More Money, More Problems: Expectations, Wage Hikes, and Worker Voice*

Achyuta Adhvaryu† Teresa Molina‡ Anant Nyshadham§

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Abstract

We report on the results of a worker "voice" experiment in an Indian ready-made garments firm. We begin by documenting substantial disappointment after a scheduled wage hike, showing that workers were expecting substantially larger wage increases than was actually realized. But the randomized voice treatment, which gave workers the opportunity to complete a survey just after the wage increase in which they were asked for feedback on job conditions, supervisor performance, and overall job satisfaction, mitigated the turnover effect of the hike almost entirely.

Keywords: voice, reference dependence, anchoring, minimum wage, ready-made garments, India
JEL Classification Codes: D91, J28, J31, O15

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†University of Michigan & NBER, adhvaryu@umich.edu
‡University of Hawaii at Manoa, tmolina@hawaii.edu
§Boston College & NBER, nyshadha@bc.edu

1 Introduction

Hirschman's seminal thesis on exit and voice – the idea that in the face of low-quality goods or services, consumers, workers, and citizens can either voice their discontent and create improvement, or exit the relationship – has profound implications for labor market dynamics (Hirschman, 1970). Evidence from lab experiments demonstrates that voice has both inherent and instrumental value (Ong et al., 2012). A worker's utility increases when she is able to communicate her dissatisfaction to her employer, creating inherent value. And the ability to lodge complaints effectively may generate positive changes in the employment relationship, generating an instrumental value. Through these two channels, voice thus functions as non-wage compensation. As a result, turnover should decrease when workers can – either individually or collectively – meaningfully communicate their dissatisfaction with their employer.

While indirect tests of Hirschman's theory abound in the economics literature (see, e.g., Batt et al. (2002); Beard et al. (2009); Cottini et al. (2011); Freeman (1980); Gans et al. (2017); Kuang and Wang (2017); Lien et al. (2017); Watkins and Hyclak (2011); Williamson (1976)), to our knowledge there has been no rigorous direct test of the impacts of increased voice on worker turnover. In this paper, we seek to provide this evidence via a randomized controlled trial in which we enable greater voice for workers just after what proved to be a disappointing scheduled wage hike.

The State Governments of India revise their wage floors each year; the size of the "increment" – that is, the increase in the minimum wage – is generally linked to expected inflation. In low-skill industries, in which wages for a majority of workers are often closely benchmarked to the (sector- and locality-specific) minimum wage, the annual wage hike is highly anticipated by both employers and workers. The employer-worker relationship in this context is never more fraught than after an increment that is perceived by workers to be below expectations. Indeed the period of time leading up to and following the annual hike is often marked by widespread labor unrest (Justino, 2006).

To understand the impacts of wage-related disappointment on turnover, and the potential role of increased voice in mitigating these effects, we partnered with the largest Indian ready-made

garments firm, which employs tens of thousands of sewing machine operators. Just before the 2016 minimum wage schedule was announced, we collected data on a random sample of workers regarding their current wages; expectations about changes due to the upcoming wage increment; and other opportunities available to them in the labor market. These data reveal that workers were quite disappointed by the wage hike: on average, workers' expectations were about 8 USD (7 percent of total salary) higher than their realized post-increment monthly wages.

Just after the wage hike, we randomized approximately half of the surveyed sample to an intervention designed to enable voice within the firm. Workers in the treatment group were invited to take part in a survey asking for 1) feedback on satisfaction related to job, supervisor, wage, and workplace environment; and 2) workers' opinions on various statements: whether mistakes are held against them, whether it is difficult to ask others for help, whether supervisors encourage learning, and whether they can trust their supervisor to advocate for them, listen to them, and help solve their problems.

The results of this survey are themselves telling. Many workers used the survey to express their dissatisfaction with various aspects of the job. For instance, approximately 20% of respondents agreed with the statements that mistakes were held against them and asking for help was difficult. Over 50% of the sample responded negatively to at least one of the six specific statements about the work environment. Finally, though average reported satisfaction levels with respect to the job, supervisor, and workplace environment were quite high (around 4 on a 5-point scale), satisfaction with wage levels were much lower – averaging less than 3 – which highlights the salience of wages as a potential driver of exit.

Hazard model estimates reveal that enabling voice reduced the probability of quitting by 21% in the months after the wage hike. This effect is strongest for workers who were most disappointed with the wage increment (i.e., whose expectations were farthest from the realized wage hike). This pattern is also evident in results on the impacts of wage-related disappointment and the voice treatment on absenteeism, which we use as a proxy for provision of effort on the job.

Our study makes two main contributions. First, we provide what is to our knowledge the first

randomized evaluation of Hirschman's hypothesis on exit and voice in the employment relationship. Economic studies have carried out indirect tests using variation in union representation (Freeman, 1980); employee participation in offline problem-solving groups and self-directed teams (Batt et al., 2002); and voice in the realm of workplace hazards and unsatisfactory work conditions (Cottini et al., 2011). We add to this work by providing direct causal evidence of the power of voice to mitigate exit in a real labor setting.

Ours is also the first such study from a developing country manufacturing context, in which voice tends to be limited and exit is common. As the low-skill workforce in many developing countries transitions rapidly from agriculture to industrial work, employers struggle with high worker turnover due to poor working conditions, low pay, and restricted worker rights. Our study affirms the value of providing voice to vulnerable workers in exactly these high intensity environments as a means of increasing workers' utility on the job and reducing turnover.

Second, despite a rich theoretical literature on reference-dependent preferences (see, e.g., Abeler et al. (2011); Barberis (2013); Kőszegi and Rabin (2006)), most empirical evidence on these the implications of this behavioral phenomenon is limited to lab-experimental studies (Barberis, 2013). Two notable exceptions are Card and Dahl (2011), who examine violence following unexpected football game losses for the home team, and Backus et al. (2017), who study disappointment and exit in an online auction market. Our paper builds on these two studies by directly measuring expectations and showing that falling short of these expectations is associated with a greater probability of turnover.

The remainder of the paper is organizes as follows. Section 2 describes the context and the randomized voice intervention treatment that we use. In section 3, we outline a conceptual framework that provides us with testable predictions on the relationship between quitting, wage expectations, and voice. Section 4 describes the data. Section 5 discusses the estimation strategy. Section 6 reports the results, and section 7 concludes.

2 Context and Intervention

2.1 Context

Our study focuses on the Indian garment industry, where we have partnered with Shahi Exports, Private Limited. Shahi is the largest private garment exporter in India and the single largest employer of unskilled and semi-skilled female labor in the country. For this firm, like other manufacturing firms in low-income contexts, high turnover is a major challenge that leads to persistently high recruitment and training costs.

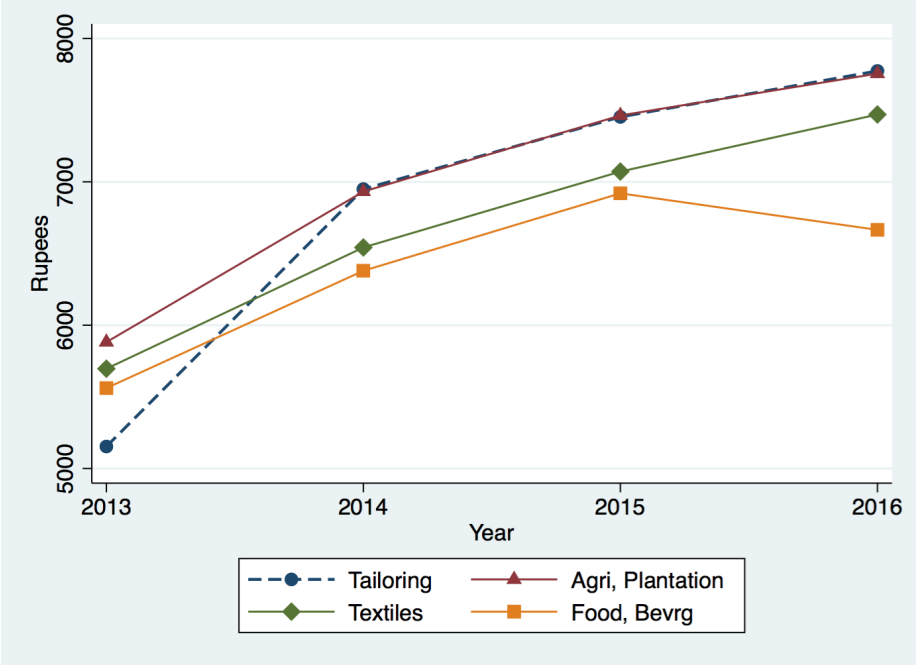
In this industry, wages are influenced in large part by government minimum wage policy, which is determined at the state level. In the state of Karnataka, where the bulk of Shahi's factories (and all of this study's sample) are located, the minimum wage schedule specifies a different minimum wage for different geographic areas, industries, and skill levels within each industry. The minimum wage is comprised of two parts – the "basic" portion and the "dearness allowance," which is intended to allow for cost of living adjustments. Every year, the government makes adjustments to the minimum wage schedules by changing the dearness allowance to account for inflation. In addition, adjustments to the "basic" wage level are made every five years, resulting in larger increases than the more frequent inflation adjustments.

Figure 1 plots the median minimum wage in Karnataka (taken across all industries, zones, and skill levels) for four female-dominated industries.[1] The minimum wage that is relevant to Shahi – the tailoring industry's – is denoted by the dashed line. As is clear from the figure, the tailoring wage increased substantially more in 2014 than in subsequent years, due to the basic wage hike that happened in that year.

Shahi wages closely track these minimum wage schedules. After the wage hike announcement made by the government every year, Shahi also revises its wages to comply with the stated increases. Shahi has some discretion; they can and sometimes do choose to raise wages by more than the minimum wage policy requires. Overall, there is substantial uncertainty about the size of these annual wage increases on the worker's end, due to the fact that both government and

[1] Chattopadhyay et al. (2013) lists food and apparel as the two industries with the highest share of female manufacturing employment in the state of Karnataka.

Figure 1: Minimum Wages in Female-Dominated Industries



Notes: Each point represents the monthly minimum wage for the relevant year and industry in Karnataka, taking the median across all geographic areas and skill types.

firm decisions are not perfectly predictable.

Interestingly, anecdotal evidence suggests that worker dissatisfaction and quit rates are especially high after these annual firm-wide wage increases, a puzzle that may be explained in part by the uncertainty just described. In section 3, we outline a model that explains how worker quitting decisions are related to wage-related expectations and disappointment, and why a disappointing wage hike might lead to higher worker turnover. Our empirical analysis aims to understand whether a "voice" intervention can reduce the exit of individuals after these wage hike announcements.

2.2 Intervention

The voice intervention we consider is an employee satisfaction survey. The survey questions, summarized in Table 1 (and copied in full in appendix section A.1), allowed respondents to express their agreement with various statements about their job: whether it is difficult to ask others for help and whether supervisors encourage learning, for example. Respondents were

also asked about their general satisfaction with their job, wage, supervisor, and overall work environment.

The use of an employee satisfaction survey to reduce quitting is motivated by the work of Hirschman (1970), who proposed that individuals have two main options in unsatisfactory situations: "exit" or "voice." If unsatisfied with their jobs, employees can quit without trying to improve their situation at work (exit), or they can stay, speak up, and try to remedy the situation (voice). The garment workers in our analysis may not typically have many opportunities to voice concerns about their working conditions and may therefore have no option but exit, which could be a partial explanation for the firm's high turnover rates. A survey like this has the potential to reduce exit even before leading to actual changes in the work environment, by providing workers with a means of expressing their dissatisfaction and concerns.

The responses to this employee satisfaction survey reveal that many workers did in fact use it to express dissatisfaction with various aspects of the job. Table 1 displays the distribution of responses to all of the survey questions. In panel A, we see that over 20% of workers agreed or strongly agreed with the first two statements: that mistakes were held against them and asking for help was difficult. Smaller proportions (ranging between 6% and 15%) provided negative evaluations of their supervisor, indicating their supervisor was either not encouraging, not someone they could trust, or indifferent about helping solve problems. Combining responses to all of the statements in panel A, over 50% of the sample responded negatively to at least one of the six statements.

Panel B of Table 1 also reveals some interesting results. Though average reported satisfaction levels with respect to the job, supervisor, and workplace environment were quite high (over half reported being extremely satisfied), satisfaction with wage levels were much lower – with over half either somewhat or extremely dissatisfied. This highlights the salience of wages as a potential driver of exit.

Table 1: Employment Satisfaction Survey

A. Evaluation of Job Conditions and Supervisor Characteristics

	Proportion				
Agreement with Statement...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Mistakes held against me	0.48	0.26	0.03	0.17	0.06
Difficult to ask for help	0.42	0.32	0.04	0.15	0.07
Supervisor encourages me	0.03	0.03	0.02	0.41	0.50
Would talk to supervisor about leaving	0.09	0.07	0.01	0.41	0.42
Supervisor would advocate for me	0.05	0.08	0.03	0.41	0.42
Supervisor not interested in helping	0.44	0.37	0.03	0.08	0.07

B. Satisfaction Levels

	Proportion				
Satisfaction with...	Extremely Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Extremely Satisfied
Current job/position	0.02	0.04	0.04	0.33	0.56
Current wage	0.33	0.24	0.07	0.24	0.12
Supervisor	0.03	0.03	0.04	0.32	0.57
Workplace environment	0.01	0.02	0.03	0.29	0.64

Notes: N=869. Data from responses to the employee satisfaction survey that served as our voice intervention. See Appendix section A for exact wording for all questions.

3 Conceptual Framework

This section provides a conceptual framework for understanding the relationship between wage increases, wage expectations, and the effects of a voice intervention like the one described above. Consider a worker who has just learned about the size of a wage hike that she had anticipated, and now must decide whether to quit or stay. This decision depends on her current wage plus any amenities (w), the wage and amenities at her best outside option ($\underline{w}$), the realized wage hike at her current job (y), the realized wage hike at her best outside option ($\underline{y}$), and the wage hike she expected prior to the announcement ($\hat{y}$).

A worker will choose to stay if and only if the utility at her current job (after the wage increase) is higher than the utility she would have at her next best option – that is, if

$$w + y - d(\hat{y} - y) > \underline{w} + \underline{y} + \epsilon. \tag{1}$$

Here, ϵ is an idiosyncratic error term, and the $d(.)$ function captures the utility loss (or gain, if $\hat{y} - y$ is negative) resulting from the discrepancy between the realized wage hike and the worker's expected wage hike. When $y - \hat{y}$ is positive, this term represents the disappointment resulting from receiving a lower wage increase than expected. In equation (1), it is assumed that this disappointment is firm-specific: a worker will only experience this utility loss if she stays at the current job. This is because she blames the lower-than-expected wage hike on her current firm, which makes working for that firm less desirable.

If we assume that $(y - \underline{y})$ is either close to zero or random noise, the condition specified by equation 1 is equivalent to the following (where $\tilde{\epsilon}$ now incorporates $(y - \underline{y})$):

$$\tilde{\epsilon} < (w - \underline{w}) - d(y - \hat{y}). \tag{2}$$

Therefore, the probability of quitting can be expressed as a function of current wages, outside wages, and wage disappointment, as shown below. As we describe in the next section, we collect

data on all of these variables.

$$\Pr(\text{Quit}) = F\left((w - \underline{w}) - d(\hat{y} - y)\right). \tag{3}$$

This equation demonstrates that quitting might increase after a wage hike, if the average worker is disappointed by the size of the realized hike (i.e. if $\hat{y} - y > 0$). Given this, the voice intervention described above might be able to reduce quitting in two ways. First, a voice intervention might improve a worker's perception of the firm or her supervisor, which would translate into higher utility derived from working at her current job (i.e., an increase in the amenities that are part of w). Secondly, a voice intervention could also mitigate the disappointment generated by the lower-than-expected wage hike, which would lead to an effect that interacts with wage disappointment ($d(\hat{y} - y)$). The latter channel is what is predicted by Hirschman (1970). If workers express their disappointment by either exiting or by voicing their opinions, providing workers with the ability to voice their opinions should weaken the relationship between disappointment and exit.

4 Data

To test the predictions from the previous section, data on quitting, current wages, outside wages, and wage expectations are required. We use three main sources of data for this analysis: a baseline survey specifically designed to learn about expectations and outside options, the employee satisfaction survey that served as our voice intervention, and firm administrative data.

4.1 Baseline and Intervention Surveys

In May of 2016, before workers were made aware of how the annual minimum wage hike would translate into an increase in their take-home pay, we conducted a baseline survey to elicit worker expectations about the pending wage hike. Workers were asked how much they expected take-home wages to increase next month, along with questions about wages at their outside option – the job they would most likely have if they did not work at Shahi. We surveyed a randomly

selected sample of approximately 2,000 workers from 12 different factory units located in the cities of Bangalore, Mysore, Maddur, Shimoga, and Kannakapura in the Indian state of Karnataka.

Using this data, we construct a measure of disappointment, which combines data on ex-ante worker expectations and ex-post wage increases. Specifically, we calculate the difference between the wage hike an individual was expecting to receive in June and the wage hike she actually received, which turned out to be a 398 rupee increase (approximately 6 USD) for all individuals in our sample.[2] Another important variable is the outside option wage. Workers are first asked what job they would most likely have or would be easiest to get if they did not work at Shahi, and then asked for the wage they would earn at the specified job.

Of the baseline sample, approximately half were randomly selected for the voice intervention. To assign treatment status, we stratified by unit and job type (there are 12 units and 5 different job types: tailor, checker, helper, operator, or other). The selected individuals were given the employment satisfaction survey (described in section 2.2) after the wage hikes were implemented at the beginning of June, 2016. These surveys were administered from the end of June to the beginning of July.

4.2 Administrative Data

Given the motivation from the exit-voice literature, we are most interested in retention as an outcome. From the firm's administrative data, we are able to observe the dates that an individual joins and leaves the firm. We also observe daily attendance and are able to calculate the share of days (in a given time period) a worker was absent. A less extreme version of exit, and likely indicative of decreased motivation, absenteeism offers another interesting outcome to study the mitigative effects of our intervention.

We obtain a set of individual-level controls from the firm's personnel data. These include tenure at the firm, gender, education, hometown, department, and job type.

[2]The size of the wage increase is not always the same for all workers because the government sometimes dictates different wage increases for workers of different skill levels and across different geographic zones. Shahi also has the discretion to raise wages more for different workers (more skilled workers, for example) as long as it complies with the new minimum wage laws. This is not the first time, however, that Shahi implemented a uniform wage increase for all workers in all factories in Karnataka.

4.3 Summary Statistics

Table 2 reports summary statistics for our sample of interest: individuals in the baseline survey without any missing demographic covariates and who were present at the firm when the intervention took place (in June 2016). Column 1 represents the full sample. Column 2 reports statistics for the treatment group that received the voice intervention, column 3 for the control group, and column 4 the difference between the two. Wage disappointment, defined as the difference between expected and actual monthly wages after the hike, is high. On average, individuals were expecting to earn 8 USD more per month (which is approximately 7% of average monthly wages) than they actually ended up earning after the hike. The sample is balanced on important observables, like salary, tenure, education, and job type across treatment and control. Language is the only variable for which there is a (small) statistically significant difference (at the 10% level) across treatment and control.

5 Empirical Strategy

The first part of our empirical strategy is derived directly from equation (3) in section 3, which predicts that quitting behavior should depend on current wages, outside wages, disappointment, and exposure to the voice intervention. We begin by estimating a Cox proportional hazard model of the following form:

$$\lambda_i(t) = \lambda_0(t) \exp\left(\beta_1 W_i + \beta_2 \underline{W}_i + \beta_3 D_i + \beta_4 T_i + \gamma X_i\right) \tag{4}$$

where $\lambda_i(t)$ denotes the instantaneous probability of individual i quitting at time t (measured in days relative to her start date) conditional on being still employed at time t. W_i is the individual's current wage, $\underline{W}_i$ is the outside option wage given in the survey, D_i is disappointment, and T_i is an indicator for the voice intervention treatment. Disappointment is measured as the difference between the wage hike an individual was expecting to receive and the wage hike an individual actually received, with higher values capturing greater disappointment. X_i is a vector

Table 2: Summary Statistics

	(1) Full sample mean/sd	(2) Voice Group mean/sd	(3) Control mean/sd	(4) Difference diff/se
Wage Disappointment	0.75	0.77	0.73	-0.033
	(1.15)	(1.12)	(1.17)	(0.053)
Monthly Salary	11.4	11.3	11.6	0.30
	(4.33)	(3.89)	(4.72)	(0.20)
Outside Option Salary	15.2	15.1	15.2	0.12
	(7.36)	(7.12)	(7.58)	(0.34)
Tenure (in years)	1.92	1.90	1.94	0.038
	(1.68)	(1.62)	(1.74)	(0.078)
Female	0.71	0.71	0.70	-0.0044
	(0.46)	(0.45)	(0.46)	(0.021)
Years of Education	8.54	8.62	8.47	-0.16
	(3.57)	(3.49)	(3.65)	(0.16)
Speak Kannadas	0.68	0.66	0.71	0.047*
	(0.47)	(0.47)	(0.46)	(0.022)
Bangalore	0.68	0.67	0.68	0.0064
	(0.47)	(0.47)	(0.47)	(0.022)
Sewing Dept	0.54	0.54	0.54	-0.0085
	(0.50)	(0.50)	(0.50)	(0.023)
Tailor	0.42	0.43	0.42	-0.0081
	(0.49)	(0.49)	(0.49)	(0.023)
Checker	0.072	0.072	0.072	0.00035
	(0.26)	(0.26)	(0.26)	(0.012)
Helper	0.13	0.12	0.13	0.0078
	(0.33)	(0.33)	(0.34)	(0.015)
Operator	0.043	0.045	0.042	-0.0028
	(0.20)	(0.21)	(0.20)	(0.0094)
Other Job	0.34	0.34	0.34	0.0027
	(0.47)	(0.47)	(0.47)	(0.022)
Observations	1869	916	953	1869

Notes: Standard errors are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Wage disappointment is the difference between expected and actual wages after the wage hike, reported in 10 USD increments. Monthly salary and outside option salary are also reported in 10 USD increments.

of controls: gender, years of tenure indicators, years of education, an indicator for speaking the Kannada dialect, an indicator for being from Bangalore, and an indicator for being part of the sewing department. We estimate the model with and without fixed effects for unit and job type. Because treatment was assigned within each unit and job type, we cluster all standard errors at the unit-job level.

In equation (4), β_4 captures the average effect of the voice intervention, but this specification does not allow us to distinguish between the direct effects (on amenities) and the effects operating through a mitigation of disappointment (as suggested by the exit-voice theory). We therefore estimate the following specification,

$$\lambda_i(t) = \lambda_0(t) \exp\left(\beta_1 W_i + \beta_2 \underline{W}_i + \beta_3 D_i + \beta_4 T_i + \beta_5 D_i T_i + \gamma X_i\right), \tag{5}$$

which allows for the intervention to have heterogeneous effects by the level of disappointment. If providing workers with voice offers them another way to express their disappointment (an alternative to quitting), we should expect to see a positive coefficient on disappointment (β_3) and a negative coefficient on the disappointment-voice interaction (β_5). This would mean that those who are more disappointed are more likely to quit, but the disappointed individuals who were given voice are less likely to do so than those who were not.

We conduct a similar analysis, using OLS, to analyze other outcomes of interest. That is, we run OLS regressions using the same independent variables as in equation (5). The dependent variables we consider include separate indicators for quitting by the end of July, August, and every month until November, as well as absence rates across various combinations of months.

Finally, the last part of our empirical analysis explores what might be driving individuals' wage expectations. In particular, we are interested in whether the wage hike that took place in 2014, which was much larger than the wage hike in the subsequent two years (due to the adjustment of the basic wage),[3] led individuals to set high expectations for the wage hike in 2016. We therefore create measures to capture the likelihood of an individual anchoring their

[3]See Figure 1.

expectations to the 2014 wage hike. The most obvious variable is an indicator for whether the individual was working at the firm during the 2014 wage hike (in April 2014), which we denote Z_i^{2014}. Next, we calculate the share of individuals in a worker's network that was at the firm during the 2014 wage hike (P_i^{2014}), where a worker's network is defined by other individuals working on their same production line and speaking the same language. We also calculate the share of individuals who were present during the 2014 wage hike, among individuals working on the same line but who do not speak the same language (Q_i^{2014}) – this variable should have a weaker effect on an individual's wage expectations because there is likely less communication with these out-of-network individuals. We calculate analogous variables for 2015, during which the wage hike was more comparable to the wage hike of 2016 and for which we should therefore see weaker effects. We regress the expected wage hike on all of these variables, as well as a set of basic individual-level controls, as shown below:

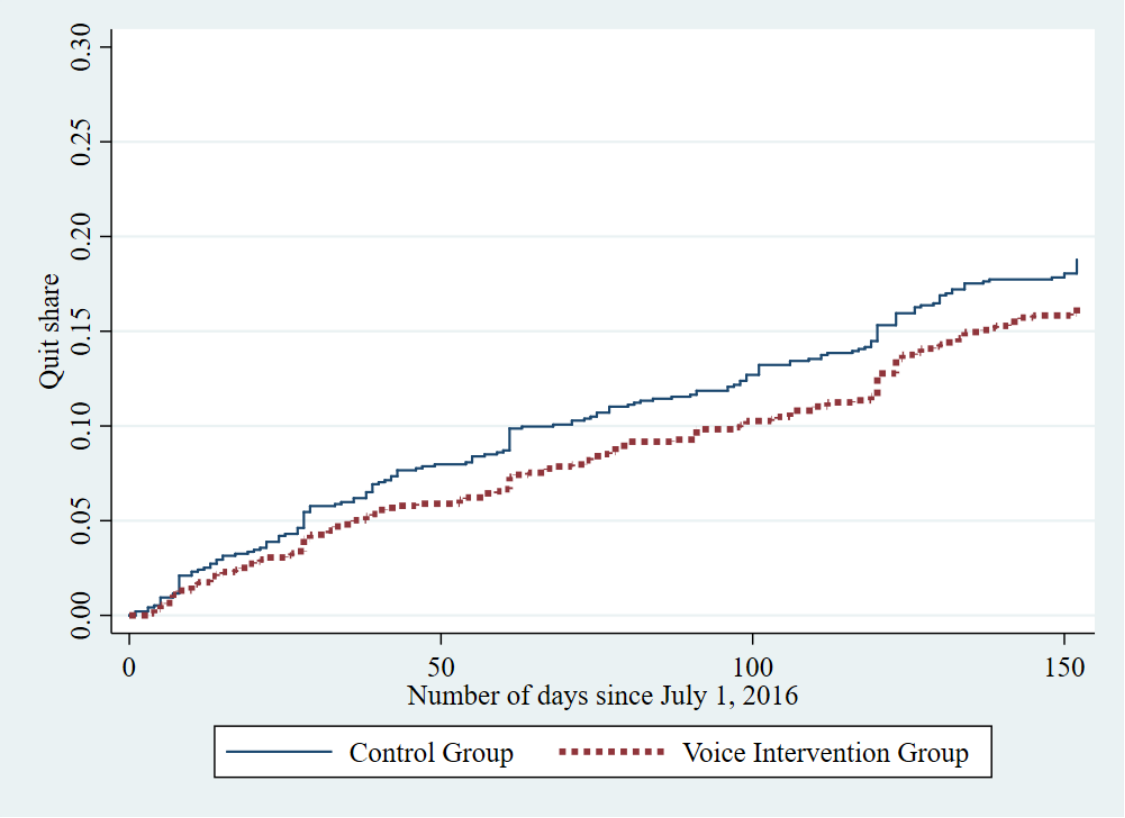
$$\hat{y}_i = \alpha_0 + \alpha_1 Z_i^{2014} + \alpha_2 P_i^{2014} + \alpha_3 Q_i^{2014} + \delta_1 Z_i^{2015} + \delta_2 P_i^{2015} + \delta_3 Q_i^{2015} + \gamma X_i + \nu_i. \tag{6}$$

If an individual's past experiences with large wage hikes (and their interactions with people who have experienced large wage hikes) influence expectations, we should see positive α_1 and α_2 coefficients that are larger in magnitude than the remaining coefficients.

6 Results

We begin with a graphical illustration of the data. In Figure 2, we plot the cumulative share of the sample that has left the firm, starting in July of 2016 (the first month after the voice intervention treatment), up until the end of November. We plot this separately for the voice intervention and the control groups. The dashed line, which represents the voice intervention group, starts separating from the solid line (the control group) after a couple of weeks, and remains lower than the solid line throughout the entire time period. By the end of November, quit shares are approximately 2 percentage points lower in the voice intervention group than in the control group.

Figure 2: Quit Rates, by Treatment Status



In Table 3, we investigate these results more formally, estimating the hazard model described in equation (4), which is derived directly from the model in section 3. In column 1, we estimate a negative coefficient of -0.21 on the voice intervention interaction (statistically significant at the 10% level), which implies that those in the treatment group are, on average, 18.5% less likely to quit than those in the control group. This regression, however, does not allow us to distinguish between the direct effect of the treatment (on amenities) and the indirect effect of the treatment (operating through a mitigation of disappointment).

In column 2, we do allow for the treatment to interact with wage disappointment, estimating the hazard model in equation (5). In this regression, it is clear that the effects of the voice intervention are strongest among the most disappointed. While the main effect of voice is small in magnitude and no longer significant, we estimate a negative coefficient (significant at the 5% level) on the interaction between the voice treatment and wage disappointment. In addition, the main effect of wage disappointment is positive and significant at the 10% level.

In other words, individuals who were disappointed by the wage hike were more likely to quit, but the voice intervention was able to lower quit rates among those who were disappointed. At the average level of wage disappointment (7.5 USD), treatment individuals were 83% less likely to quit than control individuals. For those who were not disappointed at all, the intervention had no effect. This suggests that the voice intervention worked primarily by mitigating disappointment, which is consistent with the predictions of Hirschman (1970).

In columns 3 and 4, we show that the inclusion of unit and job type fixed effects have little effect on the coefficient estimates. In the appendix (Table A1), we show that our results are robust to various alternative specifications of the model. In column 1, we allow for unit-level frailty; in column 2, we show results without any controls; in column 3 we include all individuals who were part of the treatment assignment procedure (including those who left before July and were therefore not exposed to the voice intervention). Across all three columns, we see that the voice intervention significantly reduced quitting for the most disappointed individuals.

Although our voice intervention treatment was assigned randomly, wage disappointment is not exogenous. This calls for some caution in interpreting the main effect of wage disappointment,

Table 3: Hazard Model Estimates of the Effects of Disappointment and Voice on Quitting

	(1)	(2)	(3)	(4)
Voice Intervention Group	-0.21*	-0.036	-0.21*	-0.017
	(0.11)	(0.13)	(0.11)	(0.12)
Wage Disappointment	0.0023	0.090*	0.042	0.14***
	(0.058)	(0.049)	(0.058)	(0.044)
Disappointment x Voice		-0.24**		-0.27***
		(0.10)		(0.089)
Monthly Salary	-0.030	-0.032	-0.025	-0.027
	(0.020)	(0.020)	(0.025)	(0.023)
Outside Option Salary	0.014	0.015	0.010	0.011
	(0.011)	(0.011)	(0.011)	(0.011)
Observations	1869	1869	1869	1869
Strata Fixed Effects	None	None	Unit & Job	Unit & Job

Notes: Standard errors, clustered at the unit-job level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Coefficients (not hazard ratios) from a Cox proportional hazard model are reported. All regressions control for years of tenure indicators, years of education, and indicators for Kannadas (language), Bangalore (hometown), and sewing department. Individuals who are missing the outside option salary variable are assigned the sample average, and an indicator for those missing this variable is included.

as well as the interaction coefficient. In the conceptual framework outlined in section 3, equation (1) makes it clear that the quit decision also depends on the wage hikes that take place at an individual's outside option. In section 3, we assumed that the difference between the wage hike experienced at Shahi and at the individual's next outside option is uncorrelated with the other variables in the model. However, if these wage hike differentials actually vary systematically across individuals and are correlated with wage disappointment, this would offer a different interpretation of our results discussed above.

Specifically, if workers who expected large wage hikes at Shahi (and who were therefore very disappointed) did so because they were expecting large wage hikes at their outside option, this would generate a positive correlation between wage disappointment and outside option wage hike expectations. If their large outside option wage hikes were actually realized, this would make it rational for them to quit. Our positive wage disappointment coefficient, therefore, would instead be capturing higher quit rates among individuals who saw larger wage hikes at their outside option.

There are two main reasons why we argue that this is implausible. First, the outside options for most Shahi workers are likely to be in one of the four female-dominated industries depicted in Figure 1. This figure shows that the wage hike in tailoring was similar to (or higher than) the wage hikes in the other three industries, in 2016 as well as in the previous two years. This makes it unlikely that a Shahi worker saw a higher wage hike at their outside option than the one they experienced at Shahi.

Secondly, we are able to test whether controlling for the type of outside option (as provided by the worker in the baseline survey) affects our coefficient estimates. Specifically, in column 1 of Table 4, we include indicators for the following categories of outside options: garment factory job, other factory job, agricultural self employment or labor, piece rate work, and other. We also include their interactions with the voice intervention indicator to ensure that the heterogeneity in the treatment effect we are attributing to wage disappointment and is not due to variation in outside option wage hikes. In column 2, we conduct a similar exercise, except we use the job type specified by the worker in response to a slightly different question. This question asks if a worker

Table 4: Hazard Model Estimates, Controlling for Outside Job Interactions

	(1)	(2)	(3)	(4)
Voice Intervention Group	-0.032	-0.25	-0.058	-0.19
	(0.20)	(0.26)	(0.20)	(0.32)
Wage Disappointment	0.096*	0.10**	0.14***	0.15***
	(0.050)	(0.051)	(0.044)	(0.047)
Disappointment x Voice	-0.26**	-0.27***	-0.28***	-0.29***
	(0.10)	(0.10)	(0.094)	(0.10)
Monthly Salary	-0.036*	-0.028	-0.029	-0.025
	(0.020)	(0.019)	(0.023)	(0.023)
Outside Option Salary	0.016	0.011	0.011	0.0095
	(0.011)	(0.011)	(0.011)	(0.011)
Observations	1869	1869	1869	1869
Strata Fixed Effects	None	None	Unit & Job	Unit & Job
Job Variable	Most obtainable job	Higher-paying job	Most obtainable job	Higher-paying job

Notes: Standard errors, clustered at the unit-job level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Coefficients (not hazard ratios) from a Cox proportional hazard model are reported. All regressions control for years of tenure indicators, years of education, and indicators for Kannadas (language), Bangalore (hometown), and sewing department. Individuals who are missing the outside option salary variable are assigned the sample average, and an indicator for those missing this variable is included. Regressions also control for indicators for the outside option job type, as well as their interactions with the voice intervention indicator.

can earn a higher wage at another job outside Shahi, and if so, what this job is. To control for this variable, we once again include indicators (and their voice intervention interactions) for garment factory job, other factory job, agricultural self employment or labor, piece rate work, other, and finally, an indicator for having no better-paying option at any time of the year.

Comparing the estimates in Table 4 to those in Table 3, it is clear that outside option job types do not have any effect on our coefficient estimates. Because outside option job categories should capture some of the heterogeneity in outside option wage hikes, this alleviates concerns that unobserved outside option wage hikes are driving our results in Table 3. Again, it is clear that unit and job type fixed effects do not affect our coefficient estimates. We therefore drop them in the remaining tables (but report these specifications in the appendix).

The above tables have established that the voice intervention reduced quitting in the five months after the wage hike, for the most disappointed individuals. In the next table, we conduct a slightly different analysis to investigate when the effects of the voice intervention started to kick in, and how persistent these effects were. For this analysis, we run OLS regressions using the same set of independent variables as in the hazard models above. The five dependent variables of interest are dummy variables for having quit by July, August, September, October, and November. Results are reported in Table 5. Here, we see that the main effect of disappointment is small in columns 1 and 2 (July and August), but larger and significant at the 10% level in column 3. It appears that disappointed individuals did not start quitting until September, which is also when the effect of the voice intervention (on disappointed individuals) is first observed. The magnitudes of the wage disappointment main effect and the disappointment-voice interaction are similar in the remaining columns, suggesting that the voice intervention did more than just temporarily delay quitting – the effects of the voice intervention persisted for several months after the wage hike.

The above analysis has focused on quitting as our main outcome of interest, due to the Hirschman (1970) theory's presentation of exit as the only alternative to voice. However, it is possible that those who do not leave the firm exhibit less extreme responses as well: they may, for example, reduce their effort or time spent at work by showing up to work less frequently. To investigate this possibility, we repeat our regressions above using absenteeism as our outcome variable – specifically, the share of days (over various time periods) that an individual did not attend work.

The results in Table 6 reveal that absenteeism is indeed another alternative to exit: for individuals in the control group, absenteeism is positively associated with disappointment (in columns 2 through 5, which suggests these effects start kicking in sometime in August). However, as was the case in Table 3, the voice intervention appears to mitigate these effects. For those who were not disappointed, there is no significant effect of the intervention on absenteeism, though the intervention did reduce absenteeism for the most disappointed individuals.

Table 5: Effects of Disappointment and Voice on Quitting, By Month

	Quit by the end of...				
	(1)	(2)	(3)	(4)	(5)
	Jul	Aug	Sep	Oct	Nov
Voice Intervention	-0.011	-0.022	-0.00068	-0.0032	0.0044
Group	(0.012)	(0.016)	(0.018)	(0.020)	(0.021)
Wage Disappointment	0.0010	0.0045	0.021*	0.017	0.021
	(0.0064)	(0.0098)	(0.012)	(0.013)	(0.013)
Disappointment x	-0.0071	-0.0082	-0.030**	-0.034**	-0.041**
Voice	(0.0079)	(0.012)	(0.015)	(0.016)	(0.017)
Monthly Salary	0.000034	-0.00051	-0.0019	-0.0026	-0.0057**
	(0.0017)	(0.0025)	(0.0026)	(0.0026)	(0.0029)
Outside Option	0.00070	0.0010	0.0014	-0.00015	0.0018
Salary	(0.00096)	(0.0013)	(0.0014)	(0.0015)	(0.0017)
Observations	1869	1869	1869	1869	1869
Mean of Dependent Var.	0.050	0.086	0.11	0.14	0.18
Strata Fixed Effects	None	None	None	None	None

Notes: Standard errors, clustered at the unit-job level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. All regressions control for years of tenure indicators, years of education, and indicators for Kannadas (language), Bangalore (hometown), and sewing department. Individuals who are missing the outside option salary variable are assigned the sample average, and an indicator for those missing this variable is included.

Table 6: Effects of Disappointment and Voice on Absenteeism

	Share of Days Absent in...				
	(1)	(2)	(3)	(4)	(5)
	Jul	Jul-Aug	Jul-Sep	Jul-Oct	Jul-Nov
Voice Intervention	0.0044	0.0046	0.0068	0.0041	0.0058
Group	(0.0092)	(0.0087)	(0.0084)	(0.0082)	(0.0082)
Wage Disappointment	0.0083	0.012*	0.014**	0.012**	0.012**
	(0.0065)	(0.0064)	(0.0054)	(0.0050)	(0.0048)
Disappointment x	-0.011	-0.012	-0.014*	-0.013*	-0.015**
Voice	(0.0083)	(0.0081)	(0.0073)	(0.0069)	(0.0068)
Monthly Salary	-0.00013	-0.00036	-0.0016	-0.0017	-0.0021
	(0.0013)	(0.0014)	(0.0013)	(0.0013)	(0.0013)
Outside Option	0.00010	-0.000042	0.00042	0.00024	0.00044
Salary	(0.00069)	(0.00068)	(0.00067)	(0.00067)	(0.00068)
Observations	1865	1867	1869	1869	1869
Mean of Dependent Var.	0.10	0.11	0.12	0.12	0.13
Strata Fixed Effects	None	None	None	None	None

Notes: Standard errors, clustered at the unit-job level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. The dependent variable is the share of work days in the specified period that an individual was reported absent, out of all days an individual was still employed at the firm. All regressions control for years of tenure indicators, years of education, and indicators for Kannadas (language), Bangalore (hometown), and sewing department. Individuals who are missing the outside option salary variable are assigned the sample average, and an indicator for those missing this variable is included.

6.1 Wage Expectations

The above analysis has demonstrated that expectations matter, and realizations that fall short of these expectations can result in higher rates of exit. What, then, drives these expectations? In Table 2, we showed that expected wage hikes exceeded actual wage hikes on average. Here, we conduct a descriptive exercise, outlined by equation (6), to investigate why expectations might be set so high.

First, we explore whether individuals who were at the firm during the 2014 wage hike, which was around 4 times larger than the 2016 wage hike, set their expectations high based on this large increase. In column 1 of Table 7, we see that individuals who were at the firm during the 2014 wage hike have significantly higher expectations than those who were not. In column 2, we show that this effect is much larger than the effect of being present for the 2015 wage hike (which was more comparable in magnitude to 2016 and which does not appear to have affected expectations).

In column 3, we explore whether working with people who were at the firm during the 2014 wage hike also matters. First, we calculate the share of co-workers, working in an individual's production line and speaking the same language, who were at the firm during the 2014 wage hike. We also calculate the share of co-workers, working on an individual's production line but who do not speak the same language (and who are therefore less likely to share information), who experienced the 2014 wage hike. We standardize these variables and include them, along with the analogous variables for 2015, in the regressions in columns 3 and 4.

In these regressions, the coefficient on the indicator for being present for the 2014 hike remains of similar or even larger magnitude than in columns 1 and 2, though it is no longer precisely estimated. Importantly, however, the estimated coefficient on the percentage of group present for the 2014 hike is positive and statistically significant. In theory, this variable might be picking up various different effects: the effects of having more information about the 2014 wage hike, which is what we are trying to identify, but also the effects of having more experienced workers on the same line, which might (positively or negatively) affect a worker's evaluation of their own skill and therefore her expected wage trajectory. However, if this group variable is simply capturing the

effects of specific experience compositions in a line, we would expect to see similar coefficients on the in-network and out-of-network variables. Instead, we find that the in-network 2014 variable is positive and statistically significant, while the out-of-network 2014 variable is smaller and not significantly different from zero, which is consistent with the idea that the positive in-network coefficient is due to information sharing among individuals who speak the same language.

Finally, we also see that the 2015 variables matter much less than the 2014 variables (in fact, they do not matter at all), which is consistent with the fact that the 2015 hike was much more similar to the 2016 hike and less likely to generate exceedingly high expectations.

Table 7: Wage Expectations and Experience with Previous Wage Hikes

	Expected Wage Hike			
	(1)	(2)	(3)	(4)
Present for 2014 hike	0.098*	0.13**	0.100	0.20
	(0.054)	(0.064)	(0.074)	(0.15)
Present for 2015 hike		-0.058	0.026	-0.0098
		(0.064)	(0.081)	(0.099)
% of group present for 2014 hike			0.092*	0.095**
			(0.047)	(0.048)
% of group present for 2015 hike			-0.080	-0.080
			(0.065)	(0.065)
% of out-group present for 2014 hike			0.016	0.016
			(0.037)	(0.037)
% of out-group present for 2015 hike			-0.016	-0.016
			(0.041)	(0.041)
Observations	1869	1869	1683	1683
Mean of Dependent Var.	1.36	1.36	1.37	1.37
Strata Fixed Effects	None	None	None	None
Tenure Controls	No	No	No	Yes

Notes: Standard errors, clustered at the unit level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Percentage of group present during last hike and percentage of outside group present during last hike are both expressed in terms of standard deviations. Group refers to individuals on the same line who speak the same language, while outside group refers to individuals on the same line who speak a different language. All regressions control for years of education, and indicators for Kannadas (language), Bangalore (hometown), and sewing department.

7 Conclusion

In this paper, we provide experimental evidence for Hirschman's seminal theory of the exit-voice tradeoff, for which almost no direct evidence exists, though substantial indirect evidence has been documented. An employee satisfaction survey, administered to Indian garment workers shortly after a disappointing wage hike, reduced quit rates by almost 20%. Importantly, the effects of this randomly assigned voice intervention were strongest among those most disappointed by the wage hike – individuals who, prior to the wage hike, stated expectations for the hike that were much higher than what was actually realized.

These results are very much in line with the predictions of (Hirschman, 1970), and subsequent work exploring the implications of Hirschman's thesis in various areas of economics. Turnover was substantially higher for individuals who did not have access to the voice "technology" embodied in our survey. For those who were randomized to this voice treatment, through which many workers indeed expressed dissatisfaction with various aspects of the job, exit was much less likely. The same pattern of results is apparent when we look at worker absenteeism, a less extreme form of exit.

Our study also sheds some light on what might be causing workers to set their expectations unrealistically high. We document that individuals who were at the firm during a previous wage hike, that was substantially larger than the wage hike in our year of study, set their expectations significantly higher than others. Similarly, those who worked on the same production line with more individuals present during the previous large hike also tended to have higher expectations. The evidence that the formation of wage expectations relies heavily on past experiences, along with the finding that unrealistically high expectations can lead to negative consequences for both the individual and the firm, has important implications for wage-setting in firms as well as minimum wage policy in countries like India, where the annual minimum wage revisions are often accompanied by great political unrest.

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A Appendix

A.1 Employee Satisfaction Survey

Respondents were asked to respond on a five-point scale (strongly disagree to strongly agree) to the following statements:

1. If I make a mistake in this job, it is often held against me.
2. It is difficult to ask others in this line for help.
3. My supervisor often encourages me to take on new tasks or to learn how to do things I have never done before
4. If I was thinking about leaving this company to pursue a better job elsewhere, I would talk to my supervisor about it.
5. If I had a problem in this company, I could depend on my supervisor to be my advocate.
6. Often when I raise a problem with my supervisor, s/he does not seem very interested in helping me find a solution

Respondents were asked to respond on a five-point scale (extremely dissatisfied to extremely satisfied) to the following questions:

1. How satisfied/happy or dissatisfied/ unhappy are you with your current job/position?
2. How satisfied/happy or dissatisfied/ unhappy are you with your current wage?
3. How satisfied/happy or dissatisfied/unhappy are you with your supervisor?
4. How satisfied/happy or dissatisfied/unhappy are you with your overall workplace environment?

A.2 Additional Tables

Table A1: Alternative Specifications: Hazard Model Estimates of the Effects of Disappointment and Voice on Quitting

	(1)	(2)	(3)
Voice Intervention	-0.022	0.055	0.096
Group	(0.13)	(0.14)	(0.090)
Wage Disappointment	0.12**	0.13***	0.034
	(0.053)	(0.050)	(0.042)
Disappointment x	-0.25**	-0.28**	-0.16**
Voice	(0.099)	(0.12)	(0.069)
Monthly Salary	-0.035*	-0.057**	-0.022*
	(0.019)	(0.023)	(0.013)
Outside Option	0.011	0.018*	0.015*
Salary	(0.010)	(0.0093)	(0.0077)
Observations	1869	1869	2314
Strata Fixed Effects	None	None	None
Specification	Unit-Level	No	Full
	Frailty	Controls	Sample
Clustering	None	Unit-Job	Unit-Job

Notes: Standard errors are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Coefficients (not hazard ratios) from a Cox proportional hazard model are reported. All regressions control for years of tenure indicators, years of education, and indicators for Kannadas (language), Bangalore (hometown), and sewing department. Individuals who are missing the outside option salary variable are assigned the sample average, and an indicator for those missing this variable is included.

Table A2: Effects of Disappointment and Voice on Quitting, By Month – with Unit and Job Fixed Effects

	Quit by the end of...				
	(1) Jul	(2) Aug	(3) Sep	(4) Oct	(5) Nov
Voice Intervention Group	-0.0091	-0.018	0.0046	0.0022	0.011
	(0.010)	(0.013)	(0.015)	(0.017)	(0.017)
Wage Disappointment	0.0020	0.0070	0.025**	0.022	0.028**
	(0.0072)	(0.0090)	(0.011)	(0.013)	(0.012)
Disappointment x Voice	-0.0076	-0.0096	-0.033**	-0.038***	-0.045***
	(0.0094)	(0.0098)	(0.014)	(0.014)	(0.014)
Monthly Salary	0.00079	-0.00029	-0.00092	-0.0020	-0.0050
	(0.0018)	(0.0027)	(0.0027)	(0.0030)	(0.0030)
Outside Option Salary	0.00040	0.00073	0.0012	-0.00026	0.0013
	(0.00094)	(0.0012)	(0.0012)	(0.0013)	(0.0016)
Observations	1869	1869	1869	1869	1869
Mean of Dependent Var.	0.050	0.086	0.11	0.14	0.18
Strata Fixed Effects	Unit & Job	Unit & Job	Unit & Job	Unit & Job	Unit & Job

Notes: Standard errors, clustered at the unit-job level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. All regressions control for years of tenure indicators, years of education, and indicators for Kannadas (language), Bangalore (hometown), and sewing department. Individuals who are missing the outside option salary variable are assigned the sample average, and an indicator for those missing this variable is included.

Table A3: Effects of Disappointment and Voice on Absenteeism – with Unit and Job Fixed Effects

	Share of Days Absent in...				
	(1)	(2)	(3)	(4)	(5)
	Jul	Jul-Aug	Jul-Sep	Jul-Oct	Jul-Nov
Voice Intervention	0.0058	0.0060	0.0086	0.0059	0.0074
Group	(0.0093)	(0.0087)	(0.0087)	(0.0087)	(0.0086)
Wage Disappointment	0.0085	0.012*	0.014**	0.013**	0.012**
	(0.0063)	(0.0066)	(0.0065)	(0.0059)	(0.0054)
Disappointment x	-0.011	-0.012	-0.015	-0.014	-0.016*
Voice	(0.0085)	(0.0089)	(0.0092)	(0.0085)	(0.0083)
Monthly Salary	0.0012	0.00061	-0.00061	-0.00075	-0.0011
	(0.0014)	(0.0011)	(0.0012)	(0.0012)	(0.0011)
Outside Option	-0.000070	-0.00013	0.00039	0.00020	0.00033
Salary	(0.00056)	(0.00067)	(0.00065)	(0.00067)	(0.00067)
Observations	1865	1867	1869	1869	1869
Mean of Dependent Var.	0.10	0.11	0.12	0.12	0.13
Strata Fixed Effects	Unit & Job	Unit & Job	Unit & Job	Unit & Job	Unit & Job

Notes: Standard errors, clustered at the unit-job level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. The dependent variable is the share of work days in the specified period that an individual was reported absent, out of all days an individual was still employed at the firm. All regressions control for years of tenure indicators, years of education, and indicators for Kannadas (language), Bangalore (hometown), and sewing department. Individuals who are missing the outside option salary variable are assigned the sample average, and an indicator for those missing this variable is included.

Table A4: Wage Expectations and Experience with Previous Wage Hikes – with Unit and Job Fixed Effects

	Expected Wage Hike			
	(1)	(2)	(3)	(4)
Present for 2014 hike	0.085	0.13**	0.087	0.18
	(0.054)	(0.056)	(0.066)	(0.15)
Present for 2015 hike		-0.071	0.037	0.00092
		(0.049)	(0.065)	(0.083)
% of group present for 2014 hike			0.098*	0.10*
			(0.052)	(0.051)
% of group present for 2015 hike			-0.10	-0.11
			(0.076)	(0.077)
% of out-group present for 2014 hike			0.028	0.027
			(0.032)	(0.032)
% of out-group present for 2015 hike			-0.065	-0.065
			(0.047)	(0.046)
Observations	1869	1869	1683	1683
Mean of Dependent Var.	1.36	1.36	1.37	1.37
Strata Fixed Effects	Unit & Job	Unit & Job	Unit & Job	Unit & Job
Tenure Controls	No	No	No	Yes

Notes: Standard errors, clustered at the unit level, are in parentheses. * p< 0.1 ** p< 0.05 *** p< 0.01. Percentage of group present during last hike and percentage of outside group present during last hike are both expressed in terms of standard deviations. Group refers to individuals on the same line who speak the same language, while outside group refers to individuals on the same line who speak a different language. All regressions control for years of education, and indicators for Kannadas (language), Bangalore (hometown), and sewing department.