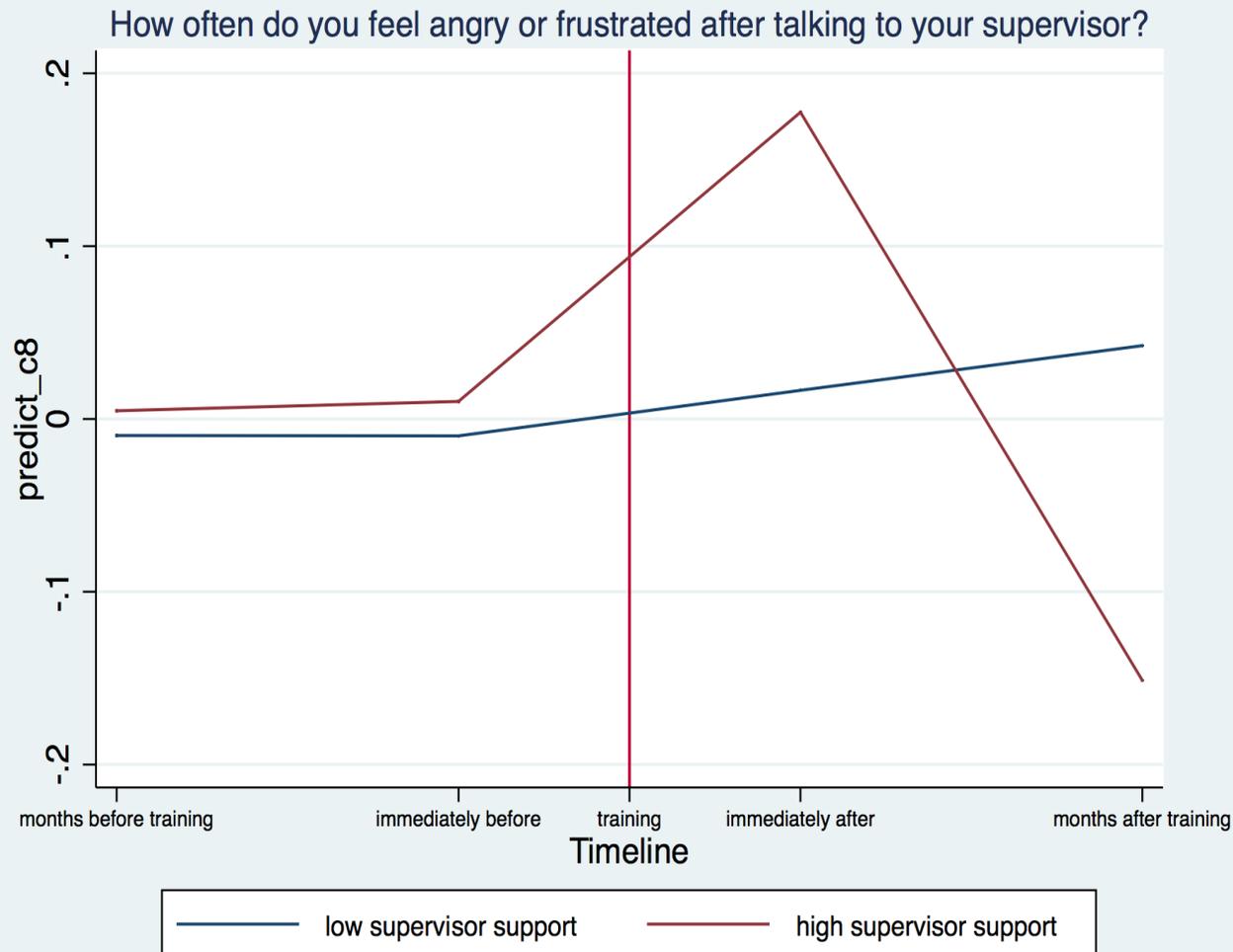


- Managing conflict and disagreement is hard.
- When workers are trained to think that they have a right to speak up, there can be an increase in disagreements between workers and supervisors.
- The increase in conflict is sensitive to attitudes about women in leadership positions.
- If norms supporting female leadership are absent (blue line), conflict will increase more when women are encouraged to voice their opinions.
- If norms support female leadership (red line), conflicts still arise but less commonly.

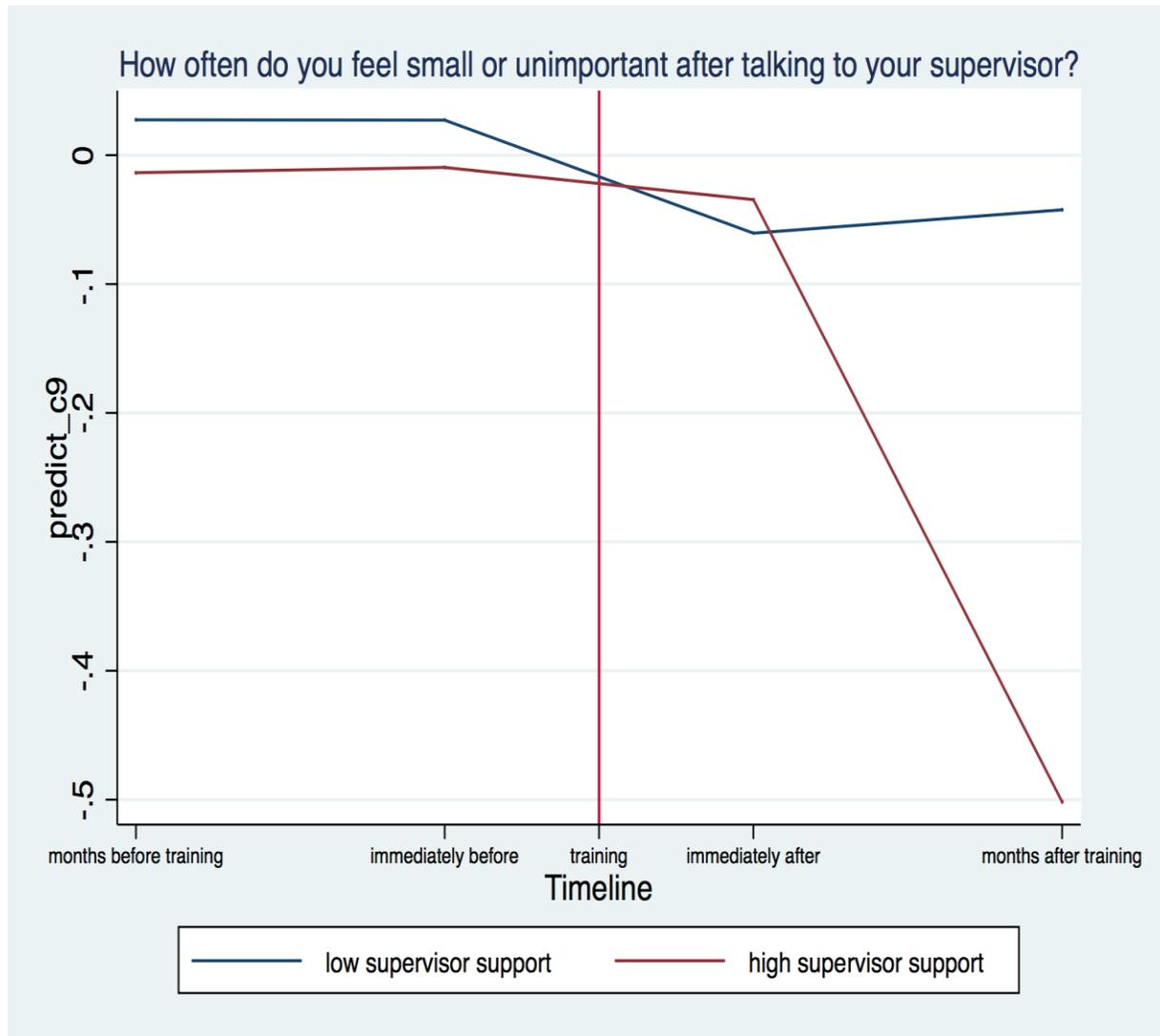


- In Bangladesh, training needed to provide workers with more skills for interacting with supervisors.
- Training increased the likelihood that interactions with supervisors would be humiliating.
- We saw an adverse treatment effect even in factories where supervisors supported the goals of training.

India Change can take time particularly even when supervisors are supportive of the goals of the training.



- Sometimes change takes time.
- In India, there was an increase in conflict with supportive supervisors immediately after training.
- But in the months after training, conflict went down.
- There was no treatment effect for workers in factories with unsupportive supervisors.



- Workers in India are also asked how often they feel small or unimportant after talking to their supervisor.
- There is a strong treatment effect for workers in factories with high supervisor support for the training. (red line) Humiliating interactions with supervisors decline in the months after training.
- Even though the training is for workers, it is affecting the behavior of supervisors receptive to its lessons
- We see almost no improvement in factories with low supervisor support for the training.

Part VII Conclusions

- Foundational Training has a significant effect on firm performance. Female employees are less likely to be late for work and they are more productive when at work.
- Training requires about 10 hours of lost work time per worker. The productivity and missed work effects are sufficiently large that factories can make up the time lost to training in less than 1.7 months after training ends.
- Training lowers worker turnover. Lower turnover also contributes to higher productivity. Workers with more than one year of experience are considerably more likely to reach their production target than less experienced workers.
- The reduction in turnover will increase the payoff to other types of training. Before introducing production-related training such as skills training, factories might consider empowerment training as preparation. A program like FT will improve retention and receptivity to new production systems.

- Training to improve productivity often reduces the use of PPEs and increases accidents. Empowerment training can help workers maintain the use of PPEs even as productivity increases.
- The gender pay gap declines. Women move from earning \$0.86 for each dollar earned by a male coworker to \$0.91.
- Training is generally more effective if managers and supervisors are supportive of its objectives. But in some cases, training can offset weak managerial function.
- Females and males reacted differently to the training. Prior to training, females were less productive than male employees. After training, female employees became the high productivity employees.

- Training increased the intrinsic value of work, teamwork and problem-solving. In India, workers were more likely to be proud of their work and offer coworkers help. Workers are also more able to remain engaged during a conflict or disagreement and appreciate the impact that their work effort has on coworkers.
- Training is particularly effective if managers and supervisors support the training. In Bangladesh factories with high manager support for the training, FT increased job satisfaction, awareness of interdependence of work effort and use of personal protective equipment (PPEs).
- Training reduced gender stereotypes in men concerning whether abilities are determined by gender at birth and the role of gender in housework. Training also affected the willingness of males to give equal opportunities to daughters and sons.
- Training promotes healthy behaviors such as eating breakfast and washing hands before handling food. Workers also report improvement in health status and the health of their daughters. Training also had a positive treatment effect on mental health in India, with fewer participants reporting episodes of sadness and depression. Males in India also reported fewer sick days.