Ask and You Might Disappoint:
Reference-Dependent Preferences and Worker Voice

Helen Ho*

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Abstract

Why don’t firms seek more worker feedback? Even though firms can improve job quality and labor productivity by soliciting feedback, not all firms encourage workers to share their opinions. For example, only 61% of frontline workers during COVID-19 reported that their employers consulted them about safety protocols and only 71% of workers had ever spoken with their supervisor about workplace issues before the pandemic. To explain the lack of employer interest in worker voice, I develop a model where asking workers about their preferences changes their reference point for working conditions, creating the risk of disappointment-related “loss” and lowered productivity. In contrast to a model without reference-dependent preferences, my model predicts that firms may decline to seek worker voice, even when the direct costs of consultation, such as personnel time, are negligible. I show patterns of worker effort and firm voice-seeking in the US and UK that are consistent with expectations-based reference points. For example, in support of the “disappointment effect” prediction of the model, I find that employers that rarely take worker suggestions seriously see a negative relationship between voice-seeking and worker effort. Interventions to increase voice-seeking without addressing reference-dependent preferences may have lower-than-expected benefits to the firm and worker.

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1. **Introduction**

Why don’t firms encourage more worker feedback? Firms can use information obtained from workers to increase job quality, reduce turnover, and increase labor productivity (Hirschman, 1970; Freeman and Medoff, 1984; Kochan and Osterman, 1994). As such, management experts have advised firms to foster worker voice for decades (e.g., Kochan and Osterman, 1994; Milliken and Tatge, 2016; Edmondson, 2019; Burris et al., 2020). Although some forms of worker voice, such as unions, involve relinquishing power or costly investments, simply asking workers for their opinions can be relatively cheap. Yet, only 61% of frontline workers said their employers consulted them about COVID-19 workplace safety protocols. Before the pandemic, only 53% of US workers said they often feel free to report problems in their workplace (Smith et al., 2018).

This paper models and empirically examines how encouraging worker voice creates the risk of disappointing workers and, thus, a downside to seeking information. When asked, workers raise their expectations for what they were consulted about. The employer also learns the best working conditions to adopt to elicit the highest level of worker effort. However, if the employer cannot meet these raised expectations, workers feel loss and lower their productivity. Thus, worker voice can lead to worse outcomes for both the worker and firm by raising workers’ expectations. In contrast to models of firm voice-seeking without behavioral features (e.g., Willman et al., 2006), the risk of disappointing workers can lead firms to decline to seek workers’ opinions when the direct costs to consultation are negligible. The model explains why firms do not encourage worker voice even though the act of voice has inherent benefits (Adhvaryu et al., 2019; Ong et al., 2012). The prediction of lowered job satisfaction cautions against interventions to increase firm voice-seeking that do not address workers’ reference points. Even if voice increases objective job quality, the gains may fall short of workers’ expectations, counteracting increases in job satisfaction and productivity.

I formalize this theory in a model where workers have reference-dependent preferences for job characteristics. Workers form reference points based on rational expectations in the spirit of Kőszegi and Rabin (2006). If the firm consults the worker, the worker updates their reference point using the probability that the firm can implement their preference. There is empirical support for this mechanism as Ong et al. (2012) finds that voice affects reference points by changing expectations in a laboratory setting. Through consultation, the firm learns whether it would be profit-maximizing to change existing working conditions. However, if the firm does not deliver on the worker’s suggestion, then the
worker suffers a reference-based loss in job satisfaction, leading to lower productivity. Mas (2006)’s finding that police effort suffers when the union loses in a wage dispute arbitration is an example of this occurrence.

The model has several predictions. First, consultation leads to a stronger positive relationship between the worker’s preferences and actual working conditions. Second, when the firm consults the worker about their preferences and does not follow through, the worker has lower effort than if the firm did not consult at all. Third, the risk of disappointing workers may lead the firm not to encourage worker voice, even when the direct costs of consultation (e.g., survey costs or personnel time) are low relative to the benefits of information. Finally, increases in the probability of adopting the worker’s preferred outcome do not monotonically increase voice-seeking. This is because increases in the probability of adoption raises the worker’s expectations further, increasing the size of the disappointment loss. The increase in the size of the disappointment loss can outweigh the decrease in the probability of disappointing workers.

I empirically examine the predictions of the model using survey data from the United States and United Kingdom. I conducted a survey of frontline workers in the US during the COVID-19 pandemic to test whether worker voice leads to beneficial information exchange. I measure worker demand for different COVID-19 workplace safety measures, whether the measures were in place at their job, and whether their employer consulted employees on the safety protocols. Employers adopted a range of precautions, such as airflow and ventilation improvements, teleworking arrangements, workplace layout modifications, COVID-19 symptom screening, and mask mandates. They had varying degrees of discretion over what precautions to adopt depending on geography, time, and industry. In one national study, less than 50% of county-weeks from March to September 2020 with at least one COVID-19 fatality in the prior 6 weeks were under public mask mandates and less than 50% were under gathering restrictions of 10 or fewer people (Spiegel and Tookes, 2020). As of April 27, 2021, fewer than half of states and several counties in a handful of additional states required employee COVID-19 symptom screening for at least some industries (Ogletree Deakins, 2021).

Workers had heterogeneous preferences for pandemic mitigation measures. Supporting the information exchange feature of the model, I find that employers who consulted their workers adopted COVID-19 workplace safety protocols that were better matched to worker preferences. In this setting, a model without reference-dependent preferences would predict that firms would adopt low-cost voice-seeking strategies, such as one-off consultations. However, only 61% of frontline workers reported that their employers con-
sulted them about workplace safety protocols. This is in line with pre-pandemic data. In a recent survey of US workers, only 71% said they have ever spoken with their supervisor to address issues at their current workplace (Kochan et al., 2019). Similarly, in the 2004 General Social Survey, only 53% of US workers said they often feel free to report problems in the workplace (Smith et al., 2018).

I use the 1994 US Worker Power and Representation Survey (US WRPS) (Freeman and Rogers, 1999) and the 2011 UK Workplace Employment Relations Study (UK WERS) (National Institute of Economic and Social Research et al., 2021) to test whether worker voice policies can produce a “disappointment effect.” I compare the relationship between worker-reported effort ratings and worker voice policies for workers who have employers that do and do not adequately respond to voice. In the US WRPS, additional worker voice policies are negatively associated with effort for employers who rarely take worker suggestions seriously, but positively associated with effort for employers who take suggestions seriously more often. In the UK WERS, allocating more time during meetings for worker feedback is negatively associated with effort for employers who respond poorly to worker suggestions. These results are consistent with a “disappointment effect,” where effort suffers when employers ask for employee feedback, but do not follow through.

Another key prediction of the model is that a firm’s ability to adopt a worker’s preference is not monotonically related to encouraging worker voice. Although an increase in a firm’s ability increases the chance of avoiding worker disappointment, it also increases the size of the reference-dependent loss because workers’ expectations are higher. Workers know the probability that the firm is able to adopt their preference and use this probability to update their reference point. Thus, a higher probability of adoption leads to a higher reference point. When the firm’s ability to satisfy a worker’s preference is high, increases in the firm’s ability unambiguously increases the net benefit of worker voice. When the firm’s ability is low, however, increases in the firm’s ability have ambiguous effects on the net benefit of worker voice.

Using the 2011 UK WERS, I examine the effect of an employer having autonomy over different workplace policies on whether the employer consults or negotiates with an employee representative on those policies. I use whether non-headquarter establishments of multi-establishment firms must consult with headquarters before changing specific policies as a measure of autonomy. The intuition is that workplaces may want to adopt their workers’ proposals, but risk headquarters denying permission. Training is an area where employer and worker interests may align. For a given proposal from workers, there is a higher probability that the firm views the proposal as profit-maximizing, leading to a...
high baseline ability for the firm to adopt the worker’s preference. Controlling for establish-
ment fixed effects, employer autonomy over worker training increases the probability of con-
sulting or negotiating with employee representatives about training. On the other hand, autonomy over setting pay decreases the probability of consulting or negotiating with employee representatives about pay. Compared to training, pay is a topic where the firm may be more resistant to adopting a worker’s proposal because it more likely hurts the firm’s bottom line, translating into a lower baseline ability to adopt the worker’s preference.

The empirical results are consistent with major features of the model. Worker voice transmits actionable information about workers’ preferences, but can lead to lowered effort if the firm cannot follow through. This may explain why many firms declined to use low-cost consultation methods to learn about workers’ preferences during the COVID-19 pandemic. Finally, consistent with a model where workers have expectations-based reference points, increases in a firm’s ability to adopt a worker’s proposal can decrease firm voice-seeking. One limitation of the empirical analyses is the lack of exogenous variation in voice-seeking. For example, one source of omitted variable bias is that workplaces seek worker voice may also adopt other “high-performance” management strategies. However, inability to fully control for managerial performance would tend to bias correlations between voice-seeking and effort upward, preventing the observation of a “disappoint-
ment” effect of voice.

This paper contributes to the literature studying the effects of worker voice on job satisfaction and labor productivity. Freeman and Medoff (1984) observe that the effect of worker voice on labor productivity depends on whether management and workers can cooperate. This paper describes how reference-dependence contributes to this pattern, even when firms intend to cooperate with worker demands. Reference-dependent loss may partially explain why studies of voluntary firm adoption generally find positive effects of worker voice on job satisfaction or productivity (e.g., Batt and Colvin, 2011; Black and Lynch, 2001; Freeman and Kleiner, 2000; Adhvaryu et al., 2019) while studies of mandates find small or null effects (e.g., Harju et al., 2021; Jäger et al., 2021; Keskinen, 2017). Situations where firms were mandated to adopt additional worker voice policies may be those where firms expect disappointment to outweigh the expected benefit of satisfying worker’s preferences. Prior studies have examined other barriers to encouraging

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1Reference dependence has been applied in labor market settings in other ways, such as peers as reference points (e.g., Card et al., 2012; Bracha et al., 2015) and income and hours targets or history as reference points (e.g., Camerer et al., 1997; Farber, 2005; Köszegi and Rabin, 2006; Fehr and Goette, 2007; Farber, 2008; Crawford and Meng, 2011; Bracha et al., 2015; Thakral and To, 2021).
worker voice, including manager psychology (e.g., Sherf et al., 2019), cultural barriers (e.g., Kochan and Osterman, 1994), and direct costs (e.g., Willman et al., 2006). Bryson et al. (2006) examines differential associations between firm voice regimes and labor productivity by employee perceptions of managerial buy-in to voice, but does not examine the role of workers’ expectations of firm follow-through on voice.

The remainder of the paper is organized as follows. Section II models the firm’s decision to encourage worker voice in the presence of the worker’s reference-dependent preferences. Section III discusses the predictions of the model. Section IV describes the survey data used in the empirical analyses. Section V presents the empirical strategies used in the analyses and results. Section VI concludes.

2. Model Setup

This section models a firm’s decision to consult a worker about their preferences for a non-wage job amenity when the worker has reference-dependent preferences. The firm does not know the worker’s preferred level for the amenity, but can consult with workers prior to setting the amenity. After the firm decides on the non-wage amenity, workers choose their effort. The higher the utility that a worker receives from the job, the more effort they exert.

The model illustrates how reference-dependent preferences create a cost to encouraging worker voice. Not meeting the worker’s reference points creates feelings of loss. Feeling of loss lower the worker’s utility from the job, which leads to lower productivity. Consulting workers about their preferences changes their expectations so that it is harder for firms to meet them. With reference-dependent preferences, firms must weigh the benefit of gaining information with the cost of raising workers’ expectations and disappointing them.

2.1. Assumptions

There is one worker, one firm, and two work periods. The main lever the firm has to incentivize effort in the first work period is the threat of firing the worker prior to the second work period. When the worker’s utility from having a job is higher, the incentive to exert effort is stronger.

Define the worker’s utility from having a job with compensation bundle \( \{w, q\} \) and
reference point $r$ in a given work period as
\[
\gamma w - b|q - q^*| + n(q|r)
\]
where $\gamma$ is a constant representing the marginal utility of wages, $w$. The second term, $-b|q - q^*|$, is the consumption utility from the non-wage job amenity, $q$. The worker has a bliss point for the non-wage amenity, $q^*$. The positive constant $b$ represents the marginal disutility of distance from the bliss point. At baseline, all workers are Type L, with $q^* = q_L$. The third term, $n(q|r)$, is the gain-loss utility:
\[
n(q|r) = \begin{cases} 
-\lambda(b|q - q^*| - b|r - q^*|), & \text{if } |q - q^*| > |r - q^*| \\
0, & \text{otherwise}
\end{cases}
\]
Workers have reference-dependent disutility if the provided level of the amenity is worse for the worker than the reference level of the amenity. The size of the disutility increases with the size of the loss relative to the reference consumption utility. “Wins” do not result in additional utility gains. This gain-loss utility function allows the analysis to focus on disappointment.\(^3\) The constant $\lambda$ represents the strength of the reference-dependent preference or, in this case, loss aversion.

Figure 1 summarizes the timing of events. First, the firm offers the worker a two-period work contract that stipulates $w$ and a firing decision rule based on output. The worker accepts the contract if it is preferred to their outside option, which is receiving $\bar{\omega}$ in each work period. The firm and worker can commit to this contract. If the contract does not take place, the firm receives its outside option, normalized to 0. The worker receives wage $w$ and non-wage amenity $q$ for each period they have a job.

The non-wage amenity, $q$, is not stipulated in the contract. The firm has adopted $q = q_L$ prior to the contract, which is the worker’s preferred level of $q$ at baseline. For example, $q$ can represent requirements for customers to wear personal protective equipment. Prior to the COVID-19 pandemic, requirements to for customers to wear masks were not even considered in the typical workplace because of minimal safety risks. The worker’s initial reference point is $q_L$.

After the contract is agreed upon, the worker experiences a preference shock for $q$.

\(^2\)Bliss point preferences for a single amenity can be recast as a tradeoff between multiple amenities, resulting in similar conclusions. See Appendix A.1.

\(^3\)As long as there is loss aversion, allowing for gain utility results in qualitatively similar conclusions. See Appendix A.2 for more details.
Figure 1: Timing of firm choices, worker choices, and random events

With probability $h \in (0, 1)$, the worker becomes Type $H$, with $q^* = q_H$ and $q_H > q_L$. Otherwise, the worker’s bliss point remains $q^* = q_L$ (Type $L$). The worker knows their type. The firm does not know the worker’s type, but knows $h$. For example, after the COVID-19 pandemic, some workers preferred that their workplaces require customers to wear masks. Other workers did not place as much weight on COVID-19 risk and preferred not to require customer masks because they impede social interactions. Although employers could guess the preferences of their workers based on the public’s opinions, they may have had uncertainty about the preferences of their particular workers.

After the preference shock, firms decide whether to ask workers about their type. Consultation has a cost $\kappa$. $\kappa$ represents the time and material costs of consultation, such as person-hours expended at a meeting or the costs of administrating a survey. It is also possible for $\kappa$ to be negative. This can occur because voice has inherent value to workers that is separate from the results of the consultation, which leads to benefits for the firm (Adhvaryu et al., 2019; Ong et al., 2012). I implicitly assume that workers have some cost to voicing their opinions, which firms can alleviate. For example, workers may worry that speaking up will hurt their advancement within the company. Adopting an open door policy may alleviate some of those concerns.

The firm has a probability $m$ of being able to change $q$ to $q_H$ costlessly. Otherwise, the cost is arbitrarily large. This represents variation in the costs of adopting different worker proposals. For example a worker may suggest a change to the production line that increases worker comfort. As the firm investigates the cost and benefits to adopting this change, it may find out that the change is too costly. If the firm does not adopt $q = q_H$, it continues providing $q_L$. The cost of changing $q$ and the firm’s choice of $q$ are revealed after the consultation period and prior to the first work period.

I make two additional assumptions. First, $\frac{h}{1-h} - 1 < \lambda$. This results in the firm choosing to maintain $q = q_L$ when it does not consult. This condition is satisfied when
$h < \frac{1}{2}$. In other words, the probability that the worker is Type H is low enough that it is not profitable to adopt the Type H worker’s preference without finding out whether the worker’s type. This allows the worker’s reference point to remain $r = q_L$ if the firm does not consult. Second, I assume that workers truthfully transmit their type if consulted. This allows for the consultation to be meaningful.

If consulted, the Type H worker’s reference point for $q$ changes. The change in the worker’s reference point is based on rational expectations (Kőszegi and Rabin, 2006), which uses the probability that the firm will adopt the worker’s preference after learning the worker’s type. I assume that the worker and the firm both know $m$, the probability that the firm can adopt $q_H$. Type H workers use $m$ to update their reference point:

$$r_{\text{new}} = (1 - m)q_L + mq_H$$

If the worker proposes $q_L$, their reference point does not change, since the probability of being able to adopt $q_L$ is 1. If the firm does not consult the worker, the reference point also remains $r = q_L$ for both types of workers.

In each work period, the worker produces a successful output with some probability, $p(\ell)$. The probability of success increases in worker effort: $p(\ell) = \min\{\alpha \ell, 1\}$, where $\alpha > 0$. Define $w_{\text{max}} = \max\{w_{\text{ask}}, w_{\text{don't ask}}\}$, where $w_{\text{ask}}$ is the optimal wage if the firm consults and $w_{\text{don't ask}}$ is the optimal wage if the firm does not consult. I assume that $\alpha < \sqrt{\frac{2}{\beta(w_{\text{max}} - \bar{\omega})}}$ so that the worker’s maximization problem has an interior solution. The firm cannot observe effort, but can observe a successful output, $x$. The firm fires the worker if it observes a failure and retains the worker if it observes a success. The worker has the incentive to exert effort in the first work period to be retained for the second work period. The firm’s main decisions are the wage to offer in the contract and whether to consult. Under the assumptions, the firm will decide to change the amenity if it finds out its worker is Type H and it is able to change it.

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4 The worker is truthful if they do not account for their gain-loss utility in their proposal. In their laboratory experiment, Ong et al. (2012) finds that participants in an ultimatum game state similar preferred allocations regardless of whether the message will be transmitted to their game partner.

5 Hirschman (1970) also assumes that actors use the probability that voice will lead to change in their decisions.

6 I solve for $w_{\text{ask}}$ and $w_{\text{don't ask}}$ in Appendix A.5 They are functions of $\alpha$, but a value of $\alpha$ exists such that the assumption holds.

7 Appendix A.3 shows that this is the firm’s optimal firing rule for all $w \geq 0$. 

2.2. Worker’s Maximization Problem

The worker’s total utility depends on job quality, effort, and a reservation value:

\[ U(\ell_1, \ell_2, w, q | r) = \gamma w - b|q - q^*| + n(q|r) - c(\ell_1) \]  
work period 1

\[ + \beta \left( x[\gamma w - b|q - q^*| + n(q|r) - c(\ell_2)] + [1 - x]\bar{\omega} \right) \]  
work period 2

\( \beta \) represents the worker’s time preference. The cost of effort is quadratic: \( c(\ell) = \ell^2 \).

The worker chooses effort in periods 1 and 2 to maximize their expected utility. It is clear that \( \ell_2 = 0 \) is the worker’s optimal level of effort in period 2. The worker’s optimal effort in period 1, \( \ell^* \), satisfies:

\[ \ell^* = \max_{\ell_1} E[U(\ell_1, \ell_2, w, q | r)] \]

The worker’s optimal effort for a given compensation bundle is

\[ \ell^* = \frac{\alpha \beta}{2} (\gamma w - b|q - q^*| + n(q|r) - \bar{\omega}) \]

Increases in job quality relative to the worker’s reservation value increase the worker’s optimal level of effort in the first period.

2.3. Firm’s Consultation Decision

The firm’s expected profit function, is

\[ E[\pi(x)] = E[x](a - w) - w - \kappa \{\text{Consult}\} \]

The firm receives revenue \( a \) from a success. The firm pays the worker \( w \) for the first work period. If it retains the worker, the firm pays \( w \) in the second work period. The worker exerts minimal effort in period 2, so the firm produces nothing in period 2.

The firm’s choice of wage corresponds to a pure consultation strategy for all but one value of \( w \). Define \( w_{\text{ask}} \) as the wage that maximizes profits if the firm consults and \( w_{\text{don't task}} \).

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\[^8\] The model assumes two work periods, but can also be extended to multiple work periods in which the firm uses firing in future periods to incentivize effort.
as the wage that maximizes profits if the firm does not consult. Any wage offer must also satisfy the firm and worker’s individuality constraints. Such wages exist when when \( a \gamma \) is sufficiently large. See Appendix A.5 for wage derivation details.

The firm is indifferent between consulting and not consulting when

\[
E[\pi_{\text{ask}}] = E[\pi_{\text{don'task}}] \\
E[x|w_{\text{ask}}](a - w_{\text{ask}}) - w_{\text{ask}} - \kappa = E[x|w_{\text{don'task}}](a - w_{\text{don'task}}) - w_{\text{don'task}}
\]

When the expected benefits of information outweigh the disappointment costs of consultation, consultation leads to a higher probability of a successful output and a lower optimal wage. This is because the firm can increase job quality by adjusting the non-wage amenity rather than increasing wages. The firm then weighs this consultation benefit against the direct costs of consultation \( \kappa \).

3. Model Predictions

This section discusses the implications that reference-dependent disappointment has on firm voice-seeking, worker effort, and job characteristics. All proofs are in Appendix A.6. An important benefit of worker voice is that it provides the firm information about workers’ preferences. Firms use this information to adjust working conditions according to workers’ preferences to increase labor productivity. Consultation, however, increases worker’s expectations. Since firms are not always able to adopt worker’s demands, reference-dependent preferences create a risk to consultation. This leads to lower levels of effort.

Proposition 1

The worker and firm maximization problems result in three possible optimal worker effort levels. Define these three levels: \( \ell_{\text{high}} > \ell_{\text{medium}} > \ell_{\text{low}} \)

1. When the firm does not consult, it maintains \( q = q_{L} \). A Type L worker exerts \( \ell_{\text{high}} \). A Type H worker exerts \( \ell_{\text{med}} \).

2. When the firm consults, its choice of \( q \) depends on worker type. If the worker is Type L, the firm maintains \( q = q_{L} \) and the worker exerts \( \ell_{\text{high}} \). The firm is able to change \( q \) to \( q_{H} \) with probability \( m \). If the worker is Type H, this is the probability that the firm adopts \( q_{H} \) and the worker exerts \( \ell_{\text{high}} \). With probability \( 1 - m \), the firm maintains \( q = q_{L} \) and the Type H worker exerts \( \ell_{\text{low}} \).
Part 1 describes the firm and worker’s behavior if the firm does not consult. Since the firm chose not to reveal the worker’s private information about their preferences, the firm sets the non-wage amenity according to the distribution of possible worker preferences. Type $H$ and $L$ workers would receive the same level of the non-wage amenity. Type $L$ workers would be satisfied and choose their highest level of effort. Type $H$ workers would experience lower consumption utility, but not experience disappointment. These workers choose a medium level of effort.

Part 2 discusses the implications of voice-seeking. Asking the worker about their preferences allows the firm to customize the non-wage amenity according to worker type. Type $L$ workers would receive $q_L$ with certainty and Type $H$ workers would receive $q_{H1}$ with probability $m$. This creates the potential for firms to elicit the highest levels of effort from both types of workers. If the firm is able to adopt the Type $H$ worker’s preference, the resulting level of effort is higher than in the case without consultation. However, when the worker has reference-dependent utility, consultation changes the Type $H$ worker’s reference point, creating the potential for loss utility. If the firm does not adopt the Type $H$ worker’s preference, the worker exerts in the lowest level of effort, which is lower compared to the case without consultation.

**Proposition 2**

There exists $\kappa^*$ such that when $\kappa = \kappa^*$, the firm is indifferent between consulting and not consulting. The firm does not consult when $\kappa > \kappa^*$ and consults when $\kappa < \kappa^*$. Call $\kappa^*$ the indifference cost of consultation.

1. An increase in the disappointment factor, $\lambda$, reduces consultation. That is, $\frac{\partial \kappa^*}{\partial \lambda} < 0$. When $\lambda > \frac{1}{1-m}$, $\kappa^* < 0$. When $\lambda = 0$, $\kappa^* > 0$.

2. An increase in the firm’s ability to adopt the Type $H$ worker’s preference, $m$, has an ambiguous effect on consultation.

   (a) When $\lambda \leq 1$, increasing the firm’s ability to satisfy Type $H$ worker’s preference unambiguously increases consultation. That is, $\frac{\partial \kappa^*}{\partial m} > 0$

   (b) When $\lambda > 1$, there exists $\bar{m} \leq \frac{1}{2}$ such that $\frac{\partial \kappa^*}{\partial m} < 0$ when $m < \bar{m}$ and $\frac{\partial \kappa^*}{\partial m} > 0$ when $m > \bar{m}$.

There is a level of $\kappa$ that would make the firm indifferent between consulting and not consulting, denoted with $\kappa^*$. A higher $\kappa^*$ means that the expected benefit of information

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9With multiple workers and non-excludable amenities, a firm would act on aggregate worker preferences.
is larger relative to the expected cost of disappointment. A higher cost of consultation is required to make the firm indifferent between consulting and not consulting.

Part 1 of Proposition 2 means that firms are less likely to consult as disappointment increases. When the worker’s loss utility plays a larger role in the worker’s perception of job quality, voice-seeking carries a larger cost. As disappointment increases, the time and material costs of consultation must decrease to maintain the same net benefits of voice-seeking. When the disappointment factor, $\lambda$, is large enough, firms will not consult, even when the direct costs of consultation are negligible ($\kappa = 0$) and potentially when the inherent value to voice outweighs direct costs ($\kappa < 0$). In other words, the risk of disappointment can be costly enough to deter firms from consulting workers. Additionally, if there was no disappointment, ($\lambda = 0$), then the firm would always consult when the time and material costs of consultation are negligible ($\kappa = 0$) or the inherent value to voice outweighs the direct costs ($\kappa < 0$). In this case, the firm would want to gain the benefit of more information.

Part 2 of Proposition 2 says that increasing the firm’s ability to adopt the worker’s demand has opposing effects on voice-seeking. On the one hand, increases in ability means there is a higher chance that the firm can increase the worker’s consumption utility and avoid triggering the worker’s loss utility. On the other hand, increases in ability also raise the worker’s expectations for the non-wage amenity. The worker knows the probability that the firm will adopt their preference and uses it to update their reference point. This increases the size of the loss utility, if it is triggered.

Part 2a considers the case when disappointment is relatively small. In this case, the increase in the expected disappointment cost from an increase in $m$ never exceeds the increase in expected benefit from satisfying worker’s preferences. In part 2b, the benefit of being more able to satisfy the worker’s demand exceeds the cost of increasing expectations only when the firm’s ability is above a certain threshold, $\bar{m}$. At lower levels of ability, increases in ability actually make it less cost-beneficial to consult. Thus, the effect of an increase in ability can either increase, decrease, or not change the firm’s incentives to seek worker voice.

Figure 2 illustrates the conclusions in Part 2 of Proposition 2. In panel 2a, workers do not have reference-dependent preferences. When the firm has a higher ability to satisfy workers, they are always more likely to encourage worker voice. This relationship holds when workers have weakly reference-dependent preferences (panel 2b). When worker’s reference dependent preferences are stronger, ability has first a decreasing and then in-
Figure 2: Relationship between ability to adopt worker’s preferences and voice-seeking by strength of reference-dependence

(a) $\lambda=0$  
(b) $\lambda=1$  
(c) $\lambda=1.5$  
(d) $\lambda=2.5$

Notes: $\kappa^*$ is the level of direct costs required to make firms indifferent to voice-seeking. A higher $\kappa^*$ translates to more voice-seeking. $m$ represents the ability of firms to satisfy worker preferences. Each panel displays the relationship between $\kappa^*$ and $m$ for different strengths of reference-dependence preferences ($\lambda$). The other parameters are set as follows: $a = 30, \gamma = 2.5, \bar{\omega} = 5, b(q_H - q_L) = 10, h = 0.25, \alpha = 0.3, \beta = 0.85$
Figure 3: Heterogeneous effects of increases in ability

Notes: \( \kappa^* \) is the level of direct costs required to make firms indifferent to voice-seeking. A higher \( \kappa^* \) translates to more voice-seeking. The ability of firms to satisfy worker preferences is represented by \( m \). The other parameters are set as follows: \( a = 30, \gamma = 2.5, \omega = 5, b(q_H - q_L) = 10, h = 0.25, \alpha = 0.3, \beta = 0.85, \lambda = 2.5 \)

increasing relationship with voice-seeking (panels 2c and 2d).

Figure 3 displays how increases in the ability to satisfy a worker’s preferences can have ambiguous effects on voice-seeking when starting from a lower level of ability. When starting at an ability level below the threshold, \( \bar{m} \), smaller increases in ability can decrease voice-seeking (Point A to B). Larger increases can result in no effects (Point A to C) or increases in voice-seeking (Point A to D).

4. Survey Data

This section describes the surveys used in this analysis. I conducted the COVID-19 frontline worker survey in the Spring of 2021. The US Worker Representation and Power Survey was conducted by Richard Freeman and Joel Rogers in 1994 to 1995. The UK Workplace Employment Relations Study was jointly conducted in 2011 to 2012 by the UK Department for Business, Innovation and Skills, Advisory, Conciliation and Arbitration Service, the Economic and Social Research Council, the UK Commission for Employment and Skills, and the National Institute of Economic and Social Research.
4.1. COVID-19 FRONTLINE WORKER SURVEY

4.1.1. THE COVID-19 PANDEMIC

The coronavirus disease 2019 (COVID-19) emerged in January 2020 as a public health emergency, spreading exponentially and causing deaths across the globe (American Journal of Managed Care Staff, 2021a). Human-to-human transmission of this disease made in-person work much more dangerous. Prior to the COVID-19 pandemic, the average occupational mortality rate in the United States was 3.5 per 100,000 (of Labor Statistics, 2020). Almost a quarter of workers had underlying conditions or other factors that made them vulnerable to severe illness from COVID-19 (Claxton et al., 2020). For vulnerable workers in high-infection risk jobs, the occupational mortality rate could have jumped to 1 in 100 (Larochelle, 2020). Vaccines became available to prioritized groups at the end of 2020 and to more populations in 2021, but distribution faced significant hurdles (American Journal of Managed Care Staff, 2021b). By May 2021, about 56% of adults 18 years and older had received at least one vaccine dose (Diesel et al., 2021).

Employers could mitigate COVID-19’s shock to job quality by adopting safety precautions. For example, the percent of the workforce working from home quadrupled by summer 2020 (Bick et al., 2021). However, many jobs, especially those that paid less and were held by people of color or people with lower educational attainment, could not be shifted to telework (Black and Lynch, 2001; Bick et al., 2021). For in-person work, the Occupational Safety and Health Agency (OSHA) guidance asked employers to consider implementing precautions, such as social distancing, surface disinfection, screening of employees with COVID-19 symptoms, and wearing face coverings (Occupational Safety and Health Administration, 2020). On June 1, 2021, the Equal Employment Opportunity Commission released guidance permitting employers to require employees be vaccinated (American Journal of Managed Care Staff, 2021b).

With no federal COVID-19 workplace safety mandates, limited federal enforcement of safety standards (Office of Inspector General, 2021), and variation in sub-federal policies (Spiegel and Tookes, 2020; Ogletree Deakins, 2021), employer adoption of workplace precautions was uneven. Over the first nine months of the pandemic, OSHA received 15 percent more complaints than it did during the same period in the prior year (Office of Inspector General, 2021). In the Fall of 2020, 28 percent of workers at large service sector firms reported that customers sometimes, rarely, or never wore masks and 41 percent reported that they could sometimes, rarely, or never maintain 6 feet of social distance at work (Ho et al., 2020).
Another factor in employer adoption of safety precautions was the large heterogeneity in worker and consumer preferences. Beliefs about the severity of COVID-19, willingness to limit in-person activities, and attitudes toward mask wearing differed by gender, income, and political party. Opposition to some precautions were so vigorous that the CDC had to issue guidance on preventing violence against workers when implementing safety protocols, such as customer mask requirements. At the same time, many consumers voluntarily avoided in-person economic activity to reduce their risk of COVID-19 infection.

4.1.2. Survey Details

My main source of data on worker preferences for non-wage job amenities, access to these amenities, and employer consultation is a survey I conducted about COVID-19 workplace safety. I surveyed US workers in primarily face-to-face industries and occupations in March 2021 about COVID-19 safety precautions. See Appendix B for a complete list of industries and occupations. To focus on workers for whom COVID-19 would have been relevant to their working conditions, I limited the sample to those who were employed at the time of the survey or had worked on or after March 1, 2020.

The survey was fielded at a time when our sense of COVID-19 risk was declining slightly, but stable. Vaccine rates were rising, but not widespread among the workforce. By mid-March 2021, about 29 percent of the adult population had received at least one dose of a vaccine, with much a much higher rate for adults aged 65 years and older who are less likely to be in the labor force. There was also still uncertainty about asymptomatic transmission risk for vaccinated people. The CDC had not yet released guidance that vaccinated people did not need to wear masks indoors. Indeed, 89 percent of Americans reported wearing masks to keep safe from COVID-19 during the survey period. Kantar, a market research company, distributed the online survey to their survey panel, which includes thousands of US residents at any given time. Kantar recruits people into their survey panel by email, social media, and affiliate websites. Panel members receive points for completing surveys, which could be redeemed for online gift certificates, charity donations, and PayPal cash deposits. Kantar increased recruitment efforts for panel members who were Black, Hispanic, and/or had a high school diploma as their
highest level of education to better match the demographics of those working in frontline jobs. I reweighted the data to match the race, ethnicity, sex, and education characteristics of people who worked in the target industries and occupations in the 2015-2019 American Community Survey 5-year estimates (Ruggles et al., 2020). I excluded respondents who were self-employed from the analyses.

I asked respondents about the safety precautions at their current job. These precautions included employee mask requirements, whether masks were provided, customer mask requirements, social distancing, COVID-19 screening, and airflow or filtration improvements.

I measured willingness-to-pay for non-wage job amenities by asking respondents to choose between two jobs, which differed only on the wage and the presence of one amenity. Each job specified multiple characteristics: whether the job was full-time or part-time, whether the job had 10 days of paid time off or none, whether employees were required to wear masks, whether customers were required to wear masks, whether social distance measures were in place, whether the employer provides a portable air filter in the workspace, and whether the employer conducted COVID-19 symptom screening.

To create the job descriptions, I first set the job characteristics to mimic the respondent’s current job (or most recent job, if unemployed). For example, if the respondent reported that their employer required employees to wear masks, the job choices would also require employees to wear masks. See Appendix B for a description of how current/recent job characteristics are translated to the job comparison question. Then for one of the two job choices, I set the amenity in question to have opposite values so that one job had the amenity and the other did not. The two jobs were displayed side-by-side in a randomly selected left-to-right order. Appendix Figure 8 displays an example of the job choice question.

The wages of the two jobs were also set in relation to the respondent’s current or most recent job. The job without the amenity had a randomly drawn wage that was within 10 percent of the respondent’s current hourly wage. The job with the amenity had a randomly drawn wage that was between 65% and 115% of the sans-amenity job wage. Both wages will be rounded to the nearest $0.05. I displayed the weekly earnings in addition to the hourly wage. For full-time workers, the weekly earnings figure was 40 times the hourly wage. For part-time workers, the weekly earnings figure was 20 times the hourly wage.

To measure whether employers encouraged worker voice, I asked respondents whether
their employer consulted them and their coworkers about their COVID-19 safety protocols. Respondents could answer yes, no, or unsure. Respondents who answered yes were coded as having their employer consult them about COVID-19 safety protocols.

I collected additional details about the respondent’s job and geographic area. I asked respondents to choose the NAICS and SOC categories that best described their industry and occupation. I also asked respondents for their state and county of residence, which I merged to the National Center for Health Statistics’ 2013 urban-rural classification scheme.

Table 1 displays the demographic and personal characteristics of the sample. The sample was reweighted to match the race and ethnicity-gender-education proportions of frontline workers according to the 2015-2019 American Community Survey. Respondents were about evenly divided between Republicans, Democrats, and Independents, with a small proportion choosing “Other.” About 42% of the sample said they or someone in their household had at least one of the conditions that made them at a higher risk for serious illness from COVID-19\(^{10}\) Just over 10% of the sample said they had been infected with COVID-19, 58% said they knew someone who had COVID-19, and a third reported having at least one dose of a COVID-19 vaccine.

Table 2 displays the employment-related characteristics of the sample. Although all respondents were working on or after March 1, 2020, only 78% of respondents were currently employed. The average wage was almost $28, with the median wage being $17. The unionization rate was 13%, which is slightly higher than the overall rate in the US. Over half of respondents had worked at the job they discussed in the survey for 5 years or more. About 18% of respondents said they had unlimited days of paid time off, a similar proportion to that found in the nationally representative sample in Maestas et al. (2018). Of those who did not have unlimited paid time off, respondents had an average of fewer than 13 days per year. A majority of respondents reported having retirement benefits (56%) and employer-provided health insurance (64%). The most represented industry in the sample was retail (20%), followed by health care (17%). The next several most represented industries were manufacturing (10%), construction (9%), delivery, warehouse, and transportation (8%), and personal services (6%).

Table 3 displays the safety precautions adopted at respondents’ workplaces. A large majority of respondents reported mask requirements for employees (75%) and customers

\(^{10}\)The survey displayed the list of conditions specified by the CDC as high risk without explaining that the list was from the CDC.
A large proportion of respondents also reported social distancing measures at work (74%). Over a quarter of respondents reported at least some teleworking. Around a third of respondents reported COVID-19 screening (37%) and airflow improvements (33%). Only 8% of respondents did not have any of the safety precautions asked about in the survey. A large majority of respondents reported that they could stay six feet away from others always or most of the time (60%), their co-workers wore masks always or most of the time (81%) and customers wore masks always or most of the time (75%).

4.2. **US WRPS**

The data I use to examine the effect of ignoring worker suggestions on job quality and effort come from the 1994 Worker Representation and Power Survey (WRPS) conducted by [Freeman and Rogers (1999)](https://doi.org/10.1016/0049-0970(99)00042-3). The WRPS is a nationally representative survey of workers 18 years of age and older who were employed by private or non-profit organizations with 25 or more employees. The WRPS consists of two waves, one conducted with 2,308 respondents in the fall of 1994 and a smaller follow-up of 801 respondents in the spring of 1995. The survey included questions about the respondent’s job characteristics, current worker voice programs, and preferences for influence over aspects of one’s job. The survey methodology is described in further detail in [Freeman and Rogers (1999)](https://doi.org/10.1016/0049-0970(99)00042-3). The second wave asked respondents to rate the effort levels of their co-workers. All analyses exclude managers and are reweighted to be nationally representative using survey-provided weights.

4.3. **UK WERS**

The 2011 UK Workplace Employment Relations Study (UK WERS) is a survey of a nationally representative sample of workplaces in Great Britain. The first part of the sample consists of workplaces that were surveyed in the 2004 wave and still operating in 2011. The second part of the sample was a stratified random sample of the government’s 2010 register of UK businesses with 5 or more employees, excluding agricultural, mining, and in-home domestic businesses.

Interviews were conducted from March 2011 to June 2012, a few years after the 2008 Great Recession. According to the UK WERS First Findings report, the workplace closure rate was similar to the previous WERS waves in 1998 and 2004, ([van Wanrooy et al., 2013](https://doi.org/10.1111/j.1467-8527.2013.02085.x)). However, many workplaces were negatively affected by the recession. Over 40 percent of workplaces said the recession had adversely affected their workplace “Quite a bit” or “A great deal” ([van Wanrooy et al., 2013](https://doi.org/10.1111/j.1467-8527.2013.02085.x)).
The study interviewed the most senior human resources manager in the workplace using the Management Questionnaire (MQ) instrument. The MQ asked about workplace practices, employee characteristics, perceptions of workplace performance, and aspects of management-employer relations. The study conducted a separate questionnaire for employees called the Survey of Employees Questionnaire (SEQ). In workplaces with fewer than 25 employees, the SEQ was administered to all employees. In workplaces with 25 or more employees, the SEQ was administered to a random sample of 25 employees. The SEQ asked employees about their job characteristics, satisfaction with their employer and job, and perceptions of management-employee relations.

I use survey-provided weights that account for the sampling strategy and non-response for all analyses. Additional survey methodology details can be found in van Wanrooy et al. (2013).

5. **Empirical Strategies and Results**

5.1. **Information Exchange Feature of Worker Voice and Lack of Consultation**

The model predicts an attenuated correlation between a worker’s demand for COVID-19 safety precautions and their actual working conditions when the employer does not consult the worker. This is because firms that do not consult their workers adopt a baseline set of precautions based on the distribution of possible worker preferences. When an employer does consult workers, there is a stronger positive correlation between demand and safety precautions because the employer acts on the worker’s proposal. In contrast, a pure compensating differentials model predicts a stronger positive correlation regardless of employer consultation because workers with high willingness-to-pay sort to firms that can provide the amenity at lower cost. Given that job-to-job transition rates were diminished during the pandemic, this analysis can better isolate the information exchange mechanism of allocating amenities.

5.1.1. **Empirical Strategy**

I use measures of firm voice-seeking, worker demand for safety precautions, and adoption of safety precautions from the COVID-19 survey to empirically examine the

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Many COVID-19 safety precautions, such as mandates and workspace layout changes, are set for groups of workers rather than customizable for individual workers. In this case, the firm would adopt precautions based on aggregate worker preferences, and the single worker in the model would represent an aggregation of multiple workers. Aggregate preferences would have a positive relationship with individual worker preferences.
information exchange feature of the model. The survey presented respondents with a series of choices between two nearly identical jobs. The two jobs only differed on one of five COVID-19 safety precautions and the hourly wage. I use whether the respondent preferred the job with the safety precaution and the lower wage as a measure of demand for the precaution. If the respondent chose the job with the precaution and lower wage, I interpret this to mean the respondent’s value of the precaution was at least the difference in wages between the two jobs.

The respondent viewed multiple questions of this type with a different safety precaution varied for each question. The following safety precautions were varied: employee mask requirements, customer mask requirements, social distancing, a portable air filter in the workspace, and COVID-19 screening. Appendix table C1 displays correlates of choosing to give up wages for a COVID-19 safety precaution. Democrats, black respondents, and those who provided an above-median estimate of the COVID-19 infection rate in a hypothetical scenario were more likely to give up wages for a precaution.

I estimate a regression that pools multiple job choices for an individual:

\[ A_i = \beta_0 + \beta_1 D_{ia} + \beta_2 V_i + \beta_3 (V_i \times D_{ia}) + \beta_4 \Delta w_{ia} + \beta_5 \Delta w^2_{ia} + \gamma \mathbf{X}_i + \delta_c + \alpha_s + \theta_a + \epsilon_i \]

where \( A_i \) is whether the respondent has the precaution at their job. \( D_{ia} \) is whether the respondent preferred the job with the precaution when precaution \( a \) was varied, \( V_i \) is whether the respondent’s employer consulted them and their fellow employees about COVID-19 workplace safety protocols, and \( V_i \times D_{ia} \) is the interaction term between consultation and preferring the job with the precaution. \( \Delta w_{ia} \) is the percent difference between the wage of the job without the amenity and the wage with the precaution and \( \Delta w^2_{ia} \) is its square. \( \mathbf{X}_i \) is a vector of individual-level characteristics that includes county-level COVID-19 cases per capita, survey date indicator variables, 2-digit SOC occupation indicator variables, and 2-digit NAICS industry indicator variables. \( \theta_a \) is the precaution fixed effect, \( \delta_c \) is a county urbanicity fixed effect, and \( \alpha_s \) is a state fixed effects. The regression sample is restricted to job choices where the job with the precaution had a lower wage. Linearized standard errors for this regression are clustered at the individual level.

\( \beta_1 \) measures the relationship between worker demand for the precaution and whether it was presented in the workplace for workers who were not consulted about COVID-19 workplace safety protocols. The combination of \( \beta_1 \) and \( \beta_3 \) measures the relationship between worker demand for the precaution and whether it was adopted in the workplaces of workers who were consulted. \( \beta_2 \) measures the relationship between having the
Figure 4: Demand is positively correlated with having an amenity when employers consult

![Diagram showing the relationship between demand and having safety precautions in the workplace.]

Notes: Data are from the COVID-19 Frontline Worker survey. The error bars represent 95% confidence intervals using linearized standard errors clustered at the respondent level. The sample consists of 2,199 respondents and 8,944 job choices.

amenity and whether the worker was consulted.

5.1.2. **Results for the Information Exchange Feature of Worker Voice and Lack of Consultation**

Figure 4 shows the relationship between demand for COVID-19 safety precautions and having them in the workplace. The left and right panels divide respondents between those who were and were not consulted by their employers about safety protocols. Within each sample of respondents, respondent-precaution pairs were further divided into instances where the respondent did and did not choose to give up wages for the precaution.

The left panel shows the presence of safety precautions for respondents that were not consulted by their employers about COVID-19 protocols. The incidence of workplace safety precautions was similar between higher and lower demand respondents: 45% of higher demand respondents had the safety precaution compared to 42% of the lower demand respondents. The difference was not statistically significant. This result is consistent with a labor market where compensating differentials could not arise because of limited job transition opportunities.
The right panel shows the presence of safety precautions for respondents that were consulted by their employers about COVID-19 protocols. Comparing the left and right panels, consultation is associated with higher adoption, regardless of worker demand. This may be because some firms faced legal requirements to adopt measures and decided to consult workers on the details of those measures. For example, Minnesota required businesses to adopt plans to screen employees on the basis of symptoms (Ogletree Deakins, 2021). Given that firms were required to incur the fixed costs of a screening regime, they may have decided to ask workers about their preferences for additional criteria, such as travel exposure. The model also predicts that firms with very high probabilities of adopting workers’ preference are more likely to consult than firms with low probabilities. Firms could have varied in their costs for adopting different precautions. For example, businesses with customers that preferred customer mask mandates faced lower costs to implementing that precaution than those with many customers who would object to mask mandates.

For consulted respondents, the incidence of safety precautions is higher when the respondent has higher demand for the precaution: 69% of higher demand respondents had the safety precaution compared to 62% of lower demand respondents. This difference is statistically significant at the 1% level. Since there was no positive correlation between demand for and current safety precautions for the non-consulted group, the positive relationship for the consulted group likely does not reflect the sorting of workers between jobs according to demand and job characteristics. The positive relationship for the consulted group is consistent with the predictions of Proposition 1 about how amenities are allocated and is suggestive evidence of the information exchange feature of worker voice.

Despite the information benefit of consultation, only 61% of workers reported that their employers consulted them and their co-workers about COVID-19 workplace safety protocols. The question asked about consultation broadly, so it could include one-off consultations. Unlike other worker voice programs, such as joint consultative committees and surveys, one-off consultations require very little direct costs. Consistent with Proposition 2, even when there are benefits to information and negligible direct consultation costs, firms may decline to encourage worker voice.

The respondent’s job-related characteristics had the strongest statistically significant relationships to being consulted. Appendix Table C2 displays the correlates of consultation. Workers who were full-time, had higher wages, and more non-wage job amenities

\[ \text{In this particular model, firms with a 50% chance or more of adopting the worker’s preference are more likely to consult than firms with lower probabilities.} \]
were more likely to be consulted. Additionally, workers at firms with 5 or more employees were more likely to be consulted. Gender, age, race and ethnicity, education, and political party were not statistically significantly related to consultation.

5.2. Consultation and Disappointment

I present two case studies of the disappointment effect of ineffective consultation. Consulting workers about their preferences raises employees’ expectations that they will adopt their employees’ proposals. If the employer does not satisfy the worker’s demands, then the worker suffers a reference-dependent loss. The loss then leads to reduced labor productivity. Employers can avoid disappointment by declining to consult with workers, preventing a change in the worker’s reference point and an additional loss in the event that the employer cannot meet the worker’s demand. The first case study uses data from the US WRPS on the adoption of formal worker voice programs as a measure of voice-seeking. The second case study uses data from the UK WERS to examine time spent fielding worker feedback as a measure of voice-seeking. For both case studies, I compare the relationship between voice-seeking and effort for employers that have high and low-quality responses to worker voice.

5.2.1. Empirical Strategy

The analysis samples for both case studies are limited to private employers. I estimate regressions of the following form:

\[ Y_i = \beta_0 + \beta_1 \text{High}_i + \beta_2 V_w + \beta_3 \text{High}_i \times V_w + \gamma X_i + \rho Z_w + \epsilon_i \]

\( Y_i \) is a measure of effort taken at the individual level. \( \text{High}_i \) is whether the respondent rated the employer’s response to suggestions highly. \( V_w \) is a vector of variables measuring employers’ voice-seeking. \( X_i \) is a vector of respondent-level characteristics. \( Z_w \) is a vector of workplace-level characteristics. These variables are defined differently for each case study and described in each case study subsection.

\( \beta_2 \) represents the relationship between voice-seeking and effort for employers with low-quality responses to suggestions. The combination of \( \beta_2 \) and \( \beta_3 \) represents the relationship between voice-seeking and effort for higher-response employers. For the US WRPS case study, higher-response employers are those who “Always” or “Sometimes” takes workers’ suggestions about production seriously. For the UK WERS case study, higher-response employers are those who are “Very Good,” “Good,” or “Neither Good nor Poor” at responding to suggestions from workers and worker representatives. Lin-
earized standard errors for the US WRPS case study are at the individual level as respondents were sampled from the full population. Linearized standard errors for the UK WERS case study are clustered at the workplace level as individuals were sampled within workplaces.

5.2.2. Case Study 1: Adopting Formal Worker Voice Policies

Case Study 1 Variable Construction and Descriptive Statistics

In the US WRPS case study, $Y_i$ is constructed from two questions asking respondents to rate their co-workers. Respondent rated their fellow employees on a five-point scale on their willingness to work hard and willingness to take on new responsibilities. I standardize these two measures of worker effort and standardize their average to create an effort index.

I measure the quality of the employer’s response to worker’s suggestions by using respondents’ views of how often their employer takes production and product quality improvement suggestions from workers seriously. I consider employers that “hardly ever” or “never” take suggestions seriously as "low-response" employers with a value of 0 for $High_i$. Those who always or sometimes take suggestions seriously are "high- or medium-response" employers with a value of 1 for $High_i$. About 24% of respondents reported that their employer “hardly ever” or “never” takes production or product quality suggestions seriously.

$V_w$ is the number of worker voice initiatives the respondent reports at their workplace. The worker voice initiatives I examine are joint consultative committees, regular townhalls, an open door policy for individual issues, and an open door policy for group issues. A joint consultative committee is a body comprised of employee and management representatives that meets to discuss various labor and production issues. With an open door policy, employees can freely contact management with feedback or concerns. Townhalls are meetings between senior management and the entire workforce, usually to discuss workplace-wide issues. About 40% of workers reported having joint consultative committees, 48% reported having regular townhalls, 64% reported open door policies for group problems, and 84% reported open door policies for individual problems. As opposed to employer-employee relations features that increase worker power, such as unions and self-directed teams, the policies in this analysis encourage workers to discuss issues with management without necessarily increasing workers’ decisionmaking authority.

The number of these worker voice programs that an employer adopts is a proxy for
how much the employer facilitates worker voice. Less than 10% of respondents reported having none of these policies at work. About 18% of respondents reported having one of these policies, 27% reported having two, 27% reporting having three, and 18% reported having all four.

The individual characteristics controlled for in $X_i$ are gender, age, race and ethnicity, educational attainment, log annual income, and occupation fixed effects. The workplace characteristics controlled for in $Z_w$ are industry fixed effects and firm size category.

Appendix table C3 shows the correlates of worker voice programs. Workers with higher salaries and more education work at establishments with more worker voice programs. Hispanic respondents and union members worked at establishments with more worker voice programs. Very large employers (1000 or more employees) had more worker voice programs. Finally, workers who reported that their employers took production suggestions more seriously also reported more worker voice programs.

Case Study 1 Results

Formal worker voice policies offer opportunities for workers to express their opinions to their employer. A dedicated townhall, for example, may have a question and answer period where workers provide feedback on topics that they normally do not discuss during their day-to-day duties. If there was no disappointment effect, then the number of worker voice programs should have no relationship with effort for low-response employers. In this case, workers and employers exchange information, but workers’ reference points do not change or workers do not experience a loss if their employer does not follow through on their suggestions. If there is a disappointment effect, increasing the number of venues for suggestions should have a negative relationship with effort for low-response employers because it creates more opportunities for increasing expectations and disappointment. High response employers, on the other hand, would see higher effort if worker voice programs do represent an avenue for learning about employee preferences as these employers are able to increase job quality with more information.

Figure 5 plots the differences in effort between having none of the worker voice policies and having one or more worker voice policies by employer responsiveness. The plotted points represent differences between having none of the formal voice policies and each number of voice policies. The left panel shows that having worker voice policies is associated with higher levels of effort compared to having none of them. In a regression that operationalizes the number of worker voice policies as a continuous variable, an additional worker voice policy is associated with a .06 standard deviation increase in effort.
Figure 5: Workers with low-response employers have lower effort with more worker voice policies

Notes: Data are from the Worker Representation and Power Survey (Freeman and Rogers, 1995). The outcome is a standardized index of the respondent’s rating of their fellow employee’s willingness to work hard and willingness to take on new responsibilities. The plotted points represent differences from respondents at employers with none of the worker voice policies estimated in an OLS regression. The error bars represent 95% confidence intervals using linearized standard errors.
for workers with high-response employers. This relationship is not statistically significant at the 10% level ($p$-value $= .114$).

The right panel suggests that there is a disappointment effect for ineffective consultation. When employers do not take workers’ suggestions seriously, worker voice policies are negatively associated with effort. In a regression that uses the number of worker voice policies as a continuous variable, an additional worker voice policy is associated with a .17 standard deviation decrease in worker effort. This relationship is statistically significant at the 10% level. Lower effort in the presence of greater voice when employers are poor at responding to voice is consistent with Proposition 1.

5.2.3. Case Study 2: Allocating Time to Fielding Worker Questions and Views

Case Study 2 Variable Construction and Descriptive Statistics

I use workers’ response on whether they take initiative to complete tasks that are not required of them as a measure of effort, or $Y_i$. Workers were asked to choose between “Very Agree,” “Agree,” “Neither Agree Nor Disagree,” “Disagree,” and “Very Disagree.” I convert this to a 5-point numerical scale, with 5 representing “Very Agree” and 1 representing “Very Disagree.” I standardize this scale to have mean 0 and standard deviation 1 to be more easily comparable to the measure of effort used in the first case study.

I use the proportion of time during debriefing meetings allocated to worker voice as a measure of voice-seeking, or $V_w$. Debriefing meetings are meetings between line managers or supervisors and all the workers for whom they are responsible. The UK WERS asked managers whether the workplace uses debrief meetings and, if so, the proportion of time during these meetings that are available for workers to ask questions or offer their views. Seventy-four percent of workers had debriefing meetings. About 13% of workers’ employers allocated less than 10% of meeting time to worker feedback. Twenty-three percent of workers’ employers allocated between 10 and 24% of time to worker feedback. And 64% of workers’ employers allocated a quarter or more of meeting time to worker feedback.

The WERS also asked workers to rate how good their employer is at responding to suggestions from employees or employee representatives. Workers rated their employers as “Very poor,” “Poor,” “Neither good nor poor,” “Good,” or “Very good.” I consider “Very poor” and “Poor” employers as low-response employers with a value of 0 for $High_i$. Other employers have a value of 1 for $High_i$. Almost 20% of workers said their employers were poor or very poor at responding to worker suggestions.
The individual characteristics controlled for in $X_i$ are gender, race and ethnicity, educational attainment, categories for age, categories for different levels of pay, and occupation fixed effects. The workplace characteristics controlled for in $Z_w$ are industry, firm size category, whether the workplace is part of a multi-establishment firm, and whether the firm is primarily UK-owned.

Table C4 displays the correlates of meeting time spent on worker feedback. Single establishment and smaller firms spend more time on worker feedback while foreign-owned firms spend less time on worker feedback. Workers with more formal education and higher pay are employed at workplaces that spend more time on worker feedback. Workers who say their employers are very good or good at responding to worker suggestions have employers that spend more time during meetings on feedback.

Case Study 2 Results

Devoting more time to feedback provides more opportunity for workers to make suggestions and update their reference points. For employers that are poor at responding to suggestions, this creates more opportunities to disappoint workers. Again, if there was no disappointment effect, there would be no relationship between spending time on feedback and effort for these employers. And if leaving time for worker feedback provided more actionable information on worker’s preferences, firms that are good at responding to suggestions would see increases in effort when they make more time available feedback.

Figure 6 shows differences in worker effort by time allocated to worker feedback and employers’ response to feedback. The plotted points are differences from allocating less than 10% of meeting time on workers’ questions and views estimated in a single OLS regression. On the left panel, workers with high- or medium-response employers have minimally higher effort when there is more time at debriefing meetings devoted to worker feedback. Compared to workers whose employers spend less than 10% of time, workers whose employers spend 10 to 24% or more than 24% of time reported a .008 higher and .007 lower standard deviation higher level of effort, respectively. There is no evidence that spending more time during meetings on worker feedback helps high-response employers improve job quality, though the point estimates are noisy. This may be due to the topics discussed during debriefing meetings, which lean more towards product and production issues rather than topics that are more heavily associated with job quality, such as compensation.

The right panel in Figure 6 shows worker effort for employers with low-quality re-
Figure 6: Workers with low-response employers have lower effort with more worker voice policies

Notes: Data are from the 2011 UK WERS. The outcome is a standardized version of workers’ ratings of how much they take initiative to complete tasks that are not required of them. The plotted points represent differences from respondents at employers that spend less than 10 percent of time at meetings on worker feedback estimated in an OLS regression. The error bars represent 95% confidence intervals using linearized standard errors clustered at the workplace level.
sponses to worker suggestions, which is supportive of Proposition 1. For workers with low-response employers, spending 10 to 24% of meeting time and more than 24% of meeting time are associated with a .073 and .121 standard deviation lower effort, respectively. The coefficient for spending 10 to 24% of meeting time is not statistically significant while the coefficient for spending a quarter or more time is statistically significant at the 10% level. The negative associations with spending more time on worker views for low-response employers are suggestive evidence of a disappointment effect. Despite debriefing meeting topics focusing more on production rather than directly on job quality, workers may still experience disappointment when production processes deviate from their reference point.

5.3. Ability to Satisfy Workers and Firm Voice-Seeking

A key prediction of the model, as stated in Part 2 of Proposition 2, is that increases in firm ability to satisfy workers’ desires has ambiguous effects on firm adoption of worker voice programs. The ability to satisfy workers’ desires allows the firm to avoid disappointment. However, when the firm is more able, workers have higher expectations when consulted, increasing the size of the disappointment effect. When the firm’s baseline ability to satisfy workers reaches a certain threshold, further increases in ability unambiguously increase the adoption of worker voice. Below that threshold, small increases in ability decrease voice-seeking and larger increases can result in negative, positive, or null effects. If workers did not have reference-dependent preferences, increases in a firm’s ability to satisfy workers’ desires would unambiguously increase voice-seeking.

5.3.1. Empirical Strategy

I use data from the UK WERS on establishments that are part of multi-establishment firms to explore the effect of the ability to satisfy workers on voice-seeking. Non-headquarter establishments must sometimes consult with headquarters before making changes to workplace policies. For example, a workplace may need to ask headquarters before requiring worker grievances to be submitted in writing because it may have implications for future lawsuits. If workplaces put forth a proposal that was approved by workers, headquarters may deny the change, even if the workplace wants to implement it. If a workplace has the power to change a policy without consulting headquarters, then it has a higher chance of implementing workers’ proposals.

I use within-establishment variation in autonomy over workplace policies to examine the effect of the ability to adopt workers’ proposals on voice-seeking for specific policies.
The UK WERS asks whether establishments can make changes to the following workplace policies without consulting managers at other workplaces within the same firm: pay, pension entitlements, holiday entitlements, grievance and disciplinary procedures, hours of work, health and safety, and training. These policies vary in the ability for firms to adopt workers’ preferences independent from the variation in autonomy. For example, increasing pension entitlements, pay, and holiday entitlements can result in lower profits, reducing the employer’s ability to adopt worker-proposed increases. On the other hand, improving training topics or adopting relatively low-cost safety measures can increase profits, resulting in a higher ability for firms to adopt worker preferences.

The survey also asks how a workplace engages union and non-union employee representatives on these topics. The workplace can select either negotiate, consult, inform, or none. I categorize negotiating or consulting with either a union or non-union representative as voice-seeking.

Observations for this analysis are at the establishment-policy level. The sample is restricted to non-headquarter establishments with either union or non-union employee representatives, or both. I estimate the following regression:

\[
v_{jp} = \beta_1 A_{jp} + \beta_2 A_{jp} \times W_p + \delta_j + \alpha_p + \epsilon_{jp}
\]

The dependent variable \(v_{jp}\) is whether establishment \(j\) negotiates or consults on policy \(p\) with employee representatives. \(A_{jp}\) is whether the establishment has autonomy over the policy. \(W_p\) is an indicator function for policy \(p\). I control for establishment and policy fixed effects, \(\delta_j\) and \(\alpha_p\), respectively. The combination of coefficients \(\beta_1\) and \(\beta_2\) for each policy measures the effect of autonomy on voice-seeking on policy \(p\). By including establishment fixed effects, this regression uses within-establishment variation by policy to identify the effects of autonomy. Standard errors are linearized and clustered at the establishment level.

5.3.2. Empirical Results on the Relationship between Ability and Voice-Seeking

Figure 7 displays the heterogeneous effects of autonomy on voice-seeking by workplace policy. The plotted points are the linear combinations of the coefficient on autonomy and the interaction between autonomy and the specific policy, for each workplace policy. The error bars represent 95% confidence intervals. The effect of autonomy over training policies has a positive effect on voice-seeking over training. This is consistent with the model as training can be beneficial for both the firm and worker, making it more feasible.
Figure 7: Autonomy over workplace policies has heterogeneous effects on voice-seeking by policy

![Graph showing the effect of autonomy on voice-seeking by workplace policy](image)

Notes: Data are from the UK WERS. The error bars represent 95% confidence intervals using linearized standard errors. There are 3,566 policy-workplace observations with 513 unique workplaces.

for firms to adopt training policies that workers want. In this case, the baseline ability for firms to satisfy workers’ desires, or $m$ in the model, is high.

On the other end, autonomy over pay decreases firm voice-seeking over pay. This is consistent with the model as pay is an area where a firm may be less willing or able to satisfy workers’ demands, resulting in a low $m$. At the low end of firm ability, increases in ability can reduce voice-seeking. This occurs when increases in the disappointment loss due to increases in expectations outweighs the increased probability of avoiding the disappointment. Without disappointment, the model would unambiguously predict an increase in voice-seeking. The point estimates for the effect of autonomy on holiday entitlements and grievance and disciplinary procedures are negative, but not statistically significant.

The effect of autonomy for the other workplace policies hover around zero. Pension entitlements are similar to pay in that firms may be less willing or able to adopt workers’ proposals. The null effects of autonomy for pension entitlements would occur in the model if autonomy increased firm ability beyond the point where increased expectations
outweigh the decrease in risk of disappointment, or $\bar{n}$ in Part 2 of Proposition 2. Hours of work may also be areas where firms have little ability to satisfy workers’ preferences as they may be constrained by external forces, such as customer preferences. Finally, health and safety matters represent an area where firms and workers may have more aligned interests, similar to training. A null effect would be consistent with the model if being able to change health and safety policies without consulting headquarters represented a small increase in ability. This may happen if consultation with headquarters about changes to health and safety policy is a formality and results in a high approval rate.

6. DISCUSSION AND CONCLUSION

Worker voice can create opportunities to improve outcomes for both workers and firms. However, some firms decline to elicit information from workers, even when direct costs are negligible. This paper presents a theory of and empirical support for how reference-dependent preferences create a cost to firm voice-seeking.

In a model where workers are reference-dependent and have private information about their preferences, firms weigh the benefits of gaining information against the costs of raising workers’ expectations. Raising worker’s expectations creates the risk of disappointing them, since firms may not always be able to adopt a worker’s proposal. This paper situates prior empirical evidence on wage dispute arbitration (Mas, 2006) in a broader theory of how worker voice can generate reference-dependent loss and its influence on firm behavior. Using surveys of workplace relations in the US and UK, I find suggestive evidence of a disappointment effect with less-adversarial forms of worker voice.

The model predicts that even when there are benefits to information and the direct costs of consultation are negligible, the risk of disappointing workers may deter firms from encouraging worker voice. The results of an analysis of firm behavior during COVID-19 is consistent with this prediction. Consulting workers about COVID-19 safety protocols appears to have an information exchange component. Yet, only 61% of workers report being consulted, even though one-off consultations arguably have very low direct costs. Disappointment as a barrier to firm voice-seeking may explain why studies of voluntary adoption of worker voice programs by firms find larger positive effects on job satisfaction and labor productivity than studies of worker voice mandates (e.g., Batt and Colvin, 2011; Black and Lynch, 2001; Freeman and Kleiner, 2000; Adhvaryu et al., 2019; Harju et al., 2021; Jäger et al., 2021; Keskinen, 2017). These findings explain why mandated worker voice may have lower-than-expected benefits and caution against

---

13This is illustrated in Figure 3 as going from point A to C.
mandates that do not address workers’ reference points.

A less obvious prediction of the model is that increases in the chance of implementing the worker’s preferred outcome has ambiguous effects on voice-seeking. It simultaneously decreases the chance of disappointing workers and further raises worker’s expectations and potential disappointment. Using autonomy over specific workplace policies for non-headquarter firms as a proxy for the ability to adopt workers’ proposals, I find that autonomy has heterogeneous effects on voice-seeking by workplace policy. Consistent with the model, autonomy over policies where firms are less likely to satisfy workers at baseline, such as pay, has a negative effect on voice-seeking. Autonomy over policies where firms are much more likely to satisfy workers at baseline, such as training, has a positive effect on voice-seeking.

The effect of worker voice on reference points has implications for worker-initiated forms of voice as well. Increasing worker voice, and relatedly, worker power can have opposing effects on job satisfaction by improving working conditions but also generating feelings of loss. This may explain the seemingly contradictory findings of a union wage premium but a negative relationship between union membership and job satisfaction that is separate from the strategic fomenting of disappointment by unions (Freeman and Medoff 1984). The weakened association between material working conditions and job satisfaction underscores the importance of measuring both objective and subjective measures of job quality when studying the effects of worker voice. Additionally, the broader connection between worker voice and reference dependence highlights an interesting line of research on mass worker movements. Pro-worker movements, such as calls for factory safety regulations in the late nineteenth century and contemporary movements to increase the minimum wage, may not only influence firm behavior through regulatory changes, but also by increasing workers’ expectations for working conditions and compensation.

Finally, the possibility that voice can affect reference points can be applied to settings outside of the labor market. Hirschman (1970)’s influential *Exit, Voice, Loyalty* theorizes voice as a response to disappointment, with applicability to a wide variety of contexts, including political dissent, consumer choices, and membership organizations. The theory casts voice as an alternative and as a complement to exit when dealing with negative

---

14See Blanchflower and Bryson (2020) for a discussion of the literature on union membership and job satisfaction and evidence of the evolution of the relationship over time. See Farber et al. (2021) for recent evidence on the union wage premium.
quality shocks, depending on the circumstances.\textsuperscript{15} This paper affirms an additional relationship between exit, voice, and disappointment: voice can precipitate exit by increasing disappointment.\textsuperscript{16} Thus, the potential for disappointment may contribute to lowered voice-seeking in many other contexts, such as consumer markets and political campaigns.

\textsuperscript{15}Recent work has sought to clarify the market conditions under which consumer voice arises (Gans et al., 2021).

\textsuperscript{16}Although Hirschman acknowledges that voice can be “overdone” (p. 31), is it through the mechanism of harassment, where the recipient of voice becomes unresponsive. Ong et al. (2012) also discusses how voice can lead to disappointment.
Table 1: COVID-19 Frontline Worker Survey Sample

<table>
<thead>
<tr>
<th>Covariate</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>0.55</td>
</tr>
<tr>
<td>Age</td>
<td>49.43</td>
</tr>
<tr>
<td>White, not Hispanic</td>
<td>0.66</td>
</tr>
<tr>
<td>Black, not Hispanic</td>
<td>0.11</td>
</tr>
<tr>
<td>Other race, not Hispanic</td>
<td>0.15</td>
</tr>
<tr>
<td>Hispanic, any race</td>
<td>0.09</td>
</tr>
<tr>
<td>High school or less</td>
<td>0.40</td>
</tr>
<tr>
<td>Some college</td>
<td>0.26</td>
</tr>
<tr>
<td>College degree</td>
<td>0.34</td>
</tr>
<tr>
<td>Republican</td>
<td>0.28</td>
</tr>
<tr>
<td>Democrat</td>
<td>0.35</td>
</tr>
<tr>
<td>Independent Party</td>
<td>0.28</td>
</tr>
<tr>
<td>High risk COVID-19 household</td>
<td>0.42</td>
</tr>
<tr>
<td>Had COVID-19</td>
<td>0.11</td>
</tr>
<tr>
<td>Knows someone who had COVID-19</td>
<td>0.58</td>
</tr>
<tr>
<td>Had at least one vaccine dose</td>
<td>0.33</td>
</tr>
<tr>
<td>Observations</td>
<td>1918</td>
</tr>
</tbody>
</table>

Notes: This table presents summary statistics on demographics, political affiliation, and experience with COVID-19 from the COVID-19 Frontline Worker Survey collected in March 2021. The sample includes people who were most recently employed in frontline industries or occupations on or after March 1, 2020. Data were reweighted to match gender-race-ethnicity-education distributions in frontline industries and occupations from the American Community Surveys 2015-2019.
Table 2: COVID-19 Frontline Worker Survey Sample

<table>
<thead>
<tr>
<th>Covariate</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Currently employed</td>
<td>0.78</td>
</tr>
<tr>
<td>Hourly wage</td>
<td>27.87</td>
</tr>
<tr>
<td>Union member</td>
<td>0.13</td>
</tr>
<tr>
<td>Job tenure 5 yrs or more</td>
<td>0.51</td>
</tr>
<tr>
<td>Full-time</td>
<td>0.67</td>
</tr>
<tr>
<td>Unlimited PTO</td>
<td>0.18</td>
</tr>
<tr>
<td>Days of PTO, if not unlimited</td>
<td>12.52</td>
</tr>
<tr>
<td>Retirement benefits</td>
<td>0.56</td>
</tr>
<tr>
<td>Employer health insurance</td>
<td>0.64</td>
</tr>
<tr>
<td>Accommodations and food services</td>
<td>0.09</td>
</tr>
<tr>
<td>Retail</td>
<td>0.20</td>
</tr>
<tr>
<td>Construction</td>
<td>0.09</td>
</tr>
<tr>
<td>Health care</td>
<td>0.17</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>0.10</td>
</tr>
<tr>
<td>Delivery, warehouse, and transportation</td>
<td>0.08</td>
</tr>
<tr>
<td>Personal services</td>
<td>0.06</td>
</tr>
<tr>
<td>Other</td>
<td>0.21</td>
</tr>
<tr>
<td>Small firm</td>
<td>0.10</td>
</tr>
<tr>
<td>Medium firm</td>
<td>0.28</td>
</tr>
<tr>
<td>Large firm</td>
<td>0.25</td>
</tr>
<tr>
<td>Giant firm</td>
<td>0.37</td>
</tr>
<tr>
<td>Observations</td>
<td>1918</td>
</tr>
</tbody>
</table>

Notes: This table presents summary statistics on job and employer characteristics from the COVID-19 Frontline Worker Survey collected in March 2021. The sample includes people who were most recently employed in frontline industries or occupations on or after March 1, 2020. Data were reweighted to match gender-race-ethnicity-education distributions in frontline industries and occupations from the American Community Surveys 2015-2019.
Table 3: COVID-19 Frontline Worker Safety Precautions

<table>
<thead>
<tr>
<th>Covariate</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masks provided</td>
<td>0.67</td>
</tr>
<tr>
<td></td>
<td>(0.47)</td>
</tr>
<tr>
<td>Employee masks required</td>
<td>0.75</td>
</tr>
<tr>
<td></td>
<td>(0.43)</td>
</tr>
<tr>
<td>Customer masks required</td>
<td>0.68</td>
</tr>
<tr>
<td></td>
<td>(0.47)</td>
</tr>
<tr>
<td>COVID-19 Screening</td>
<td>0.37</td>
</tr>
<tr>
<td></td>
<td>(0.48)</td>
</tr>
<tr>
<td>Full remote work</td>
<td>0.16</td>
</tr>
<tr>
<td></td>
<td>(0.36)</td>
</tr>
<tr>
<td>Partial remote work</td>
<td>0.11</td>
</tr>
<tr>
<td></td>
<td>(0.32)</td>
</tr>
<tr>
<td>Coworker Interaction</td>
<td>0.75</td>
</tr>
<tr>
<td></td>
<td>(0.43)</td>
</tr>
<tr>
<td>Non-coworker Interaction</td>
<td>0.56</td>
</tr>
<tr>
<td></td>
<td>(0.50)</td>
</tr>
<tr>
<td>Social Distancing</td>
<td>0.74</td>
</tr>
<tr>
<td></td>
<td>(0.44)</td>
</tr>
<tr>
<td>Airflow improvements</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>(0.47)</td>
</tr>
<tr>
<td>None of the above COVID-19 precautions</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td>(0.27)</td>
</tr>
<tr>
<td>Able to stay six feet always or most of the time</td>
<td>0.60</td>
</tr>
<tr>
<td></td>
<td>(0.49)</td>
</tr>
<tr>
<td>Co-workers wear masks always or most of the time</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>(0.39)</td>
</tr>
<tr>
<td>Customers wear masks always or most of the time</td>
<td>0.75</td>
</tr>
<tr>
<td></td>
<td>(0.43)</td>
</tr>
<tr>
<td>Observations</td>
<td>1918</td>
</tr>
</tbody>
</table>

Notes: This table presents summary statistics on COVID-19 workplace safety precautions in place at the respondent’s most recent or current job from the COVID-19 Frontline Worker Survey collected in March 2021. The sample includes people who were most recently employed in frontline industries or occupations on or after March 1, 2020. Data were reweighted to match gender-race-ethnicity-education distributions in frontline industries and occupations from the American Community Surveys 2015-2019.
REFERENCES


USC Center for Economic and Social Research, “Understanding America Study,” 2021.

van Kessel, Patrick and Dennis Quinn, “Both Republicans and Democrats cite masks as a negative effect of COVID-19, but for very different reasons,” October 2020.


A. Appendix: Proofs

A.1. Non-Bliss Point Preferences

Bliss point preferences for a single amenity can be recast as a tradeoff between multiple amenities. Although workers may have positive marginal utilities for all non-wage amenities, firms cannot provide infinite amounts of each and must trade-off different amenities according to workers’ marginal preferences. This produces similar model conclusions.

Define the worker’s utility from having a job with compensation bundle $w, q, s$ and reference points $r_q$ and $r_s$ as

$$\gamma w + bq + gs + n(q|r_q) + n(s|r_s)$$

where $\gamma$ is a constant representing the marginal utility of wages, $w$. The non-wage amenities $q$ and $s$ have marginal utilities $b$ and $g$, respectively. The worker has a gain-loss utility for each amenity, $n(v|r_v), v \in \{q, s\}$:

$$n(v|r_v) = \begin{cases} 
\lambda \delta_v(v - r_v), & \text{if } v < r_v \\
0, & \text{otherwise}
\end{cases}$$

where $\delta_v$ is the marginal utility of amenity $v$. Workers suffer a loss when either $q$ or $s$ is less than their respective reference points.

At baseline, all workers are Type $Q$, with $b > g$. In other words, Type $Q$ workers prefer an additional unit of $q$ over an additional unit of $s$. Also assume at baseline that the firm has adopted a technology such that $q = 1$ and $s = 0$.

After the contract is agreed upon and before firms decide whether to consult, the worker experience a preference shock. With probability $h$, the worker becomes Type $S$, with $g > b$. The firm has a probability $m$ of being able to costlessly change their amenity provision technology so that $q = 0$ and $s = 1$. The cost is arbitrarily large otherwise. This technology structure approximates firm budget constraints and the inability to provide infinite amounts of both $q$ and $s$. One example of such a trade off is the use of office space. There may be a meeting space that can be converted to a lactation room for breastfeeding parents. With some probability, a worker may prefer to have a lactation room in the office rather than a meeting space. Other workers prefer to use the space for meetings rather than allocate it for lactating parents. When the worker prefers $s$ over $q$, the firm would
rather adopt $s = 1, q = 0$ than $s = 0, q = 1$.

The firm can ask the worker about their type. If the worker is of Type $S$, asking the worker about their type changes their reference point for $q$ and $s$:

$$r_{q,new} = 0m + (1 - m)1 = 1 - m$$
$$r_{s,new} = 1m + (1 - m)0 = m$$

When the Type $S$ worker is consulted and the firm can change its amenity technology, the utility from a work period is

$$u_{\text{high}} = \gamma w + g$$

When the Type $S$ worker is consulted, but the firm cannot change its amenity technology, the utility from a work period is

$$u_{\text{low}} = \gamma w + b - \lambda mh$$

If the firm does not consult the Type $S$ worker, the utility from a work period is

$$u_{\text{med}} = \gamma w + b$$

Since $g > b$ for Type $S$ workers,

$$u_{\text{high}} > u_{\text{med}} > u_{\text{low}}$$

which also corresponds to ordering of the worker’s level of effort in each case.

So, the result that consultation allows the firm to incentivize the highest level of effort and also risks eliciting the lowest level of effort can also follow from non-bliss point preferences.

### A.2. Allowing for Gain Utility

Define the worker’s gain-loss utility:

$$n(q|r) = \begin{cases} -\eta \lambda (b|q - q^*| - b|r - q^*|), & \text{if } |q - q^*| > |r - q^*| \\ -\eta (b|q - q^*| - b|r - q^*|), & \text{otherwise} \end{cases}$$
where \( \eta > 0 \) and represents the overall strength of reference-dependence. The relative strength of loss aversion is represented by \( \lambda \geq 1 \).

When the firm consults, a Type H worker uses the probability that the firm is able to change to \( q_H \) to update their reference point:

\[
r_{new} = (1 - m)q_L + mq_H
\]

If the firm does not consult, both types of workers keep their reference points \( r = q_L \).

Define the following effort levels for the Type H worker:

\[
\ell_{\text{high},H} = \frac{\alpha \beta}{2} \left( \gamma w - \bar{\omega} + \eta b(q_H - q_L) \right)
\]
\[
\ell_{\text{high},H} = \frac{\alpha \beta}{2} \left( \gamma w - \bar{\omega} + \eta mb(q_H - q_L) \right)
\]
\[
\ell_{\text{med}} = \frac{\alpha \beta}{2} \left( \gamma w - \bar{\omega} - b(q_H - q_L) \right)
\]
\[
\ell_{\text{low},H} = \frac{\alpha \beta}{2} \left( \gamma w - \bar{\omega} - (1 + \eta \lambda m)b(q_H - q_L) \right)
\]

with

\[
\ell_{\text{high},H} > \ell_{\text{high},H} > \ell_{\text{med}} > \ell_{\text{low},H}
\]

The effort level \( \ell_{\text{high},H} \) represents the utility gain from fully pleasantly surprising the Type H worker, maximizing their gain utility. The effort level \( \ell_{\text{high},H} \) results from a partial pleasant surprise with gain utility attenuated by \( m \), the probability the firm can costlessly choose \( q_H \). The effort level \( \ell_{\text{med},H} \) comes from meeting the Type H worker’s reference point when it is \( q_L \). The worker gets negative consumption utility from \( q_L \), but no gain-loss utility. The effort level \( \ell_{\text{low},H} \) results from raising the Type H worker’s reference point to \( r_{new} \), but adopting \( q_L \). This results in both negative consumption utility and loss utility.

Define the following effort levels for the Type L worker:

\[
\ell_{\text{high},L} = \frac{\alpha \beta}{2} \left( \gamma w - \bar{\omega} \right)
\]
\[
\ell_{\text{low},L} = \frac{\alpha \beta}{2} \left( \gamma w - \bar{\omega} - (1 + \eta \lambda)b(q_H - q_L) \right)
\]

with

\[
\ell_{\text{high},L} > \ell_{\text{low},L}
\]
The effort level $\ell_{\text{high},L}$ represents the utility from meeting the Type $L$ worker’s reference point, $q_L$. The effort level $\ell_{\text{low},L}$ comes from disappointing the Type $L$ worker by adopting $q_H$ when they expected $q_L$.

If the firm does not consult and continues $q = q_L$, neither type of worker experiences gain-loss utility because their reference point matches their consumption utility. The firm’s expected profit is

$$E[\pi(x)|q = q_L, \text{don’t task}] = E[p(l^*(q = q_L|r = q_L))(a - w) - w]$$

$$= \frac{a^2 \beta}{2} (\gamma w - \bar{\omega} - hb(q_H - q_L))(a - w) - w$$

If the firm chooses $q = q_H$, the Type $L$ worker’s effort is $\ell_{\text{low},L}$. The Type $L$ worker’s reference point was $q_L$, so the firm has given the Type $L$ worker an unpleasant surprise, resulting in loss utility in addition to negative consumption utility. The Type $H$ worker’s effort is $\ell_{\text{high},H}$. In this case, the firm gives Type $H$ workers a pleasant surprise, resulting in gain utility, in addition to avoiding negative consumption utility. If the firm adopts $q_H$ when it is able, its expected profit is:

$$E[\pi(x)|q = q_H, \text{don’t task}] = E[p(l(q = q_H|r = q_L))(a - w) - w]$$

$$= \frac{a^2 \beta}{2} (\gamma w - \bar{\omega} + [h \eta - (1 - h)(1 + \eta \lambda)]b(q_H - q_L))(a - w) - w$$

The firm maintains $q = q_L$ when

$$E[\pi(x)|q = q_L, \text{don’t task}] > E[\pi(x)|q = q_H, \text{don’t task}]$$

$$-hb(q_H - q_L) > [h \eta - (1 - h)(1 + \eta \lambda)]b(q_H - q_L)$$

$$\frac{h}{1 - h} < \frac{1 + \eta \lambda}{1 + \eta}$$

(1)

There exists $\bar{h}$ such that when $h < \bar{h}$, the firm never adopts $q_H$ without consulting the worker. Since $\frac{1 + \eta \lambda}{1 + \eta} \geq 1$, $\bar{h} \geq \frac{1}{2}$. To focus on the scenario where the firm might use consultation to inform a change, I assume that Equation (1) holds. This is satisfied when $h < \frac{1}{2}$.

When the firm consults, the worker tells the firm their type. If the worker is Type $L$, the reference point remains $q_L$. The firm maintains $q = q_L$ and the worker chooses effort
level $\ell_{\text{high,L}}$ because

$$
\alpha \ell_{\text{high,L}}(a - w) - w - \kappa > \alpha \ell_{\text{low,L}}(a - w) - w - \kappa \\
E[\pi(x)|q = q_L, q^* = q_L, \text{ask}] > E[\pi(x)|q = q_H, q^* = q_L, \text{ask}]
$$

If the worker is Type $H$, the firm changes $q = q_H$ when it is costless to do so to incentivize effort level $\ell_{\text{high,H}}$:

$$
\alpha \ell_{\text{high,H}}(a - w) - w - \kappa > \alpha \ell_{\text{low,H}}(a - w) - w - \kappa \\
E[\pi(x)|q = q_H, q^* = q_H, \text{ask}] > E[\pi(x)|q = q_L, q^* = q_H, \text{ask}]
$$

When the cost of changing $q$ is arbitrarily large, then the firm maintains $q = q_L$ and the Type $H$ worker chooses $\ell = \ell_{\text{low,H}}$, since the Type $H$ worker’s reference point changed to $r_{\text{new}}$ due to consultation.

When there is gain utility and loss aversion, the benefits of pleasantly surprising Type $H$ workers are counteracted by the loss of disappointing Type $L$ workers. When it is in the firm’s best interest not to adopt $q_H$ without first consulting ($h < \bar{h}$), consulting allows the firm to incentivize a higher level of effort from Type $H$ workers. However, it also creates the risk of eliciting a lower level of effort. Thus, allowing for gain utility results in the same conclusions.

**A.3. Firing Rule**

The worker’s expected utility depends on job quality and effort:

$$
E[U(l_1, l_2, w, q|r)] = \gamma w - b|q - q^*| + n(q|r) - c(\ell_1) \\
+ \beta E[j(x)[\gamma w - b|q - q^*| + n(q|r) - c(\ell_2)] + [1 - j(x)]\omega]
$$

where $j(x)$ is the firing rule:

$$
j(x) = \begin{cases} 
  j_0, & \text{if } x = 0 \\
  j_1, & \text{if } x = 1 
\end{cases}
$$

where $j_0$ and $j_1$ take the value 0 if the worker is fired and 1 if the worker is retained.
The worker chooses effort in period to satisfy:

$$\max_{\ell} \gamma w - b|q - q^*| + n(q|r) - c(\ell) + \beta E \left[ j(x) [\gamma w + g(q) + n(q|r) - c(0)] + [1 - j(x)] \bar{\omega} \right]$$

$$= \max_{\ell} \gamma w - b|q - q^*| + n(q|r) - c(\ell)$$

$$+ \beta \left( p(\ell) (j_1 \gamma w - b|q - q^*| + n(q|r) + [1 - j_1] \bar{\omega}) - (1 - p(\ell)) (j_0 \gamma w - b|q - q^*| + n(q|r) + [1 - j_0] \bar{\omega}) \right)$$

Taking the first order condition with respect to $\ell$:

$$c'(\ell^*) = \beta p'(\ell^*) \left[ (j_1 - j_0) (\gamma w - b|q - q^*| + n(q|r) - \bar{\omega}) \right]$$

$$\ell^* = \frac{\alpha \beta}{2} \left[ (j_1 - j_0) (\gamma w - b|q - q^*| + n(q|r) - \bar{\omega}) \right] \quad (3)$$

If the firm offers the worker a job contract and the worker accepts, the expected profit is:

$$E[\pi(x)] = p(\ell^*) [a - (j_1 - j_0) w] - w - j_0 w$$

$$= \frac{\alpha^2 \beta}{2} (\gamma w - b|q - q^*| + n(q|r) - \bar{\omega}) \left[ (j_1 - j_0) a - (j_1 - j_0)^2 w \right] - w - j_0 w$$

The firm’s expected profits depends on the firing rule:

$$E[\pi(x)|j_0 = 0, j_1 = 1] = \frac{\alpha^2 \beta}{2} (\gamma w - b|q - q^*| + n(q|r) - \bar{\omega}) (a - w) - w$$

$$E[\pi(x)|j_0 = 1, j_1 = 1] = -2w$$

$$E[\pi(x)|j_0 = 0, j_1 = 0] = -w$$

$$E[\pi(x)|j_0 = 1, j_1 = 0] = \frac{\alpha^2 \beta}{2} (\gamma w - b|q - q^*| + n(q|r) - \bar{\omega}) (-a - w) - 2w$$

The firing decision rule that maximizes expected profits given any choice of $w \geq 0$ is

$$j(x) = \begin{cases} 0, & \text{if } x = 0 \\ 1, & \text{if } x = 1 \end{cases} \quad (4)$$
That is, the firm fires the worker if it observes a failure and retains the worker if it observes a success.

A.4. Worker’s Message

The worker’s utility increases as the combined consumption and gain-loss utility increases. Define \( k(q|r) = -b|q - q^*| + n(q|r) \).

\[
\frac{\partial U}{\partial k(q|r)} = 1 + \frac{\alpha^2\beta^2}{2}(\gamma w + k(q|r) - \bar{\omega}) > 0
\] (5)

Conditional on the firm maintaining \( q_L \) when it does not consult, maintaining \( q = q_L \) if it consults and receives the Type L message, and attempts to change \( q \) to \( q_H \) if it receives a Type H message, the Type L worker’s utility from the non-wage amenity if they transmit \( q_L \) is

\[-b|q_L - q_L| + n(q_L|r = q_L, q^* = q_L) = 0\]

the Type L worker’s utility from the non-wage amenity if they transmit \( q_H \) is

\[m(-b|q_H - q_L| + n(q_H|r = mq_H + (1-m)q_L, q^* = q_L)) + (1-m)(-b|q_L - q_L| + n(q_L|r = mq_H + (1-m)q_L, q^* = q_L)) \]

\[= m(-b(q_H - q_L) - \lambda[b(q_H - q_L) - b(mq_H + (1-m)q_L - q_L)]) + (1-m)(0) < 0\]

The Type L worker always truthfully reveals their type.

The Type H worker’s utility from the non-wage amenity if they transmit \( q_L \) is

\[-b|q_H - q_L| + n(q_L|r = q_L, q^* = q_H) = -b(q_H - q_L)\]

The Type H worker’s Expected utility from the non-wage amenity if they transmit \( q_H \) is

\[m(-b|q_H - q_H| + n(q_H|r = mq_H + (1-m)q_L, q^* = q_H)) + (1-m)(-b|q_L - q_H| + n(q_L|r = mq_H + (1-m)q_L, q^* = q_H)) \]

\[= m(0) + (1-m)(-b(q_H - q_L) - \lambda[b(q_H - q_L) - b(q_H - mq_H - (1-m)q_L)]) \]

\[= -(1-m)(b(q_H - q_L) + \lambda[b(q_H - q_L) - (1-m)b(q_H - q_L)]) \]

\[= -(1-m)(1+\lambda m)b(q_H - q_L)\]
The Type $H$ worker transmits $q_H$ if

$$-b(q_H - q_L) > -(1 - m)(1 + \lambda m)b(q_H - q_L)$$

$$1 < (1 - m)(1 + \lambda m)$$

$$\frac{1}{1 - m} - 1 < \lambda m$$

$$\frac{1}{1 - m} < \lambda$$

(6)

### A.5. Wage-Consultation Strategy

#### A.5.1. Pure wage-consultation strategy

If the firm does not consult the worker, then the expected profit is:

$$E[\pi_{\text{don't task}}] = E[x] (a - w) - w$$

$$= E[p(\ell^*(q = q_L | r = q_L))] (a - w) - w$$

$$= \frac{\alpha^2 \beta}{2} [\gamma w - \bar{\omega} - h b(q_H - q_L) ](a - w) - w$$

If the firm consults the worker, then the expected profit is

$$E[\pi_{\text{ask}}] = E[x] (a - w) - w - \kappa$$

$$= \frac{\alpha^2 \beta}{2} (\gamma w - \bar{\omega} - h (1 - m)(1 + m \lambda) b(q_H - q_L) ) (a - w) - w - \kappa$$

At a given wage level, the firm is indifferent between consulting and not consulting if

$$E[\pi_{\text{ask}}] = E[\pi_{\text{don't task}}]$$

$$w_{\text{indiff}} = a - \frac{2\kappa}{\alpha^2 \beta b(1 - (1 - m)(1 + m \lambda))} \frac{1}{b(q_H - q_L)}$$

### A.5.2. Profit-Maximizing Wage for Each Consultation Strategy

I now find the wage-consultation strategy that maximizes profits.

Using the first order condition for the firm’s expected profit when it does not consult,
the profit maximizing wage satisfies

\[ w_{\text{don't task}} = \frac{a}{2} + \bar{\omega} + hb(q_H - q_L) - \frac{1}{\alpha^2 \beta \gamma} \]

Using the first order condition for the firm’s profit when it consults, the profit maximizing wage satisfies

\[ w_{\text{ask}} = \frac{a}{2} + \bar{\omega} + h(1 + m \lambda)(1 - m)b(q_H - q_L) - \frac{1}{\alpha^2 \beta \gamma} \]

### A.5.3. Wage Offer and Individuality Constraints

If the firm offers a wage that would lead it to not consult, the wage offer must satisfy the worker’s individual rationality constraint:

\[ E[U_{\text{don’t task}}] \geq (1 + \hat{\beta})\bar{\omega} \]

\[ (1 + \hat{\beta} E[p(\ell^*)|\text{don't task}]) \times (\gamma w_{\text{don't task}} + E[-b|q - q^*| + n(q|r)|\text{don't task}] - E[c(\ell^*)|\text{don't task}] + (\hat{\beta} - \hat{\beta} E[p(\ell^*)|\text{don't task}])\bar{\omega} \]

\[ (1 + \hat{\beta} E[\ell^*|\text{don't task}]) (\gamma w_{\text{don't task}} + E[-b|q - q^*| + n(q|r)|\text{don't task}] - \bar{\omega}) - E[\ell^2|\text{don't task}] \geq 0 \]

\[ \frac{2}{\alpha \beta} E[\ell^*|\text{don't task}] + E[\ell^*|\text{don't task}]^2 - \text{Var}(\ell^*|\text{don't task}) \geq 0 \]

\[ \gamma w_{\text{don't task}} - hb(q_H - q_L) - \bar{\omega} + \left( \gamma w_{\text{don't task}} - hb(q_H - q_L) - \bar{\omega} \right)^2 - h(1 - h)[b(q_H - q_L)]^2 \geq 0 \]

\[ \frac{a\gamma}{2} - \frac{\bar{\omega}}{2} - \frac{hb(q_H - q_L)}{2} - \frac{1}{\alpha^2 \beta} + \left( \frac{a\gamma}{2} - \frac{\bar{\omega}}{2} - \frac{hb(q_H - q_L)}{2} - \frac{1}{\alpha^2 \beta} \right)^2 - h(1 - h)[b(q_H - q_L)]^2 \geq 0 \]

The firm would only offer a contract without consultation if it satisfied the firm’s individual rationality constraint.

\[ E[\pi_{\text{don't task}}] = E[x|\text{don't task}](a - w_{\text{don't task}}) - w_{\text{don't task}} \geq 0 \]
\[ \alpha E[\ell^* | \text{don't task}] \left( \frac{a}{2} - \frac{\bar{\omega}}{2\gamma} - \frac{hb(q_H - q_L)}{2\gamma} + \frac{1}{\alpha^2 \beta \gamma} \right) - \left( \frac{a}{2} + \frac{\bar{\omega}}{2\gamma} + \frac{hb(q_H - q_L)}{2\gamma} - \frac{1}{\alpha^2 \beta \gamma} \right) \geq 0 \]

\[ \frac{\alpha^2 \beta}{2} \left( \frac{a}{2} - \frac{\bar{\omega}}{2\gamma} \right)^2 - \frac{1}{\alpha^2 \beta} \left( \frac{a}{2} - \frac{\bar{\omega}}{2\gamma} - \frac{hb(q_H - q_L)}{2\gamma} + \frac{1}{\alpha^2 \beta \gamma} \right) - \left( \frac{a}{2} + \frac{\bar{\omega}}{2\gamma} + \frac{hb(q_H - q_L)}{2\gamma} - \frac{1}{\alpha^2 \beta \gamma} \right) \geq 0 \]

The wage offer must satisfy the worker’s individual rationality constraint. In the case of offering a wage that would lead the firm to consult, the worker’s constraint is:

\[ E[U_{ask}] \geq (1 + \beta)\bar{\omega} \quad (9) \]

\[ (1 + \beta E[p(\ell^*) | ask]) (\gamma w_{ask} + E[-b | q - q^* | + n(q | r) | ask]) - E[c(\ell^*) | ask] + (\beta - \beta E[p(\ell^*) | ask]) \bar{\omega} \geq (1 + \beta)\bar{\omega} \]

\[ (1 + \beta \alpha E[\ell^* | ask]) (\gamma w_{ask} + E[-b | q - q^* | + n(q | r) | ask] - \bar{\omega}) - E[\ell^2 | ask] \geq 0 \]

\[ \frac{2}{\alpha \beta} E[\ell^* | ask] + E[\ell^* | ask]^2 - Var(\ell^* | ask) \geq 0 \]

\[ \gamma w_{ask} - h(1 - m)(1 + m\lambda)b(q_H - q_L) - \bar{\omega} \]

\[ + \left( \gamma w_{ask} - h(1 - m)(1 + m\lambda)b(q_H - q_L) - \bar{\omega} \right)^2 \]

\[ - h(1 - m)[1 - h(1 - m)][(1 + \lambda m)b(q_H - q_L)]^2 \geq 0 \]

\[ \frac{a\gamma}{2} - \frac{\bar{\omega}}{2} - \frac{h(1 - m)(1 + m\lambda)b(q_H - q_L)}{2} - \frac{1}{\alpha^2 \beta} \]

\[ + \left( \frac{a\gamma}{2} - \frac{\bar{\omega}}{2} - \frac{h(1 - m)(1 + m\lambda)b(q_H - q_L)}{2} - \frac{1}{\alpha^2 \beta} \right)^2 \]

\[ - h(1 - m)[1 - h(1 - m)][(1 + \lambda m)b(q_H - q_L)]^2 \geq 0 \]

The firm only offers a contract with asking if it satisfies the firm’s individual rationality constraint:

\[ E[\pi_{ask}] = E[x | ask] (a - w_{ask}) - w_{ask} - \kappa \geq 0 \quad (10) \]
\[
\alpha E[\ell^* \text{ask}] \left( \frac{a}{2} - \frac{\omega}{2\gamma} - \frac{h(1-m)(1+\lambda m)b(q_H - q_L)}{2\gamma} + \frac{1}{\alpha^2 \beta \gamma} \right) \\
- \left( \frac{a}{2} + \frac{\omega}{2\gamma} + \frac{h(1-m)(1+\lambda m)b(q_H - q_L)}{2\gamma} - \frac{1}{\alpha^2 \beta \gamma} \right) - \kappa \geq 0
\]

\[
\frac{\alpha^2 \beta}{2} \left( \frac{a}{2} - \frac{\omega}{2\gamma} - \frac{h(1-m)(1+\lambda m)b(q_H - q_L)}{2\gamma} \right)^2 \\
- \left( \frac{a}{2} + \frac{\omega}{2\gamma} + \frac{h(1-m)(1+\lambda m)b(q_H - q_L)}{2\gamma} + \frac{1}{2\alpha^2 \beta \gamma} \right) - \kappa \geq 0
\]

The constraints in 7, 8, 9 and 10 are clearly satisfied when \(a\gamma\) is sufficiently large.

### A.6. Proposition Proofs

**A.6.1. Proof of Proposition 1**

Define the following effort levels:

- \(\ell_{\text{high}} = \frac{\alpha \beta}{2}(\gamma w - \tilde{\omega})\)
- \(\ell_{\text{med}} = \frac{\alpha \beta}{2}(\gamma w - \tilde{\omega} - b(q_H - q_L))\)
- \(\ell_{\text{low}} = \frac{\alpha \beta}{2}(\gamma w - \tilde{\omega} - (1 + \lambda m)b(q_H - q_L))\)

I first discuss the scenario where the firm does not consult. In this case, the worker’s reference point remains \(r = q_L\).

If the firm chooses \(q = q_L\), the Type L worker’s effort is \(\ell_{\text{high}}\) and the Type H worker’s effort is \(\ell_{\text{med}}\). Then the firm’s expected profit if it chooses \(q = q_L\) is:

\[
E[\pi(x)|q = q_L, \text{don’t task}] = E[p(l^*(q = q_L|r = q_L))(a - w) - w] \\
= \frac{\alpha^2 \beta}{2}(\gamma w - \tilde{\omega} - hb(q_H - q_L))(a - w) - w
\]

If the firm choose \(q = q_H\), the Type L worker’s effort is \(\ell_{\text{low}}\) and the Type H worker’s
effort is $\ell_{\text{high}}$. If the firm adopts $q_H$, its expected profit is:

$$E[\pi(x)|q = q_H, \text{don't task}] = E[p(l(q = q_H|r = q_L))(a - w) - w]$$

$$= \frac{\alpha^2}{2} \beta (\gamma w - \bar{w} - (1 - h)(1 + \lambda)b(q_H - q_L))(a - w) - w$$

The firm maintains $q = q_L$ when

$$E[\pi(x)|q = q_L, \text{don't task}] > E[\pi(x)|q = q_H, \text{don't task}]$$

$$-hb(q_H - q_L) > -(1 - h)(1 + \lambda)b(q_H - q_L)$$

$$\frac{h}{1 - h} - 1 < \lambda \quad (11)$$

There exists $\hat{h}$ such that when $h < \hat{h}$, the firm never adopts $q_H$ without consulting the worker. $\hat{h} \geq \frac{1}{2}$ because $\lambda > 0$. To focus on the scenario where the firm might use consultation to inform a change, I assume that Equation $11$ holds.

When the firm consults, the worker tells the firm their type. If the worker is Type $L$, the firm maintains $q = q_L$ and the worker chooses $\ell = \ell_{\text{high}}$:

$$\alpha \ell_{\text{high}}(a - w) - w - \kappa > \alpha \ell_{\text{low}}(a - w) - w - \kappa$$

$$E[\pi(x)|q = q_L, q^* = q_L, \text{ask}] > E[\pi(x)|q = q_H, q^* = q_L, \text{ask}]$$

If the worker is Type $H$, the firm changes $q = q_H$ when it is costless to do so to incentivize effort level $\ell_{\text{high}}$:

$$\alpha \ell_{\text{high}}(a - w) - w - \kappa > \alpha \ell_{\text{low}}(a - w) - w - \kappa$$

$$E[\pi(x)|q = q_H, q^* = q_H, \text{ask}] > E[\pi(x)|q = q_L, q^* = q_H, \text{ask}]$$

When the cost of changing $q$ is arbitrarily large, then the firm maintains $q = q_L$ and the Type $H$ worker chooses $\ell = \ell_{\text{low}}$.

A.6.2. **Proof of Proposition 2**

$$E[\pi_{\text{ask}}] = E[\pi_{\text{don't task}}]$$

$$E[x|w_{\text{ask}}](a - w_{\text{ask}}) - w_{\text{ask}} - \kappa = E[x|w_{\text{don't task}}](a - w_{\text{don't task}}) - w_{\text{don't task}}$$
\[
\frac{a^2\beta\gamma}{2} \left( \frac{a}{2} - \frac{\bar{\omega} + h(1 - m)(1 + m\lambda)b(q_H - q_L)}{2\gamma} - \frac{1}{a^2\beta\gamma} \right)^2 \\
- \left( \frac{a}{2} + \frac{\bar{\omega} + h(1 - m)(1 + m\lambda)b(q_H - q_L)}{2\gamma} - \frac{1}{a^2\beta\gamma} \right)^2 \\
\kappa = \frac{a^2\beta\gamma}{2} \left( \frac{a}{2} - \frac{\bar{\omega} + h(1 - m)(1 + m\lambda)b(q_H - q_L)}{2\gamma} - \frac{1}{a^2\beta\gamma} \right)^2 \\
- \left( \frac{a}{2} + \frac{\bar{\omega} + h(1 - m)(1 + m\lambda)b(q_H - q_L)}{2\gamma} - \frac{1}{a^2\beta\gamma} \right)^2 \\
+ \left( \frac{a}{2} - \frac{\bar{\omega} + h(1 - m)(1 + m\lambda)b(q_H - q_L)}{2\gamma} - \frac{1}{a^2\beta\gamma} \right)^2 \\
\kappa^* = \frac{a^2\beta\gamma}{2} \left[ \left( \frac{a}{2} - \frac{\bar{\omega} + h(1 - m)(1 + m\lambda)b(q_H - q_L)}{2\gamma} - \frac{1}{a^2\beta\gamma} \right)^2 \\
- \left( \frac{a}{2} - \frac{\bar{\omega} + h(1 - m)(1 + m\lambda)b(q_H - q_L)}{2\gamma} - \frac{1}{a^2\beta\gamma} \right)^2 \right] \\
+ \frac{h(b(q_H - q_L)(1 - (1 - m)(1 + m\lambda))}{2\gamma} \\
\frac{\partial \kappa^*}{\partial \lambda} = -\frac{a^2\beta}{2} \left( \frac{b(q_H - q_L)(1 - m)m}{2\gamma} \right) \left( \frac{a}{2} - \frac{1}{a^2\beta\gamma} - \frac{\bar{\omega} + h(1 - m)(1 - m)(1 + \lambda)}{2\gamma} \right) \\
- \frac{h(b(q_H - q_L)(1 - m)m}{2\gamma} \\
\]
Since
\[ \frac{\alpha^2 \beta}{2} (h(1 - m)mb(q_H - q_L)) \left( \frac{a}{2} - \frac{1}{\alpha^2 \beta \gamma} \frac{\bar{\omega} + hb(q_H - q_L)(1 - m)(1 + \lambda)}{2\gamma} \right) > 0 \]

Then \( \frac{\partial \kappa^*}{\partial \lambda} < 0 \)

\[ \frac{\partial \kappa^*}{\partial m} = \left( \frac{hb(q_H - q_L)}{2\gamma} \right) \left( \lambda(2m - 1) + 1 \right) \times \left( \frac{\alpha^2 \beta \gamma}{2} \left( \frac{a}{2} - \frac{\bar{\omega} + hb(q_H - q_L)(1 - m)(1 + m\lambda)}{2\gamma} - \frac{1}{\alpha^2 \beta \gamma} \right) + 1 \right) \] \quad (12)

Since
\[ \frac{hb(q_H - q_L)}{2\gamma} > 0 \]

\[ \frac{\alpha^2 \beta \gamma}{2} \left( \frac{a}{2} - \frac{\bar{\omega} + hb(q_H - q_L)(1 - m)(1 + m\lambda)}{2\gamma} - \frac{1}{\alpha^2 \beta \gamma} \right) + 1 > 0 \]

the sign of \( \frac{\partial \kappa^*}{\partial m} \) follows the sign of \( \lambda(2m - 1) + 1 \). This term is increasing in \( m \), so there exists an \( \bar{m} \) such that \( \frac{\partial \kappa^*}{\partial m} > 0 \) when \( m < \bar{m} \) and \( \frac{\partial \kappa^*}{\partial m} < 0 \) when \( m < \bar{m} \).

\[ \bar{m} = \frac{1}{2} - \frac{1}{2\lambda} \]

When \( \lambda \leq 1 \), \( \frac{\partial \kappa^*}{\partial m} > 0 \) for all \( m \in (0, 1) \). Additionally, \( \lim_{\lambda \to \infty} \bar{m} = \frac{1}{2} \).

\[ \frac{\partial \kappa^*}{\partial b(q_H - q_L)} = \frac{\alpha^2 \beta}{2} \left[ h \left( \frac{a}{2} - \frac{\bar{\omega}}{2\gamma} - \frac{hb(q_H - q_L)}{2\gamma} - \frac{1}{\alpha^2 \beta \gamma} \right) \right. \]

\[ - \left( h(1 - m)(1 + \lambda m) \right) \left( \frac{a}{2} - \frac{\bar{\omega}}{2\gamma} - \frac{h(1 - m)(1 + \lambda m)b(q_H - q_L)}{2\gamma} - \frac{1}{\alpha^2 \beta \gamma} \right) \]

\[ + \frac{hm(1 - (1 - m)\lambda)}{2\gamma} \] \quad (13)
Define $\bar{g}$ to be the value of $b(q_H - q_L)$ where $\frac{\partial \kappa^*}{\partial b(q_H - q_L)} = 0$

$$\bar{g} = \frac{\alpha \gamma - \omega - \frac{2}{\alpha^2 \beta}}{(1 - m)(1 + \lambda m) + 1} - \frac{2m(1 - \lambda(1 - m))}{\alpha^2 \beta((1 - m)(1 + \lambda m)^2 - 1)}$$ (14)

$$\frac{\partial^2 \kappa^*}{\partial b(q_H - q_L)^2} = \frac{\alpha^2 \beta h^2}{4\gamma} \frac{(1 - m)(1 + \lambda m)^2 - 1}{(1 - m)^2(1 + \lambda m)^2 - 1}$$ (15)

When $\lambda < \frac{1}{1-m}$, $\frac{\partial^2 \kappa^*}{\partial b(q_H - q_L)^2} < 0$, so $\bar{g}$ is a local maximum. In this case, $\frac{\partial \kappa^*}{\partial b(q_H - q_L)} > 0$ when $b(q_H - q_L) < \bar{g}$ and $\frac{\partial \kappa^*}{\partial b(q_H - q_L)} < 0$ when $b(q_H - q_L) > \bar{g}$.

When $\lambda > \frac{1}{1-m}$, $\frac{\partial^2 \kappa^*}{\partial b(q_H - q_L)^2} > 0$, so $\bar{g}$ is a local minimum. In this case, $\frac{\partial \kappa^*}{\partial b(q_H - q_L)} < 0$ when $b(q_H - q_L) < \bar{k}$ and $\frac{\partial \kappa^*}{\partial b(q_H - q_L)} > 0$ when $b(q_H - q_L) > \bar{k}$. 

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B. **APPENDIX: SURVEY DETAILS**

B.1. **FRONTLINE OCCUPATIONS AND INDUSTRIES**

Only respondents who selected an eligible occupation or industry were invited to take the COVID-19 frontline worker survey.

**Eligible occupations**

- food prep and serving
- building and grounds maintenance
- construction and extraction
- transportation and material moving
- healthcare practitioners and technical
- personal care and service
- farming, fishing, and forestry

**Eligible industries**

- accommodation and food services
- construction; delivery, transportation, and warehousing
- retail
- wholesale trade
- manufacturing
- utilities
- health care and social services
- personal, repair, and other services
- agriculture, forestry, fishing, and hunting
### B.2. Constructing Job Choices

<table>
<thead>
<tr>
<th>Job Characteristics</th>
</tr>
</thead>
</table>
| **Hours**                                                                           | If part-time: 20 hours per week (part-time)  
|                                                                                     | If full-time: 40 hours per week (full-time)  
| Paid time off                                                                       | If 10 or more days of paid time off: 10 days per year  
|                                                                                     | If fewer than 10 days of paid time off: None  
| PPE policy for employees                                                           | If provided in current job: Masks required  
|                                                                                     | If not provided in current job: No policy  
| PPE policy for customers non-employees                                              | If very little or no non-employee interactions:  
|                                                                                     | Not applicable (no in-person customer interactions)  
|                                                                                     | Else:  
|                                                                                     | If provided in current job: Masks required  
|                                                                                     | If not provided in current job: No policy  
| Social distance measures in the workplace                                          | If any provided in current job: Yes  
|                                                                                     | If not provided in current job: No  
| Portable air purifier                                                              | If employer adopted any air ventilation or filtration improvements: Provided in your workspace  
|                                                                                     | Else: None  
| COVID testing available to employees                                               | If provided in current job: Yes  
|                                                                                     | If not provided in current job: No  
| COVID symptom screening of employees                                                | If provided in current job: Yes  
|                                                                                     | If not provided in current job: No  
| Pay                                                                                 | If part-time: $w$ per hour ($20w$ per week)  
|                                                                                     | If full-time: $w$ per hour ($40w$ per week)  

Table B1: Respondent’s Current or Most Recent Job and Job Offer Values
### B.3. Job Choice Example

Figure 8: Example of a job choice that varied the COVID-19 screening policy

<table>
<thead>
<tr>
<th></th>
<th>Job A</th>
<th>Job B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hours</strong></td>
<td>40 hours per week (full-time)</td>
<td>40 hours per week (full-time)</td>
</tr>
<tr>
<td><strong>Paid time off</strong></td>
<td>10 days per year</td>
<td>10 days per year</td>
</tr>
<tr>
<td><strong>Remote work or telework</strong></td>
<td>No telework option</td>
<td>No telework option</td>
</tr>
<tr>
<td><strong>PPE policy for employees</strong></td>
<td>No policy</td>
<td>No policy</td>
</tr>
<tr>
<td><strong>PPE policy for customers and other non-employees</strong></td>
<td>Not applicable (no in-person customer interactions)</td>
<td>Not applicable (no in-person customer interactions)</td>
</tr>
<tr>
<td><strong>Social distance measures in the workplace</strong></td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>COVID testing available to employees</strong></td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>COVID symptom screening of employees</strong></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Pay</strong></td>
<td>$39.15 per hour ($1566 per week)</td>
<td>$26.55 per hour ($1062 per week)</td>
</tr>
</tbody>
</table>

If you'd like an explanation of each characteristic, please click here.

- Prefer Job A
- Prefer Job B
C. APPENDIX TABLES
### Table C1: Correlates of Choosing to Give Up Wages for COVID-19 Safety Precaution

<table>
<thead>
<tr>
<th></th>
<th>Univariate Regressions (1)</th>
<th>Multivariate Regression (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>-0.016 (0.017)</td>
<td>-0.002 (0.018)</td>
</tr>
<tr>
<td>Age</td>
<td>0.000 (0.001)</td>
<td>0.001 (0.001)</td>
</tr>
<tr>
<td>High Risk Household</td>
<td>-0.015 (0.017)</td>
<td>-0.016 (0.017)</td>
</tr>
<tr>
<td>Above-Median Infection Estimate</td>
<td>0.088*** (0.017)</td>
<td>0.087*** (0.017)</td>
</tr>
<tr>
<td>Log wage</td>
<td>-0.009 (0.014)</td>
<td>-0.010 (0.014)</td>
</tr>
<tr>
<td>Race and Ethnicity (ref = White, Not Hispanic)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black, Not Hispanic</td>
<td>0.098*** (0.029)</td>
<td>0.068* (0.030)</td>
</tr>
<tr>
<td>Hispanic, Any Race</td>
<td>0.046 (0.039)</td>
<td>0.013 (0.038)</td>
</tr>
<tr>
<td>Other Race, Not Hispanic</td>
<td>0.038 (0.035)</td>
<td>0.032 (0.034)</td>
</tr>
<tr>
<td>Education (ref = HS or Less)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some College, No Degree</td>
<td>-0.033 (0.023)</td>
<td>-0.026 (0.022)</td>
</tr>
<tr>
<td>College Degree</td>
<td>0.007 (0.020)</td>
<td>0.015 (0.020)</td>
</tr>
<tr>
<td>Political Party (ref = Independent)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Democrat</td>
<td>0.058** (0.021)</td>
<td>0.051* (0.021)</td>
</tr>
<tr>
<td>Republican</td>
<td>-0.030 (0.021)</td>
<td>-0.011 (0.021)</td>
</tr>
<tr>
<td>Industry (ref = Retail)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food and Accommodation</td>
<td>-0.008 (0.032)</td>
<td>-0.011 (0.031)</td>
</tr>
<tr>
<td>Construction</td>
<td>0.035 (0.042)</td>
<td>0.033 (0.041)</td>
</tr>
<tr>
<td>Delivery and Warehouse</td>
<td>-0.058 (0.034)</td>
<td>-0.065 (0.034)</td>
</tr>
<tr>
<td>Healthcare</td>
<td>0.021 (0.027)</td>
<td>0.009 (0.026)</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>0.010 (0.032)</td>
<td>0.024 (0.033)</td>
</tr>
<tr>
<td>Personal Services</td>
<td>0.038 (0.047)</td>
<td>0.033 (0.048)</td>
</tr>
<tr>
<td>Other Industry</td>
<td>0.003 (0.027)</td>
<td>0.000 (0.026)</td>
</tr>
</tbody>
</table>

Notes: This table presents correlates of choosing to take a job with a lower wage and more COVID-19 safety precautions, which is a measure of demand for safety precautions. Data are from the COVID-19 frontline worker survey. Each observation is a respondent-job choice. The sample only includes job choices where the job with the precaution had a lower wage. N = 7,724. *p < .05,** p < .01,*** p < .001. Each cell in the first column presents estimates from an OLS regression controlling for the covariate indicated by the row along with precaution fixed effects and the relative wage difference between the two jobs. Column 2 displays estimates from a single OLS regression that includes all of the covariates. Linearized standard errors clustered at the respondent level are displayed in parentheses.
Table C2: Correlates of Consultation

<table>
<thead>
<tr>
<th></th>
<th>Univariate Regressions (1)</th>
<th>Multivariate Regression (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>-0.006</td>
<td>-0.016</td>
</tr>
<tr>
<td></td>
<td>(0.027)</td>
<td>(0.028)</td>
</tr>
<tr>
<td>Age</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td><strong>Race and Ethnicity (ref = White, Not Hispanic)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black, Not Hispanic</td>
<td>0.057</td>
<td>0.051</td>
</tr>
<tr>
<td></td>
<td>(0.042)</td>
<td>(0.043)</td>
</tr>
<tr>
<td>Hispanic, Any Race</td>
<td>0.038</td>
<td>0.046</td>
</tr>
<tr>
<td></td>
<td>(0.057)</td>
<td>(0.057)</td>
</tr>
<tr>
<td>Other Race, Not Hispanic</td>
<td>-0.032</td>
<td>-0.004</td>
</tr>
<tr>
<td></td>
<td>(0.055)</td>
<td>(0.053)</td>
</tr>
<tr>
<td><strong>Education (ref = HS or Less)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some College, No Degree</td>
<td>0.055</td>
<td>0.041</td>
</tr>
<tr>
<td></td>
<td>(0.037)</td>
<td>(0.035)</td>
</tr>
<tr>
<td>College Degree</td>
<td>0.023</td>
<td>-0.033</td>
</tr>
<tr>
<td></td>
<td>(0.031)</td>
<td>(0.031)</td>
</tr>
<tr>
<td><strong>Political Party (ref = Independent)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Democrat</td>
<td>0.043</td>
<td>0.030</td>
</tr>
<tr>
<td></td>
<td>(0.034)</td>
<td>(0.033)</td>
</tr>
<tr>
<td>Republican</td>
<td>0.059</td>
<td>0.039</td>
</tr>
<tr>
<td></td>
<td>(0.033)</td>
<td>(0.033)</td>
</tr>
<tr>
<td><strong>Job Characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Union</td>
<td>0.071</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.044)</td>
<td>(0.042)</td>
</tr>
<tr>
<td>Full-time</td>
<td>0.101***</td>
<td>0.021</td>
</tr>
<tr>
<td></td>
<td>(0.030)</td>
<td>(0.035)</td>
</tr>
<tr>
<td>Log wage</td>
<td>0.080***</td>
<td>0.052**</td>
</tr>
<tr>
<td></td>
<td>(0.017)</td>
<td>(0.019)</td>
</tr>
<tr>
<td>Unlimited PTO</td>
<td>0.149***</td>
<td>0.149***</td>
</tr>
<tr>
<td></td>
<td>(0.034)</td>
<td>(0.034)</td>
</tr>
<tr>
<td>Employer Health Insurance</td>
<td>0.083*</td>
<td>0.057</td>
</tr>
<tr>
<td></td>
<td>(0.040)</td>
<td>(0.042)</td>
</tr>
<tr>
<td>Retirement benefits</td>
<td>0.101**</td>
<td>0.089*</td>
</tr>
<tr>
<td></td>
<td>(0.039)</td>
<td>(0.037)</td>
</tr>
<tr>
<td><strong>Firm Size (ref = fewer than 5 employees)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 to 49 employees</td>
<td>0.159**</td>
<td>0.111*</td>
</tr>
<tr>
<td></td>
<td>(0.053)</td>
<td>(0.055)</td>
</tr>
<tr>
<td>50 to 499 employees</td>
<td>0.205***</td>
<td>0.112</td>
</tr>
<tr>
<td></td>
<td>(0.053)</td>
<td>(0.057)</td>
</tr>
<tr>
<td>500 or more employees</td>
<td>0.212***</td>
<td>0.107</td>
</tr>
<tr>
<td></td>
<td>(0.049)</td>
<td>(0.055)</td>
</tr>
<tr>
<td><strong>Industry (ref = Retail)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food and Accommodation</td>
<td>-0.039</td>
<td>-0.005</td>
</tr>
<tr>
<td></td>
<td>(0.054)</td>
<td>(0.053)</td>
</tr>
<tr>
<td>Construction</td>
<td>-0.014</td>
<td>-0.041</td>
</tr>
<tr>
<td></td>
<td>(0.062)</td>
<td>(0.064)</td>
</tr>
<tr>
<td>Delivery and Warehouse</td>
<td>-0.049</td>
<td>-0.098</td>
</tr>
<tr>
<td></td>
<td>(0.059)</td>
<td>(0.059)</td>
</tr>
<tr>
<td>Healthcare</td>
<td>0.029</td>
<td>-0.017</td>
</tr>
<tr>
<td></td>
<td>(0.041)</td>
<td>(0.042)</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>-0.094</td>
<td>-0.182***</td>
</tr>
<tr>
<td></td>
<td>(0.055)</td>
<td>(0.055)</td>
</tr>
<tr>
<td>Personal Services</td>
<td>-0.104</td>
<td>-0.087</td>
</tr>
<tr>
<td></td>
<td>(0.067)</td>
<td>(0.066)</td>
</tr>
<tr>
<td>Other Industry</td>
<td>-0.023</td>
<td>-0.058</td>
</tr>
<tr>
<td></td>
<td>(0.044)</td>
<td>(0.043)</td>
</tr>
</tbody>
</table>

Notes: This table presents correlates of whether the respondent’s employer consulted them or their co-workers about COVID-19 workplace safety protocols. Data are from the COVID-19 frontline worker survey. N = 1,866. *p < .05, **p < .01, ***p < .001. Each cell in the first column presents estimates from a univariate OLS regression. Column 2 displays estimates from a single OLS regression that includes all of the covariates. Linearized standard errors are displayed in parentheses.
Table C3: Correlates of the Number of Worker Voice Programs

<table>
<thead>
<tr>
<th></th>
<th>Univariate Regressions (1)</th>
<th>Multivariate Regression (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log annual salary</td>
<td>0.128**</td>
<td>0.080*</td>
</tr>
<tr>
<td></td>
<td>(0.049)</td>
<td>(0.041)</td>
</tr>
<tr>
<td>Male</td>
<td>0.036</td>
<td>0.027</td>
</tr>
<tr>
<td></td>
<td>(0.092)</td>
<td>(0.098)</td>
</tr>
<tr>
<td><strong>Race (ref = white, not Hispanic)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black, not Hispanic</td>
<td>-0.218</td>
<td>-0.180</td>
</tr>
<tr>
<td></td>
<td>(0.150)</td>
<td>(0.167)</td>
</tr>
<tr>
<td>Hispanic, any Race</td>
<td>0.281</td>
<td>0.538*</td>
</tr>
<tr>
<td></td>
<td>(0.241)</td>
<td>(0.255)</td>
</tr>
<tr>
<td>Other race, not Hispanic</td>
<td>0.503</td>
<td>0.483</td>
</tr>
<tr>
<td></td>
<td>(0.266)</td>
<td>(0.249)</td>
</tr>
<tr>
<td><strong>Education (ref = high school or less)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some college</td>
<td>0.075</td>
<td>0.021</td>
</tr>
<tr>
<td></td>
<td>(0.106)</td>
<td>(0.114)</td>
</tr>
<tr>
<td>College degree</td>
<td>0.275*</td>
<td>0.087</td>
</tr>
<tr>
<td></td>
<td>(0.109)</td>
<td>(0.118)</td>
</tr>
<tr>
<td>Union at Workplace</td>
<td>0.173</td>
<td>0.269*</td>
</tr>
<tr>
<td></td>
<td>(0.106)</td>
<td>(0.108)</td>
</tr>
<tr>
<td><strong>Firm Size (ref = 25-99 employees)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-499 employees</td>
<td>0.083</td>
<td>0.128</td>
</tr>
<tr>
<td></td>
<td>(0.135)</td>
<td>(0.151)</td>
</tr>
<tr>
<td>500-999 employees</td>
<td>0.136</td>
<td>0.193</td>
</tr>
<tr>
<td></td>
<td>(0.177)</td>
<td>(0.208)</td>
</tr>
<tr>
<td>1000 or more employees</td>
<td>0.364**</td>
<td>0.319*</td>
</tr>
<tr>
<td></td>
<td>(0.119)</td>
<td>(0.139)</td>
</tr>
<tr>
<td><strong>Firm takes production suggestions seriously (ref = hardly ever or never)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Always</td>
<td>1.239***</td>
<td>1.214***</td>
</tr>
<tr>
<td></td>
<td>(0.130)</td>
<td>(0.139)</td>
</tr>
<tr>
<td>Sometimes</td>
<td>0.863***</td>
<td>0.870***</td>
</tr>
<tr>
<td></td>
<td>(0.120)</td>
<td>(0.125)</td>
</tr>
</tbody>
</table>

Notes: This table presents correlates of worker voice policies and programs collected in the US WRPS in 1994. The sample is restricted to respondents that were included in the second wave of survey conducted in 1995. N = 575. "p < .05, **p < .01, ***p < .001. Each cell in the first column presents estimates from a univariate OLS regression. Column 2 displays estimates from a single OLS regression that includes all of the covariates. Linearized standard errors are displayed in parentheses.
Table C4: Correlates of Debriefing Meeting Time Allocated to Worker Questions and Views

<table>
<thead>
<tr>
<th></th>
<th>Univariate Regressions (1)</th>
<th>Multivariate Regression (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Establishment Firm</td>
<td>0.676***</td>
<td>0.456*</td>
</tr>
<tr>
<td>Foreign-Owned</td>
<td>-0.441*</td>
<td>-0.301</td>
</tr>
<tr>
<td>Firm Size (ref = fewer than 25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-99 employees</td>
<td>-0.565*</td>
<td>-0.531*</td>
</tr>
<tr>
<td>100 - 499 employees</td>
<td>-0.860***</td>
<td>-0.804**</td>
</tr>
<tr>
<td>500-999 employees</td>
<td>-1.028**</td>
<td>-1.030**</td>
</tr>
<tr>
<td>1000 or more employees</td>
<td>-0.648</td>
<td>-0.813*</td>
</tr>
<tr>
<td>Union at Workplace</td>
<td>-0.112</td>
<td>0.189</td>
</tr>
<tr>
<td>Male</td>
<td>-0.053</td>
<td>-0.046</td>
</tr>
<tr>
<td>Race (ref = white)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed race</td>
<td>-0.036</td>
<td>0.145</td>
</tr>
<tr>
<td>Asian</td>
<td>0.195</td>
<td>0.283</td>
</tr>
<tr>
<td>Black</td>
<td>0.181</td>
<td>0.242</td>
</tr>
<tr>
<td>Other</td>
<td>-0.215</td>
<td>-0.272</td>
</tr>
<tr>
<td>No answer</td>
<td>0.099</td>
<td>0.286</td>
</tr>
<tr>
<td>Education (ref = higher education)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A levels or equivalent</td>
<td>-0.194</td>
<td>-0.122</td>
</tr>
<tr>
<td>NVQ level 2 or equivalent</td>
<td>-0.192</td>
<td>-0.082</td>
</tr>
<tr>
<td>NVQ level 1 or equivalent</td>
<td>-0.335</td>
<td>-0.210</td>
</tr>
<tr>
<td>Other educational qualifications</td>
<td>-0.155</td>
<td>-0.030</td>
</tr>
<tr>
<td>No educational qualifications</td>
<td>-0.446*</td>
<td>-0.320</td>
</tr>
<tr>
<td>Pay (ref = £11,440 or less per year)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>£11,441 - £22,360 per year</td>
<td>0.045</td>
<td>0.171</td>
</tr>
<tr>
<td>£22,361 - £33,800 per year</td>
<td>0.115</td>
<td>0.287</td>
</tr>
<tr>
<td>£33,801 - £42,640 per year</td>
<td>0.151</td>
<td>0.389*</td>
</tr>
<tr>
<td>£42,641 - £54,600 per year</td>
<td>0.301</td>
<td>0.565*</td>
</tr>
<tr>
<td>£54,601 or more per year</td>
<td>0.388</td>
<td>0.700**</td>
</tr>
<tr>
<td>Response to worker suggestions (ref = very poor or poor)</td>
<td>0.281**</td>
<td>0.196*</td>
</tr>
<tr>
<td>Very good or good</td>
<td>0.281**</td>
<td>0.196*</td>
</tr>
<tr>
<td>Neither good nor poor</td>
<td>0.061</td>
<td>0.025</td>
</tr>
</tbody>
</table>

Notes: This table presents correlates of time allocated to worker questions and views during debrief meetings in the 2011 UK WERS. Data on debrief meetings and firm size are collected from managers at the workplace-level. Data on individual employees are from the employee-level survey. The sample only includes workers whose employers have debrief meetings. Observations are at the employee-level. N = 11,194. * p < .05, ** p < .01, *** p < .001. Each cell in the first column represents estimates from univariate ordered logit regressions, where spending a quarter or more time is the highest category, spending 10-24% of time is the medium category, and spending less than 10% of time is the lowest category. Column 2 displays estimates from an ordered logit regression that includes all of the covariates. Linearized standard errors clustered at the workplace level are displayed in parentheses.