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Abstract

Labor supply depends on wages and amenities, and standard models implicitly assume that firms hold accurate beliefs about workers' amenity valuations. In a survey with firms and workers in Germany linked to administrative data, we measure workers' valuations of five different amenities and firms' beliefs about workers' valuations. We find that firms systematically underestimate workers' valuations of all five amenities. These misperceptions are driven by interpersonal projection: managers project their own preferences—they value amenities less—onto workers. Through the lens of a simple model of imperfect competition, we show that firm misperceptions result in (i) labor shortages and (ii) excess labor costs for biased firms. Empirical tests confirm these predictions: a simple calibration suggests that non-providing firms could reduce their labor costs by 5% by providing amenities.

Keywords: Beliefs About Others, Amenities, Behavioral Firms, Labor Shortages, Work from Home

JEL Classification: J32, J42, J81, D22, D83

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1 Introduction

Workers value both wages and non-wage amenities (Rosen, 1986; Mas and Pallais, 2017; Maestas et al., 2023). When firms choose a wage-amenity bundle, they must account for workers' preferences over different job attributes. Standard models of wage-setting treat this as a one-dimensional optimization problem, implicitly assuming that firms hold correct beliefs about workers' amenity valuations (Burdett and Mortensen, 1998; Bhaskar et al., 2002).

This paper tests this assumption. Do firms accurately perceive how much workers value non-wage amenities? Or are managerial beliefs systematically biased—resulting in non-optimal wage-amenity bundles with potentially severe equilibrium consequences?[1]

Despite vast empirical evidence showing that workers value amenities (Mas and Pallais, 2017; Wiswall and Zafar, 2018; Maestas et al., 2023; Morchio and Moser, 2024), firms' beliefs about workers' valuations of non-wage amenities remain largely unmeasured. Comparing these beliefs to workers' actual valuations poses severe challenges. Firms' beliefs, workers' valuations, and information about amenities provided are not observable in standard datasets, making it necessary to collect novel data. Further, beliefs and valuations are often sensitive to the elicitation method, requiring that firms' beliefs and workers' valuations are measured using the same method.

To address these challenges, we design and field a novel survey of German workers and firms. The survey allows us to directly measure two key ingredients: (i) workers' valuations of non-wage amenities, and (ii) firms' beliefs about these valuations. As a result, we are the first to measure what firms believe workers value and how these beliefs compare to an objective benchmark: workers' actual valuations. The survey focuses on five widely discussed amenities: work from home, predictable schedules, on-the-job training, mentoring, and a four-day workweek (holding hours worked fixed). These features have received growing attention in both public debate and academic research (Bloom et al., 2015; Mas and Pallais, 2017; Maestas et al., 2023).

We survey 761 firms that are broadly representative of the German labor market to measure how accurately managers perceive workers' valuations of five key amenities. Managers participate in a series of discrete choice tasks where jobs differ only along two dimensions: salary and the presence of one amenity. Using repeated choices that dynamically adjust the pay differential at the amenity level, we recover each manager's belief about how much workers value each amenity. We then benchmark these beliefs against the actual valuations of workers in the same occupational group—using data from a separate large-scale survey of more than 3,200 German workers. Both surveys use the same design, allowing for a clean and consistent comparison between beliefs

[1] Throughout the text, we refer to *firms* and *managers* interchangeably.

and valuations.

We begin by confirming that workers value all five amenities. Valuations range from € 210 gross wage per month for mentoring to € 553 gross wage per month for work from home. When comparable estimates are available, our results are similar to prior findings (Mas and Pallais, 2017; Maestas et al., 2023). We also validate our measure of workers' valuations: workers sort into amenities they value, a job's value of amenities is positively linked to job satisfaction, and negatively associated with the intention to quit the job.

We then turn to our main finding: in contrast to the assumption of unbiased firm beliefs, managers systematically underestimate how much workers value non-wage amenities. This holds for all five amenities, and the misperceptions are economically meaningful. For predictable schedules, managers' beliefs are 27% lower than workers' valuations. For work from home, the gap is 12%; for on-the-job training 11%; for mentoring, 18%; and for the four-day workweek, 23%. Pooling across amenities, firms underestimate worker valuations by 18% on average.

We compare these beliefs to expert forecasts we collected on the *Social Science Prediction Platform* (DellaVigna and Pope, 2018). There is substantial disagreement between experts. For none of the amenities, a majority of experts predict that firms underestimate workers' valuations, while for three amenities, underestimation is even the least-frequent response—suggesting that our results shift expert priors.

Firms' beliefs are closely related to their amenity provision choices, suggesting that our measures capture economically meaningful variation in beliefs. Comparing beliefs by whether firms provide a given amenity, we find that, for two of the five amenities, providing firms hold accurate beliefs,[2] and that, for all five amenities, providing firms' beliefs are substantially more accurate than those of non-adopters. By contrast, non-providing firms consistently underestimate workers' valuations. This pattern is particularly pronounced for work from home: providing firms are unbiased on average, whereas non-adopters underestimate workers' valuations by 35%.

A natural concern is that, while firms underestimate workers' valuations of amenities in our sample, they may hold correct beliefs about workers in their own firm or relevant market. We address this by using workers' demographics and survey responses to impute valuations in the administrative data (i) within the firm, (ii) within the local labor market, and (iii) among firms' most recent hires. Across all specifications, firms continue to systematically underestimate workers' valuations.

We also assess whether asymmetric inattention in the survey response behavior between firms and workers can account for our findings. Under this hypothesis, firms'

[2]We define beliefs as accurate when the difference between workers' valuations and firms' beliefs is statistically indistinguishable from zero.

beliefs and workers' valuations are aligned, but one group is more inattentive, potentially biasing that group's responses. This implies that each distribution should be representable as a mixture of the other and a mass of inattentive agents responding at random. We show that no such mixture can reproduce the empirical distributions in either direction, ruling out asymmetric inattention as an explanation for our results.

We also conduct a wide range of further robustness checks. Workers' stated valuations are unaffected when we incentivize their decisions. The finding that managers underestimate workers' valuations holds across alternative specifications, occupational definitions, reweighting schemes, and winsorization of the distributional tails. Firms' beliefs are similar whether we exogenously prompt them to think about the mean, modal, or marginal workers. The results also persist across respondent subsamples (such as firm owners), survey quality restrictions, and population reweighting.

What explains these misperceptions? Since workers' preferences are not directly observable, managers have to mentally simulate how workers value amenities (Bordalo et al., 2025, 2026a,b). We hypothesize that this simulation draws on the input most readily available to them: managers' *own* valuation of amenities. To test this hypothesis, we elicit each manager's own valuation of one randomly selected amenity. Under the absence of such *interpersonal projection* (van Boven and Loewenstein, 2003; Bushong and Gagnon-Bartsch, 2024), managers' own valuations and their beliefs about workers should be uncorrelated in expectation. Instead, we find a positive relationship: a € 1 increase in a manager's own valuation is associated with a 51-cent increase in their belief about workers' valuations. Even further, managers' own valuations explain 33% of the variation in beliefs—providing evidence for this mechanism. Our design also allows us to directly assess each manager's degree of interpersonal projection: 29% of managers exhibit full projection, that is, they believe that workers' preferences are equal to their own preferences.

We then study the equilibrium consequences of firm misperceptions about workers' valuations. In a simple model featuring workers with heterogeneous preferences (Bhaskar and To, 1999, 2003; Manning, 2003), firms set wage-amenity bundles: a mix of wages and amenities. We allow one firm in the market to have downward-biased beliefs about workers' valuations of amenities. We then compare a market structure with unbiased firms to a market in which one firm underestimates workers' valuations of amenities. A biased firm will underprovide amenities, leading to two first-order consequences: labor shortages and excess labor costs. Intuitively, the biased firm becomes less attractive to workers and needs to compensate for this with an inefficiently high wage. To close the model, we then allow the firm to be confident about its belief accuracy, leading to the following *Berk-Nash equilibrium* (Esponda and Pouzo, 2016; Heidhues et al., 2018): the firm explains the labor shortages by updating negatively about the general labor

market conditions. The model also makes market-wide predictions: as the biased firm becomes less attractive, overall market competitiveness decreases, allowing competitors to decrease wages. As a consequence, all workers in the labor market are worse off compared to the unbiased benchmark, thus making the novel prediction that a firm's bias can increase monopsony power in the entire market.

Guided by the model, we test its three core predictions in the data. First, firms with biased beliefs should face greater difficulty attracting workers. We examine the relationship between managers' beliefs and self-reported labor shortages. Consistent with the model, we find that managers who underestimate worker valuations are significantly more likely to report labor shortages. To our knowledge, this is the first direct evidence linking firms' biased beliefs to labor market performance. Second, we test whether firms exhibit excess labor costs. In a calibration exercise, we ask: holding worker utility constant, could firms reduce labor costs by offering amenities? To do so, we compare labor costs with and without provision, incorporating amenity provision costs and productivity effects based on firms' own reports. This approach provides a conservative test of whether non-provision can be rationalized. The results indicate that most non-adopting firms would in fact lower labor costs by offering amenities: on average, non-provision raises labor costs by 5 percent, and over 80 percent of firms could reduce labor costs by adopting amenities. Third, we find that firms experiencing labor shortages are more likely to believe that the local labor market is in a difficult state—consistent with the prediction in the Berk-Nash equilibrium.

Related Literature. A growing literature explores how non-wage amenities affect labor supply decisions. Building on early contributions by Brown (1980) and Rosen (1986), a recent literature quantifies the importance of non-wage amenities compared to wages (e.g., Mas and Pallais, 2017; Sorkin, 2018; Lamadon et al., 2022; Sockin, 2022; Maestas et al., 2023; Mas, 2025). In particular, we contribute to recent work measuring the valuations of amenities on the labor supply side (Mas and Pallais, 2017; Wiswall and Zafar, 2018; Maestas et al., 2023; Nagler et al., 2023; Cullen et al., 2025a). We contribute to this literature by providing the hitherto first evidence on managers' beliefs about workers' valuations of non-wage amenities. We provide evidence that firms systematically underestimate workers' valuations of non-wage amenities, leading to an underprovision of amenities.

We contribute to the literature on beliefs in the labor market (Jäger et al., 2024; Caldwell et al., 2025; Cullen et al., 2025b). While most of the existing work shows how workers or jobseekers, i.e., the *labor supply side*, hold biased beliefs (Mueller et al., 2021; Cullen and Perez-Truglia, 2022, 2023; Jäger et al., 2024; Caliendo et al., 2023; Altmann et al., 2025; Conlon and Patel, 2026; Lehner et al., 2025), much less is

known about the *labor demand side*, i.e., managers and firms (Bertheau and Hoeck, 2024; Cullen et al., 2025b). We complement this literature by providing evidence for systematic biases in firms' beliefs about workers' valuations of non-wage amenities—highlighting the relevance of analyzing both sides of the labor market when investigating imperfect market outcomes.[3]

We also contribute to the growing literature showing firms' non-provision of amenities that workers value. Most of this literature has focused on return-to-office policies (Ding and Ma, 2024; Flynn et al., 2024; van Dijcke et al., 2024); a puzzling phenomenon given that workers highly value work from home (Mas and Pallais, 2017; Maestas et al., 2023) and most evidence suggests that work from home does not decrease productivity (Bloom et al., 2015, 2024; Angelici and Profeta, 2024; Choudhury et al., 2024). In other domains, recent work has shown that workers like earnings stability (Ganong et al., 2025) and hours worked that depart from what firms offer (Lachowska et al., 2025; Jarosch et al., 2025)—while many firms do not provide these amenities. We contribute to this literature by postulating and testing a novel explanation for the non-provision of amenities: managers differ from workers in many ways—they are on average older, more likely to be male, and value amenities less than workers. Managers then project their own preferences onto workers, leading them to underestimate workers' valuations of amenities.

Recently, many firms in major economies have reported that they are struggling to find workers, motivating a growing literature on these labor shortages (Le Barbanchon et al., 2023; Bertheau et al., 2024; Börschlein et al., 2024; vom Baur, 2026). Explanations for this phenomenon are scarce and mostly point towards firms setting wages that are too low (Friedrich and Zator, 2024). We contribute to this literature by providing evidence for another, novel explanation for labor shortages: firms underestimating workers' valuations of non-wage amenities, causing them to underprovide amenities and become less competitive.

We also contribute to the mostly theoretical literature on misguided learning studying how biased beliefs are stable in equilibrium (Esponda and Pouzo, 2016; Heidhues et al., 2018; Fudenberg et al., 2021; Fudenberg and Lanzani, 2023). A key prediction in this literature is that biased beliefs about one variable can be sustained by adjusting beliefs about another variable in the model (e.g., Heidhues et al., 2018, 2023, 2025). We contribute to this literature by providing evidence consistent with misguided learning in a natural setting.

More broadly, we contribute to the literature on misperceptions about others (Bursztyn

[3]More generally, we contribute to the growing literature that studies departures from behavior predicted by the classical model by managers (e.g., Malmendier and Tate, 2005, 2008) and firms in the labor market (Dube et al., 2025; Hazell et al., 2025) and other settings (Bloom et al., 2013; Greenwood and Hanson, 2015; DellaVigna and Gentzkow, 2019; List et al., 2023).

et al., 2020a,b; Bursztyn and Yang, 2022). Influential work has focused on misperceptions about gender norms (Bursztyn et al., 2020a; Boneva et al., 2024; Bursztyn et al., 2026), gender differences (Exley et al., 2025), and the willingness to act against climate change (Andre et al., 2024a,b). Our methodological approach complements this literature by introducing a common measurement framework for both firms' beliefs and workers' valuations: an iterative choice task.

Methodologically, we contribute to the literature on the elicitation of preferences and beliefs of labor market participants (e.g., Mas and Pallais, 2017; Maestas et al., 2023; Wiswall and Zafar, 2018). Building on this, we introduce a novel elicitation method that captures individual-level amenity valuations using an iterative approach. This method provides a more granular view of heterogeneity in valuations while maintaining internal consistency.

Outline. This paper is structured as follows. Section 2 describes our data and discusses the representativeness of our sample. In Section 3, we introduce our survey design, while Section 4 lays out the main results. In Section 5, we investigate the mechanism underlying managers' behavior. Section 6 introduces a theoretical model formalizing the consequences of firms' biases and Section 7 tests these predictions. Section 8 concludes.

2 Data

2.1 Firm Survey

Recruiting. Our objective was to reach a broad and diverse sample of the German labor market. Firms were contacted through multiple channels, with the majority (87%) recruited via publicly available email addresses from the trade register. Additionally, we collaborated with five Chambers of Industry and Commerce (*Industrie- und Handelskammern*, *IHKs*) and Chambers of Crafts (*Handwerkskammern*, *HWKs*) to distribute our surveys to their member firms. These institutions play a central role in the German labor market, with IHKs representing firms in commerce, industry, and services, while HWKs govern the craft sector, overseeing vocational training and ensuring high-quality apprenticeships. Since membership in an IHK or HWK is legally mandated for most firms, our collaboration with these chambers allowed us to achieve broad market coverage. For further details on firm recruitment across channels, see Appendix C.

The majority of our survey respondents hold senior positions within their firms. 61% of participants are firm owners, while 26% are managers, and the remaining 13% are human resource (HR) professionals. This distinguishes our sample from prior surveys in the German labor market, which predominantly survey HR professionals or workers.

By directly surveying firm owners—who are primarily responsible for setting wages and amenities—our study provides unique insights into decision-making inside the firm. For an overview of the demographic details on our firm sample, see Appendix Table C.1.

Representativeness. Appendix Table C.2 compares our firm sample to the broader population of German firms using the Orbis dataset. Overall, the sample closely resembles the underlying population along most observable dimensions. Two notable differences emerge. First, large firms are overrepresented in our sample, accounting for 8% of firms compared to 1% in the overall German labor market. Second, firms in the transportation and information services sectors are modestly overrepresented relative to the population.

Implementation and logistics. We fielded our survey in February–May 2025. In total, we collected 761 completed responses from the firm survey. The median time to complete the survey was 15 minutes and over two-thirds of respondents took less than 20 minutes to complete the survey. We implemented a comprehension question at the end of the instructions, ensuring respondents are able to make an informed decision. Comprehension in our sample is high: 87% of respondents provided the correct answers.

The structure of the survey was as follows. First, we elicited information about respondents' position within their firm. Respondents who hold an owner, manager, or HR professional position were selected into the *firm survey*, while all others were selected into the *worker survey* which we describe in detail in Section 2.2. Henceforth, we will use the terms firm and manager interchangeably. We then asked managers general questions about their firm, e.g., the most common occupational group within the firm and the average salary. We then elicited managers' beliefs about workers' valuations of amenities using an iterated discrete choice experiment as described in Section 3; we also measured managers' own valuation of one randomly selected amenity. We then asked additional questions about their firm's amenity setting conduct and additional beliefs, e.g., about the costs of providing amenities. The survey concluded with additional questions about managers' demographics.

2.2 Worker Survey

Recruiting and representativeness. We recruited workers via two channels: first, we asked firms to distribute our survey to their workers, who then self-select into their part of the survey via the first question. In total, we recruited 202 workers through this channel. Second, we contacted 3,001 workers representative of the German workforce via the platform *Bilendi* using the same survey. Appendix Table C.3 reports the characteristics of surveyed workers and compares them to those of the German labor force. The survey

sample closely matches the population in terms of gender, age, monthly gross wage, and tenure. Appendix Section F, which we reference throughout the text, shows that our main findings are robust to re-weighting with respect to the above characteristics.

Implementation and logistics. We fielded our main worker survey in August 2025. In total, we collected 3203 completed responses from the worker survey. The median time to complete the survey was 10 minutes and two-thirds of respondents took less than 12 minutes to complete the survey. We implemented a comprehension question between the instructions and the main survey module, ensuring respondents are able to make an informed decision. Comprehension in our sample is high: 94% of respondents provided the correct answer.

The structure of the survey was as follows. First, we elicited information about respondents' role within their firm. We then asked workers general questions about their job, e.g., their occupational group, salary, and whether they work in an office. We then elicited workers' valuations of amenities using an iterated discrete choice experiment as described in Section 3, followed by additional questions about their job, e.g., the amenities provided to them and their job satisfaction. The survey concluded with additional questions about the firm and the workers' demographics.[4]

Definition: occupation. Since our primary outcomes of interest—the valuations of amenities of workers and managers' beliefs about those preferences—are defined at the occupational group level, obtaining this information is crucial to aligning both sides of the labor market. This is especially relevant since valuations and beliefs thereof are heterogeneous depending on the work environment. In the survey, firms were asked to specify their most-common occupational group, based on the aggregated 2-digit *KldB* classification, while workers were asked to report their own occupational group. Appendix Table C.4 presents the distribution of firms and workers across these occupational groups, together with their respective shares.

In total, our analysis encompasses 14 distinct occupational groups at the aggregated 2-digit *KldB* level. Although more granular occupational information is available, we opt for this level of aggregation as it strikes an optimal balance between statistical power and the heterogeneity of valuations and beliefs among occupational groups. Section F replicates our main analysis with a finer-grained definition of occupations. The results remain qualitatively and quantitatively very similar.

[4]For a detailed overview of the survey instruments, see Appendix I.

2.3 Administrative Data

Linked survey-administrative data. We link our firm-level survey responses to German Social Security records, which are compiled by the Institute for Employment Research (IAB) into the Integrated Employment Biographies (IEB) and Establishment History Panel (*Betriebs-Historik-Panel*, BHP) datasets. The IEB data encompass all private- and public-sector employees making Social Security contributions, providing detailed information on employee demographics (e.g., gender, age, and education), employer characteristics (e.g., sector and location), and job-specific information (e.g., full-time status, daily pay, and occupation).

Among the 761 firms with complete survey responses, 567 (75%) granted consent for the linkage of survey data to the IEB records.[5] Appendix Table C.5 shows that firms do not significantly differ in terms of size, sector, or other characteristics, regardless of whether they consented to the linkage.

Of the firms that provided consent, we successfully linked 466 to the BHP and IEB datasets. This matching process was conducted within the IAB, and any loss of firms during this process can be attributed to the inability to identify those firms within the IEB and BHP datasets. The resulting matched firm survey-IEB dataset includes 70,724 full-time employees across these firms from 2014–2024, the most recent year for which we have access to administrative data.

Local labor market characteristics. For some of our analyses in Section 4, we use aggregated characteristics of local labor markets.

For this purpose, we leverage the *Sample of Integrated Labor Market Biographies* (SIAB), a 2 percent random sample drawn from the IEB records. We define local labor markets on the 2-digit industry × 2-digit occupational group × commuting zone level and compute the summary statistics of age, gender, and daily pay of the local labor markets.

3 Survey Design

We invited respondents to participate in a survey about the labor market. Our key outcome of interest is firms' beliefs about workers' valuations of non-wage amenities, measured by the amount of money a worker is willing to forgo to receive a given amenity.

There are two versions of the survey. Based on a short screening question at the beginning, respondents were selected into either the *manager survey*—which asked about their beliefs about workers' valuations of non-wage amenities—or the *worker survey*—

[5] In accordance with German privacy laws, explicit consent is required to link firm responses to Social Security data.

which asked about their own valuations. Respondents are unaware that multiple survey types exist. The survey focuses on five amenities: *work from home*, *predictable schedules*, *mentoring*, *on-the-job training*, and the *four-day workweek* (holding hours worked fixed). A key feature of our survey is that we measure both valuations and beliefs using the same elicitation method. This design allows us to (i) measure beliefs and valuations at the individual level and (ii) attribute any gap between workers' and managers' responses to biased managerial beliefs, eliminating methodological confounds such as scale sensitivity.

3.1 The Role of Amenities for Firms' Wage-Setting Behavior

When setting a *wage-amenity bundle* for a worker, a firm must balance offering higher wages against providing amenities. To do so, it needs to form *beliefs* about how workers value non-wage amenities in comparison to receiving a higher salary. In the classic *compensating differential* logic (Brown, 1980; Rosen, 1986; Lavetti, 2023; Mas, 2025), wages and amenities serve as (imperfect) substitutes. A firm will substitute wages with an amenity when the resulting increase in the worker's utility is sufficiently large.

This wage-amenity trade-off is typically assumed away in standard models of the labor market, where amenities are mostly either a fixed characteristic of a firm (Rosen, 1986; Card et al., 2018; Berger et al., 2022; Lamadon et al., 2022; Roussille and Scuderi, 2025) or are simply subsumed into a one-dimensional wage variable (Burdett and Mortensen, 1998; Bhaskar and To, 1999; Bhaskar et al., 2002). The first assumption is innocuous if firms have no influence over the amenities they offer, while the latter requires that firms hold unbiased beliefs about workers' valuations. However, if managers' beliefs are systematically biased, ignoring the wage-amenity trade-off could have significant equilibrium consequences.

Appendix Figure A.1 summarizes our research design. The x-axis represents workers' average valuations (in euros) for each non-wage amenity, while the y-axis shows firms' average beliefs about these valuations. Standard models would predict that managers hold unbiased beliefs about workers' valuations, meaning all values would lie on the 45-degree line. If, however, firms systematically overestimate how much workers value amenities, the values will lie above the 45-degree line. Conversely, if firms systematically underestimate workers' valuations, the values will lie below the 45-degree line.

3.2 The Amenities

Selection. Our goal is to identify a set of non-wage amenities that are widely available in the labor market, valued by workers, and subject to firm choice. We surveyed both the literature on non-wage amenities and the active public discourse to identify amenities

that fulfill three criteria: (i) they are common across industries, (ii) they are non-monetary in nature, and (iii) they can be actively adjusted by firms rather than being fixed job characteristics (see Appendix B for details).

These amenities vary in their degree of provision, their costs, and potential productivity effects, allowing us to study a wide variety of working conditions. We used the following amenities in the survey.

Predictable schedules. Prior research indicates that workers value predictability, flexibility, and personal control over their schedules (Mas and Pallais, 2017; Wiswall and Zafar, 2018; Maestas et al., 2023). In our survey, we define predictable schedules as the difference between receiving a work schedule two months in advance versus one day before the workweek begins.

Work from home. Over the past years, work-from-home (WFH) policies have become increasingly common across the world (Aksoy et al., 2022) and recent research highlights that workers value the option to work from home (Mas and Pallais, 2017), while productivity effects are mostly non-negative (Barrero et al., 2023; Bloom et al., 2024; Aksoy et al., 2025). In our survey, we define WFH as the *option* to work from home.

On-the-job training. Human capital theory predicts that workers should value on-the-job training, accepting lower wages in exchange for an increase in human capital and wage growth. Barron et al. (1999) find evidence for this using observational data, and Maestas et al. (2023) show that workers indeed have positive valuations of on-the-job training. In the survey, we define on-the-job training as three free training workshops per year compared to having no further training.

Mentoring. Regular mentoring can enhance worker performance by clarifying job roles and providing actionable guidance (**?**). Feedback mechanisms also contribute to retention, as employees who receive regular performance evaluations report higher engagement and commitment to their organization (Benson et al., 2019). We define mentoring as a monthly meeting with your supervisor compared to having no meetings.

Four-day workweek. The four-day workweek has been a topic of recent public debate, particularly in Germany. While various formats of this work arrangement exist, we focus on one specific model: the option to work a 40-hour workweek condensed into four days instead of five. This approach allows us to hold the hourly wage and total compensation constant while varying only the number of workdays and daily working hours.

3.3 Measuring Beliefs and Valuations

The design in a nutshell. The key feature of our design is that we elicit firms' beliefs about workers' valuations of non-wage amenities and benchmark them against workers' valuations. In a series of hypothetical vignettes, respondents choose between two jobs. Both jobs—A and B—have identical task requirements but differ in salary and the presence of *one* amenity. Job A offers a lower salary but includes the amenity, while Job B offers a higher salary without the amenity. We use an iterative method to identify beliefs and valuations for each amenity on the individual level. Appendix I displays the exact wording of the vignettes.

Firms: beliefs about workers' valuations of non-wage amenities. We begin by eliciting firms' most common occupational group and the average salary of their workers.[6] We then ask them to imagine a worker in Germany in this occupational group receiving two job offers from the same firm:

> *In the following parts of this survey, we ask you to imagine different situations. Imagine a worker in Germany in the field of* ***[Occupational Group]****. This worker receives two job offers from the same company: Job A and Job B. The tasks of the jobs are identical. However, the jobs differ in two respects: the gross salary and one non-wage amenity. The worker must now decide between Job A and Job B.*

We then ask managers to put themselves into the shoes of this worker and state their belief about the choice the worker would make:

> *Does the average worker prefer Job A or Job B?*[7]

Directly measuring beliefs. To quantitatively identify firms' beliefs, we employ an iterative approach. Each series of vignettes starts with a salary differential of € 450 between two jobs. If the manager chooses the job with the amenity, the salary differential increases; if they select the job without the amenity, it decreases. Repeating this process multiple times while decreasing the "step size" allows us to recover firms' beliefs about

[6] We use the 2-digit *KldB* (*Klassifikation der Berufsgruppen*, *Classification of Occupational Groups*) classification.

[7] Managers might consider different types of workers. To address this potential variation and ensure consistency in how firms think about valuations of workers, we explicitly define which worker moment—mean, mode, or marginal—firms think about. In particular, we asked firms if they think their average worker (mean), the majority of workers (mode) or the next worker that they will employ (marginal) would choose job A or job B. If the beliefs remain consistent across these treatments, it would be evidence that managers do not expect sorting into amenities by type of worker they think of to evaluate their valuations. In Section 4.7 we show that our results are insensitive to the prompting of the worker type.

workers' valuations of amenity within a € 50 interval, as illustrated in Appendix Figure A.2. For managers at the boundary (meaning workers and firms that value the given amenity either below € 100 or above € 800), we asked them to state their valuation in an open text field, such that we are also able to identify very small or large beliefs.[8]

Workers: valuations of amenities. To create a credible benchmark for managers' beliefs, we use a very similar setting and wording for the worker vignettes. We first elicit each worker's occupational group and salary and anchor the vignettes towards that salary. We then tell workers:

> *On the following pages, we will ask you to imagine different situations. In each situation, you will be presented with 2 jobs at the same company. Let us call them Job A and Job B. Both jobs are almost identical but differ in two respects: the gross salary and one non-wage amenity.*

We then ask workers to state which job they would choose:

> *Do you prefer Job A or Job B?*

We use the exact same iterative method as for managers' beliefs to recover workers' valuations up to a € 50 interval.

Discussing the design. When comparing managers' beliefs about workers' valuations of non-wage amenities to workers' actual valuations, it is crucial to eliminate potential confounds that might differentially affect the two groups. For example, embedding the vignettes within different contexts could bias the reported beliefs or valuations of one group upward or downward. To mitigate this concern, we implement several measures.

First, we align the context for both groups by framing the decision around a hiring scenario involving two identical jobs, differing solely in monetary compensation and the presence of a single amenity, to control for task-related factors. Second, we enhance validity by eliciting beliefs and valuations at the *salary* × *occupational group* level, ensuring that workers make decisions reflective of their current wage and job context, while firm managers base their responses on the wages they typically offer in their hiring practices. Third, we standardize the elicitation method by using an iterative procedure with hypothetical vignettes for both workers and firms, allowing for a consistent comparison of valuations and beliefs.

[8] We ask firms to state the minimum salary at which a worker would accept the non-amenity job over the amenity job. We define the difference between this estimate and the current wage as the firm's belief, and we winsorize at the 5% level. Our results are qualitatively identical and quantitatively very similar when using different specifications for the open text valuations. See Appendix F for details.

A key advantage of our approach is that it directly provides individual-level estimates for valuations and beliefs, rather than only allowing the researcher to infer their distributions as in standard discrete choice experiments commonly used in the literature (e.g., Mas and Pallais, 2017; Maestas et al., 2023). Our approach allows us to directly identify firms that misperceive workers' valuations and quantify the extent of this divergence.

4 Do Firms Know What Workers Want?

4.1 Preliminary Step: Workers Value Amenities

Before turning to our main question of interest—how firms perceive workers' valuations of non-wage amenities—we first present workers' valuations of non-wage amenities. For more in-depth analyses of the worker survey, we refer to Appendix E.

Workers' valuations of non-wage amenities. Appendix Figure E.1 plots the average valuation of workers for each of the amenities we consider. Workers exhibit the highest valuation of work from home (€ 553, 15% of workers' wages), followed by the four-day workweek (€ 417, 13%), predictable schedules (€ 394, 12%), on-the-job training (€ 370, 11%), and mentoring (€ 210, 7%).

These valuations are large—in line with the existing literature findings that workers exhibit sizable valuations of a diverse number of non-wage amenities (Mas and Pallais, 2017; Wiswall and Zafar, 2018; Maestas et al., 2023). When available, we find that our estimates are similar in magnitude or slightly larger than existing measures. This might be due to (i) the slightly different elicitation method we use, (ii) cross-country differences, or (iii) different degrees of measurement error between studies. Importantly, our main research question—whether firms underestimate workers' valuations of non-wage amenities—is insensitive to level effects, as we compare workers and firms using the same elicitation method.

Validation. To further validate our measure of workers' valuations, we also elicited workers' job satisfaction and the probability of quitting their current job in the next 12 months. Appendix Table E.1 shows that workers who receive a given amenity report higher job satisfaction, as workers with a given amenity are 9 percentage points more satisfied at their workplace. They are also less likely to plan to quit their job—by between 5 to 6 percentage points less—highlighting the validity of our measure and the relevance of amenities for workers.

4.2 Firms Underestimate Workers' Valuations of Amenities

We now turn to our main result. *Do firms know what workers want*? Are managers' beliefs about workers' valuations unbiased, as suggested by the classical model?

Firms underestimate workers' valuations. Figure 1 displays our main result. The x-axis displays workers' average valuation of each amenity, while the y-axis represents firms' beliefs about workers' valuations. The dotted 45-degree line characterizes all values in which beliefs and valuations coincide. The classical model would predict that all values in the belief-valuation space are positioned on this line. A value above the line means that firms overestimate workers' valuations, while a value below the line implies that firms underestimate the valuation of non-wage amenities.

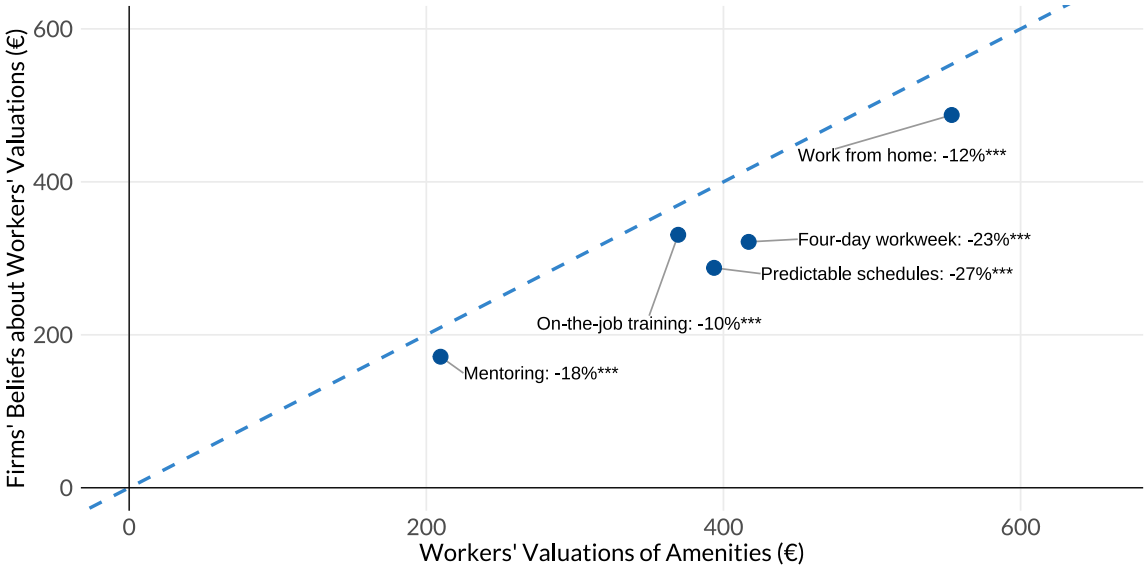
We observe that for each of the five amenities, firms *underestimate* workers' valuations. These misperceptions are economically significant in magnitude: for predictable schedules, the difference is €106 (27% smaller than workers' valuations); for work from home, €66 (12%); for on-the-job training €39 (11%); for mentoring €38 (18%) and for a four-day workweek €95 (23%).

Table 1 replicates this result in a regression format. Panel A shows that managers, when not controlling for occupation fixed effects, significantly underestimate workers' amenity valuations across all amenities. Pooling across amenities, firms undervalue workers' valuations by an average of € 68 (18%). Panel B controls for occupation fixed effects by comparing managers' beliefs with the average valuations of workers within the same occupational group. This yields similar estimates. If anything, the belief-valuation gap slightly increases under this specification—from € 68 to € 73. For additional robustness exercises, see Section 4.7.

Comparison to expert forecasts. To compare our results to other researchers' prior beliefs, we additionally fielded a forecasting survey on the *Social Science Prediction Platform* (DellaVigna et al., 2019). Between November 2025 and January 2026, N = 76 researchers submitted predictions about whether firms would underestimate, correctly perceive, or overestimate workers' valuations for each amenity. Recent evidence shows that aggregated forecasts tend to be directionally accurate—the "wisdom of the crowd" often holds even in complex empirical settings (DellaVigna and Pope, 2018; DellaVigna and Vivalt, 2025; Evans et al., 2026).

Appendix Figure A.4 reveals that, for each amenity, experts exhibit substantial disagreement. For none of the amenities, a majority chooses underestimation; the shares predicting underestimation are 47% for predictable schedules, 42% for work from home,

Figure 1: Firms underestimate workers' valuations of non-wage amenities



Notes. This figure displays workers' average valuation of amenities (x-axis) and firms' beliefs about workers' valuation (y-axis). Each dot in the x-y space corresponds to the average valuation and belief about one of the following amenities: *predictable schedules*, *work from home*, *on-the-job training*, *mentoring*, and a *four-day workweek*.

Table 1: Firms underestimate workers' valuations of non-wage amenities

	Beliefs and Valuations					
	Predictable schedules	Work from home	On-the-job training	Mentoring	Four-day workweek	Pooled
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: No Fixed Effects						
Manager	−106.139***	−66.212***	−38.769***	−38.250***	−95.453***	−68.736***
	(11.745)	(17.113)	(10.944)	(8.541)	(10.644)	(7.372)
Average Worker Valuation	393.697***	553.637***	369.552***	209.593***	416.977***	375.990***
	(6.782)	(9.371)	(5.141)	(3.932)	(5.638)	(3.883)
Observations	3,963	2,555	3,962	3,963	3,964	18,407
R^2	0.013	0.004	0.003	0.005	0.015	0.007
Panel B: Occupation Fixed Effects						
Manager	−100.590***	−75.936***	−47.896***	−45.275***	−97.929***	−73.866***
	(11.877)	(17.001)	(11.123)	(8.804)	(10.950)	(7.357)
Occupation FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,963	2,555	3,962	3,963	3,964	18,407
R^2	0.027	0.039	0.014	0.013	0.023	0.017

Notes. OLS estimates, Columns (1)–(5) robust standard errors, Column (6) clustered robust standard errors in parentheses. The dependent variable in each column is the valuation of workers / belief of managers about workers' valuations in euros. *Manager* is an indicator taking value 1 if the respondent is a manager, that is, a belief is measured and 0 if the respondent is a worker, that is, a valuation is measured. Columns (1)–(5) refer to different amenities: *predictable schedules*, *work from home*, *on-the-job training*, *mentoring*, and the *four-day workweek*. Column (6) reports specifications that pool all amenities. Panel A presents estimates without fixed effects. Panel B includes occupation fixed effects defined at the aggregated KldB 2-digit level (14 occupational groups). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

13% for on-the-job training, 16% for mentoring, and 28% for the four-day workweek.[9]

[9]Only one respondent correctly predicted our main result—underestimation across all amenities.

This disagreement between experts and across amenities suggests that our results move priors.

Result 1. *Firms underestimate workers' valuations of non-wage amenities. These misperceptions are economically sizable: on average, firms' beliefs are 18% lower than workers' true valuations.*

4.3 Validation

Beliefs predict provision. Are these beliefs relevant for firms' amenity provision decisions? For example, offering amenities might be prohibitively costly so that workers' valuations are not relevant to managers. To validate that the beliefs we measure are actually relevant for the firms when setting a wage-amenity bundle, we investigate the relationship between firms' beliefs about workers' valuations and their amenity provision decision.

Figure A.5 displays this relationship. On the x-axis, we plot firms' beliefs about workers' valuations of non-wage amenities. On the y-axis, we plot the share of firms offering the amenity. A slope of zero would mean that there is no association between firms' beliefs and their actual decisions, while a positive slope implies that higher beliefs are associated with a greater likelihood of offering the amenity.

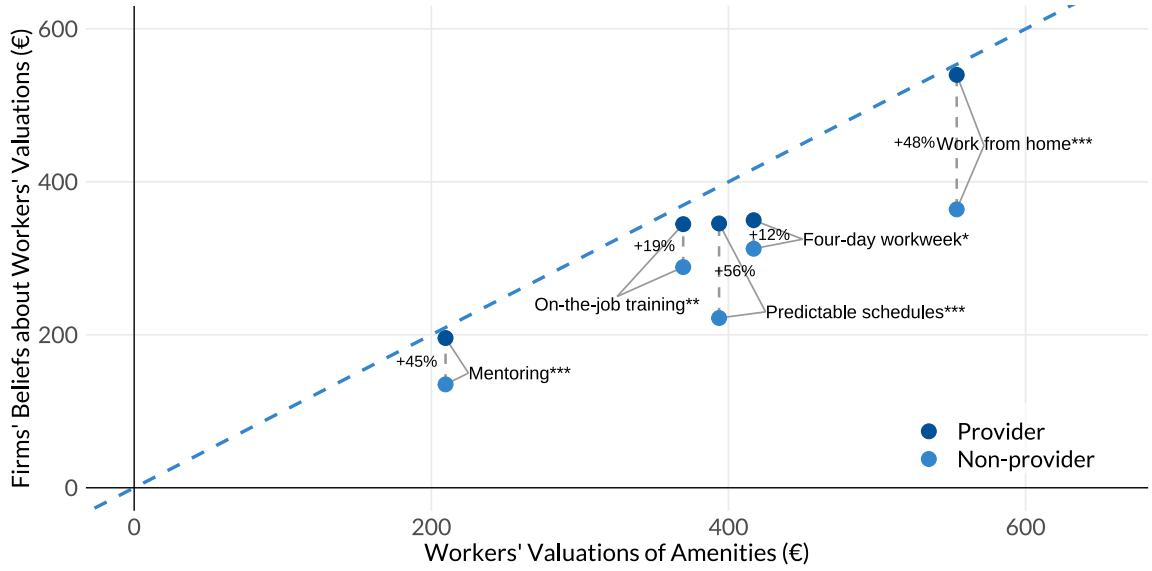
Reassuringly, we find a positive and economically relevant relationship between beliefs and actions: moving from the 25th to the 75th percentile is associated with an increase in the likelihood of adopting a specific amenity of 10.14%.

Appendix Table A.1 displays this result in a regression format, separately for each amenity. We observe a statistically significant relationship between beliefs and amenity provision for each amenity.

Decomposing beliefs. We next split firms into non-adopters and adopters on the firm-amenity level. This allows us to investigate whether firms that offer an amenity have on average correct beliefs—or also underestimate workers' valuations. Figure 2 plots workers' valuations on the x-axis and managerial beliefs about workers' valuations on each on the y-axis—separately by the firms' amenity provision policy. We find that, for each amenity, non-providing firms hold significantly lower beliefs about workers' valuations compared to providing firms. This disparity is particularly pronounced for work-from-home arrangements, where providing firms' average beliefs are approximately 48% higher than those of non-adopters.

Appendix Table A.2 shows that the beliefs held by providing firms are substantially closer to workers' valuations. This pattern holds across all amenities considered: for instance, non-adopters' beliefs are, on average, € 38 lower than adopters' for a four-day

Figure 2: Adopting firms hold less biased beliefs than non-adopters



Notes. This figure displays workers' average valuation of amenities (x-axis) and firms' beliefs about workers' valuation (y-axis). Blue dots represent firms adopting the amenity, while grey dots represent non-adopting firms. Each dot in the x-y space corresponds to the average valuation and belief about one of the following amenities: *work from home*, *four-day workweek*, *mentoring*, *on-the-job training*, and *predictable schedules*.

workweek and € 177 lower for work from home. Further, although adopters' beliefs are on average lower than workers' valuations of mentoring and working from home, these gaps are statistically indistinguishable from zero, suggesting that providing firms' beliefs are largely accurate in these two dimensions.

4.4 Heterogeneity

Works councils. Worker representation, e.g., via unions or works councils, affects firms' behavior in a multitude of ways (Jäger et al., 2021; Budde et al., 2024; Corradini et al., 2025). In our setting, works councils might serve as an intermediary between workers and firms to enhance the flow of information between both groups: it would be easier for workers to voice their preferences to firms. Under this hypothesis, we would expect that managers in firms with works councils hold less biased beliefs. To test this channel, we asked both managers and workers whether their firm has the works council institution. Works councils are prevalent in our sample, but not adopted by all firms: 14% of all asked firms have works councils. Importantly, this is not driven by mandatory regulations: firms in Germany are not mandated by law to implement works councils.

Appendix Table A.3 Columns (1)–(5) report the results for each amenity separately and reveal no systematic pattern linking works council presence to the magnitude or direction of belief biases. Column (6) presents the overall difference in belief biases

between firms with and without works councils. On average, managers in firms with works councils exhibit belief biases that are € 2 larger than those observed among managers in firms without such representation. However, this difference is not statistically significant; we fail to reject the null hypothesis that the presence of a works council is associated with increased bias in managerial beliefs ($p = 0.92$).

Taken together, the limited economic magnitude of the estimated differences and their lack of statistical significance suggest that works councils do not meaningfully mitigate—or exacerbate—managerial misperceptions of worker valuations in this context.

Occupations. Appendix Figure A.6 examines heterogeneity across occupations, aggregated at the occupational group level, comprising 14 distinct categories. This aggregation is employed to ensure sufficient statistical power within each group.

We find a significant underestimation for 13 out of 14 categories. The three groups with the most pronounced underestimation are Agriculture and Forestry, Security, and Transport and Logistics. Notably, these occupations are typically characterized as manual, low-wage, and offering limited opportunities for individual discretion or customization in job roles. In contrast, respondents in Social and Cultural Services hold on average close to unbiased beliefs.

Firm size. We next examine heterogeneity by firm size. Two countervailing forces may be at play: larger firms may have greater resources to learn about workers' valuations, while managers at smaller firms may interact more closely with their employees, improving information flow from workers to managers.

Appendix Table A.4 reports estimates of our main misperception specification separately by firm size. Misperceptions remain statistically significant in every size category, and the firm-worker gap is remarkably stable in magnitude. Notably, the estimated misperception among the smallest firms (1–9 employees) is nearly identical to that among the largest (250+ employees): 72.3 euros versus 72.2 euros.

Demographics. Finally, we examine the relationship between managerial demographics—specifically age, gender, and organizational role—and misperceptions about workers' valuations.

Appendix Table A.5 presents the corresponding regression estimates. We find that male managers have significantly larger misperceptions. On average, their estimates are 30 euros lower than those of their female counterparts, implying a 54% greater bias relative to women.

Column (2) reveals that younger managers (age 35 or younger) are less biased than older managers. In fact, younger managers' beliefs are on average 31 euros (39%) closer

to the truth than older managers' beliefs.

With respect to occupational roles, there is no significant difference in bias between owners and general managers. However, HR professionals appear to have a more accurate understanding of workers' valuations, slightly less biased beliefs, by 13 euros or 17%. However, these differences are not statistically significant at any conventional level.

4.5 Synthetic Workers: Comparing Apples to Apples

A natural concern. An alternative explanation for the observed misperceptions is that firms hold correct beliefs about the relevant workers they actually interact with. While firms may appear biased relative to the national average worker in their occupation, they might instead hold accurate beliefs about workers in their most relevant reference groups—their own workforce or the local labor market.

Synthetic workers: design. To assess this possibility, we construct "synthetic workers" that reflect firm-specific reference populations. Using the linked administrative employer-employee data (IEB), we first recover the demographic and job composition of each firm's workforce over the last ten years. Specifically, we use information on gender, age, industry, two-digit occupational group, salary, and location to predict workers' valuations for each of the five amenities.

We estimate these predicted valuations using two alternative approaches. First, we implement a simple linear model that flexibly relates observed worker characteristics to stated amenity valuations in the survey data. Second, we use an XGBoost model, a gradient-boosted decision tree algorithm that allows for non-linearities and high-dimensional interactions between worker characteristics without requiring them to be specified ex ante. This machine-learning approach provides a more flexible prediction benchmark and serves as a robustness check against functional-form assumptions.

We then apply both models to the universe of workers in the IEB who have been employed for at least one day in the years 2014 to 2024 in one of our firms—allowing us to study both firms' current and previous workforces. For each of the 70,724 distinct workers in this sample, we predict valuations for all five amenities, yielding a firm-specific distribution of synthetic worker valuations. Aggregating these predictions within firm provides a benchmark that reflects the types of workers the firm has historically employed and observed.

We repeat the same exercise at the level of local labor markets. Using administrative data from the *Sample of Integrated Labor Market Biographies* (SIAB) on regional employment, we construct local labor market cells defined by two-digit occupation × commuting zone × two-digit industry cells. For each firm, we characterize its typical

hiring environment by the modal gender and the median age and salary observed in its commuting zone–industry–occupation cell. Using the same linear and XGBoost models, we predict amenity valuations based on these local labor market characteristics. This yields a second synthetic benchmark that reflects the workers firms are most likely to encounter in their relevant external labor market.

Comparing firms' stated beliefs to these firm-level and local labor market synthetic benchmarks allows us to assess whether measured misperceptions persist once beliefs are evaluated relative to the workers firms are most likely to observe and hire.

Synthetic workers: results. Table 2 reports results for synthetic workers, focusing on all individuals currently employed at the respective firms. Reassuringly, firms' misperceptions remain robust: managers systematically underestimate workers' valuations, with estimated gaps that are consistently statistically significant. Results are qualitatively similar across both the linear model (Columns (1)–(3)) and the XGBoost prediction model (Columns (4)–(6)).

Appendix Table A.6 extends the analysis. Panel (A) replicates the exercise for all workers employed at the firm at any point in the past ten years. Panel (B) restricts the sample to workers hired in the past two years (2023–2024), targeting the most recent and potentially marginal hires, who are especially relevant for current hiring decisions. Panel (C) shifts the analysis to synthetic workers constructed at the local labor market level. Across all panels, the pattern of underestimation persists, reinforcing the conclusion that firms' misperceptions are not an artifact of the benchmark used for comparison.

Taken together, these findings suggest that the observed misperceptions are not driven by the choice of reference group. Instead, they persist even when beliefs are evaluated relative to narrowly defined and economically salient comparison populations.

4.6 Inattention Cannot Explain Underestimation Across Amenities

The role of inattention. A standard concern with survey data is that respondents may be inattentive, potentially biasing the resulting estimates. In our setting, a fully inattentive respondent might randomly choose between job A and job B in each round (Mas and Pallais, 2017). Importantly, measurement error caused by such inattention alone does not necessarily bias our estimates, as we use an identical elicitation method for both workers and managers. We will illustrate the effects of this form of inattention on our results for three cases: (i) symmetric inattention, (ii) inattentive managers, and (iii) inattentive workers.

Table 2: Underestimation: robustness to synthetic workers

	Beliefs and Valuations					
	Linear			XGBoost		
	(1)	(2)	(3)	(4)	(5)	(6)
Manager	−70.279***	−67.374***	−67.613***	−49.170**	−43.072***	−43.920***
	(22.789)	(8.497)	(8.502)	(20.952)	(8.509)	(8.495)
Constant	388.711***	480.916***	480.524***	367.602***	406.427***	404.290***
	(21.291)	(8.138)	(8.026)	(19.297)	(10.309)	(10.233)
Firm Controls	No	Yes	Yes	No	Yes	Yes
Occupation FE	No	Yes	Yes	No	Yes	Yes
Firm FE	No	No	Yes	No	No	Yes
Observations	87,184	87,184	87,184	87,184	87,184	87,184
R^2	0.005	0.180	0.180	0.002	0.176	0.176

Notes. OLS estimates with firm- and worker-clustered robust standard errors in parentheses. The dependent variable is the individual-level belief or valuation (in euros) for a given amenity. Worker valuations on the supply side are imputed using either a linear model or an XGBoost model, as indicated in the column headings. The main independent variable, *Manager*, is an indicator equal to 1 if the respondent is a manager and 0 if the respondent is a worker. Specifications progressively include firm-level controls (industry, firm size, and location), two-digit occupation fixed effects, and—in columns (3) and (6)—firm fixed effects, so that identification in these columns comes from within-firm comparisons between managers' beliefs and workers' valuations. The sample consists of all workers currently employed at the respective firms and pools all amenities. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Symmetric inattention. If the share of inattentive respondents is equal among workers and managers, inattention unambiguously reduces the difference between managers' beliefs and workers' valuations, making inattention per se not a concern for the validity of our results.

Appendix Figure D.1 illustrates the implications of symmetric inattention. Panel (a) displays the original data; Panels (b)–(d) gradually inject simulated inattentive agents into both the worker and manager samples. As the share of inattentive agents increases, the within-amenity variation in valuations and beliefs becomes compressed: both valuations and beliefs converge towards the mean of € 450. Thus, symmetric inattention cannot explain our main result.

Asymmetric inattention: managers. We next analyze the consequences of *asymmetric inattention*, i.e., one of the groups—workers or managers—is more inattentive than the other.

If managers are more inattentive than workers, inattention would systematically distort the belief distribution. Specifically, for amenities perceived as less desirable, beliefs would be inflated relative to actual valuations; for highly valued amenities, beliefs would be deflated. Appendix Figure D.2 illustrates this by gradually adding simulated

inattentive managers to the sample. However, since four out of five amenities in our study are valued below the mean (€ 450), this form of asymmetric inattention would generate a consistent *overestimation pattern* for most amenities, while not explaining the underestimation for the highly-valued *work from home*. Crucially, such a pattern cannot account for our findings, as it is the exact opposite of the *underestimation pattern* we find.

Asymmetric inattention: workers. If instead workers are more inattentive than managers, we would expect the opposite pattern: a positive relationship between the degree of overestimation and the workers' valuations. This happens because inattentive workers would inflate the valuation of less desirable amenities. This scenario is illustrated in Appendix Figure D.3, where we gradually inject inattentive respondents into the worker sample.

We develop a direct test for this potential confound. We examine whether the distribution of worker valuations, denoted by $F(v)$, can be generated by a convex combination of the distribution firm beliefs, $W(v)$, and a component $U(v)$ representing inattentive agents who choose randomly. Specifically, we test the hypotheses:

$$H_0 : F(v) = \eta \cdot U(v) + (1-\eta) \cdot W(v), \tag{1}$$

$$H_1 : F(v) \neq \eta \cdot U(v) + (1-\eta) \cdot W(v), \tag{2}$$

where $v \in V = \{75, 125, \ldots, 825\}, \eta \in [0,1]$ denotes the share of inattentive respondents, and $U(v)$ is the cumulative distribution function of the discrete uniform distribution over the support V. The functions $F(v)$ and $W(v)$ are the respective cumulative distribution functions for each group.

To evaluate the null hypothesis, we conduct a Kolmogorov-Smirnov (KS) test that compares the empirical distribution of valuations from the worker side, $F(v)$, to the mixture distribution $\eta \cdot U(v) + (1-\eta) \cdot W(v)$ across the full range of $\eta \in [0,1]$. Appendix Figure D.4 reports the test results for each amenity separately. We find that for all five amenities the KS-test rejects the null hypothesis for all levels of inattention η. That is, no convex combination of firms' distribution and inattentive agents can replicate the distribution of worker valuations.

4.7 Additional Robustness

Incentives do not decrease workers' stated valuations. A potential concern about the survey design is that workers' responses are not incentivized. In particular, workers might overstate their valuations of non-wage amenities in the absence of incentives.

To address this concern, we fielded a robustness survey in October 2026 via *Bilendi* (N = 995). We randomly assigned respondents either to an *Incentive* group, in which workers received information about job postings matching their preferences (Kessler et al., 2019), or to a *No Incentive* group, which was identical to our main worker survey.

Appendix Table A.9 displays the results of regressions of workers' valuations on an *Incentive* dummy. Reassuringly, we find that incentives do not affect workers' stated valuations: the point estimates are small for all amenities, and for three amenities they are even positive. For none of the amenities can we reject the null hypothesis that incentives do not affect workers' stated valuations of amenities.

Alternative specifications. Appendix Figure F.1 replicates the main figure while reweighting the supply-side averages to match the occupational and wage distributions observed on the demand side. The results remain robust across all reweighting schemes employed. Appendix Table A.7 further demonstrates that the pooled main findings persist after controlling not only for wages and occupations, but also for additional firm- and individual-level characteristics. Moreover, Appendix Table F.2 presents robustness checks addressing alternative treatments of distributional tails. These specifications confirm a consistent and statistically significant pattern of underestimation, regardless of how the tails are modeled.

Further, one potential concern with our empirical strategy is the possibility of comparing dissimilar units—i.e., "apples to oranges"—due to the current specification of occupation categories. To address this issue, we assess the robustness of our results using alternative, coarser and more fine-grained definitions of occupational and sectoral classifications. Appendix Table A.8 presents estimates obtained using three different levels of occupation fixed effects: occupational segments, our preferred specification (14 categories) occupational groups (37 categories), and occupational sectors (5 categories). Across all specifications, the main findings remain consistent, indicating a systematic underestimation of supply-side valuations across amenities.

Mean / Mode / Marginal. We examine whether managerial beliefs about worker valuations vary depending on the type of worker under consideration. To this end, we randomly assigned each firm to report beliefs for one of three categories: the next worker they expect to hire (marginal worker), the average worker (mean), or the majority of their current workforce (mode). As shown in Appendix Table A.10, we find that firms' beliefs are largely consistent across these categories; the gap between stated beliefs and actual worker valuations remains relatively stable. This suggests that managers expect marginal, average, and majority workers to have broadly similar amenity valuations.

Additional robustness checks. We conduct several additional robustness checks. The main results are summarized in the text, with full details provided in Appendix Table A.11. In each specification, we compare managers' misperceptions across various subgroups, pooling all amenities together.

Column (1) restricts the sample to survey respondents who are firm owners; Column (2) includes only those who actively determine their firm's amenity provision policy, Column (3) focuses on firms currently engaged in hiring. Column (4) removes the managers with the 5% lowest response durations, Column (5) focuses on respondents who correctly completed the comprehension check, while Column (6) removes respondents who self-reported to have exerted low effort in the survey. Across all specifications, our central finding remains robust: managers systematically underestimate workers' valuations of non-wage amenities.

Appendix Table F.1 reweights firms and workers to match relevant population distributions. First, we reweight workers to be representative of German employees by occupation, gender, and age, using administrative employment records. Second, we reweight the manager survey to reflect the distribution of German firms by firm size and occupation. Third, we combine these weights to jointly reweight both sides of the market. We implement the weighting using a standard raking algorithm. The pattern remains unchanged: across all amenities, firms consistently underestimate workers' valuations.

5 Mechanism: Why Do Managers Hold Biased Beliefs?

An immediate question follows from the observed misperceptions: *why are firms systematically biased?* Classical theories of wage-setting behavior predict that firms hold rational beliefs about workers' valuations—especially when systematic bias would lead to significant deviations from profit maximization.

In this section, we propose and test an explanation for this empirical fact: managers are subject to *interpersonal projection*—when forming beliefs about workers' valuations, managers project their own preferences onto workers. A necessary condition for this bias to have significant impact on their belief formation is that managers differ systematically from workers in their valuations. We first confirm this condition in our data: managers value amenities less than workers do. We then show that firms' beliefs are systematically biased towards their own valuations.

5.1 Preliminary Step: Managers and Workers are Different

Managers' valuations. To investigate whether managers differ from workers in their *own* valuations of non-wage amenities, we implemented a question in the firm survey

measuring managers' own valuation of one randomly selected amenity. We prompted managers to choose between the two jobs if they had to, allowing us to recover their valuation of one of the amenities. Specifically, we asked:

> *We would like to show you one of the additional amenities mentioned earlier. Now, we want to know which job you would prefer if you were currently choosing between the two offers.*

Managers value amenities less than workers. We next compare managers' own preferences to workers' valuations. Appendix Figure A.7 recreates our main figure using managers' own valuations on the y-axis; the x-axis once again represents workers' own valuations.

Similar to their stated beliefs, we find that managers' own valuations are lower than those of workers for 4 out of 5 amenities. For predictable schedules, the difference is €88 (22%); for work from home, €96 (17%); for on-the-job training €12 (3%), and for a four-day workweek, €137 (33%). Managers have slightly higher but non-significant valuations of mentoring compared to workers (€8; 4%). Appendix Table A.12 replicates these findings in a regression framework.

Why are managers' valuations different? Members of a firm are not homogeneous across the job ladder. To become a manager or even an owner of a firm, several years of training and hard work often are a prerequisite.

We characterize how managers and workers differ in our sample. We observe that managers on average are older than workers: in our sample, the average manager is over 50 years old, while workers are 42 years old on average ($p < 0.01$). Similarly, managers are much more likely to be male (71%) than workers (49%), which is again a statistically significant difference ($p < 0.01$).

5.2 Mechanism: Interpersonal Projection

Taking the perspective of others is difficult. As workers' preferences are not directly observable, managers have to mentally simulate how workers value amenities (Bordalo et al., 2025, 2026a,b). Both psychologists (van Boven et al., 2000; van Boven and Loewenstein, 2003) and economists (Bushong and Gagnon-Bartsch, 2024; Gagnon-Bartsch and Rosato, 2024) have noted that beliefs about others' preferences are often biased towards one's own preferences. We propose that managers in our setting are subject to this *interpersonal projection*: forming beliefs about workers' valuations of non-wage amenities is a highly complex task. As a response to this complexity, managers might use their own valuations—which might be more easily available to them—as a

benchmark to form their beliefs. Such a projection would predict that a manager's stated belief is biased towards their own valuations.

Formalizing interpersonal projection. Formally, a manager exhibiting interpersonal projection will form a belief $\hat{v}$ about workers' valuation that depends on the manager's valuation v_{own} and workers' true valuation v_{worker}:

$$\hat{v} = \alpha v_{\text{own}} + (1-\alpha) v_{\text{worker}}, \tag{3}$$

where the parameter $\alpha \in [0,1]$ measures the degree of projection. A value of $\alpha = 1$ represents full projection: workers' valuations are irrelevant for the manager's belief, which is equal to their own valuation. In contrast, a value of $\alpha = 0$ is the case of no projection: the manager correctly perceives workers' valuations, nesting the classical model as a special case into the model, as it is common in the tradition of Behavioral Economics (Rabin, 2013). Intermediate values of α indicate partial projection, where managers' beliefs are a weighted average of their own and workers' actual valuations.

Evidence for interpersonal projection. Next, we present evidence that managers' own preferences play a role in their belief formation. Figure 3 displays managers' own valuations on the x-axis and their beliefs about workers' valuations on the y-axis. If managers' beliefs were unrelated to their own valuations, the slope in the figure would be zero. If, however, managers are subject to interpersonal projection, we would expect the slope to be positive.

Consistent with our hypothesis, we document a positive relationship between managers' own valuations and their beliefs about workers' valuations. Specifically, a one-euro increase in a manager's stated valuation corresponds to a € 0.51 increase in their belief about the average worker's valuation ($p < 0.01$).

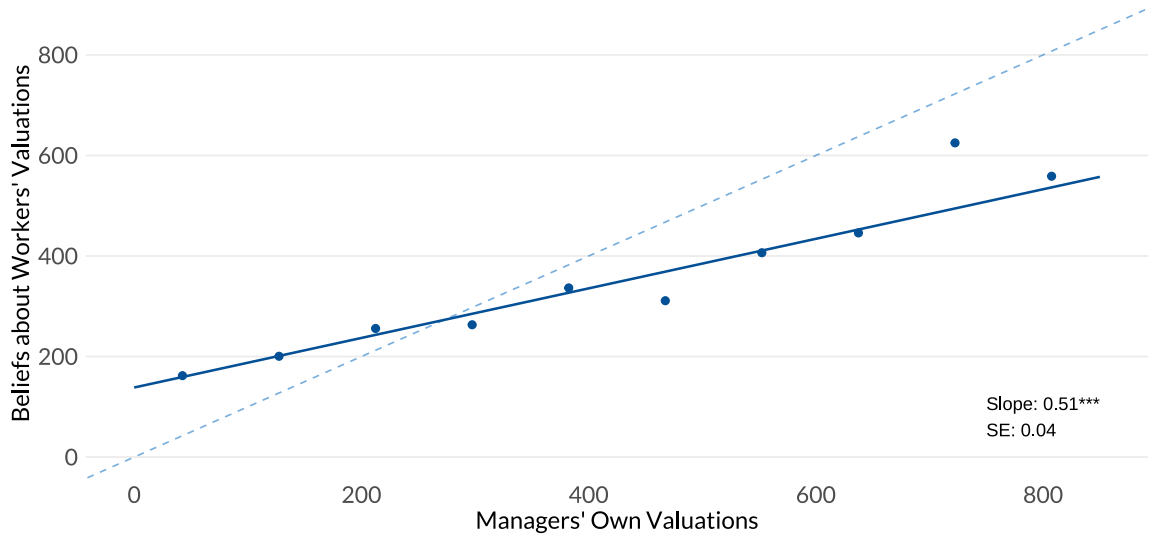
This relationship is not only statistically significant but also economically meaningful: managers' own valuations account for 33 percent of the variation in their beliefs.

Table 3 presents the corresponding regression estimates with a rich set of controls added sequentially. The coefficient of managers' own valuation is remarkably stable across specifications. Moreover, the joint incremental R^2 from treatment fixed effects, gender, age, gender-by-age fixed effects, and occupation is only 8.3%—less than one quarter of the explanatory power of managers' own valuations.

Appendix Figure A.8 displays this relationship separately for each amenity, confirming that managers engage in interpersonal projection across all amenities. Appendix Table A.13 Panel (A) replicates this finding in a regression format—for every amenity, the relationship is statistically significant at any conventional level. Appendix Table A.13

Panel (B) demonstrates that these results are robust to the inclusion of a rich set of controls.

Figure 3: Managers' own valuations predict their beliefs



Notes. This binscatter plot displays managers' own average valuation of amenities (x-axis) and managers' beliefs about workers' valuation (y-axis). Each dot corresponds to the average manager belief in a specific bin of manager valuations in one of the following amenities: *predictable schedules*, *work from home*, *on-the-job training*, *mentoring*, and a *four-day workweek*.

Directly estimating α. The interpersonal projection framework yields a simple expression for α. Rearranging Equation 3 gives:

$$\alpha = \frac{v_{\text{worker}} - \hat{v}}{v_{\text{worker}} - v_{\text{own}}}, \tag{4}$$

This highlights a useful property of our data: as we measure the manager's belief $\hat{v}$ and valuations v_{own} on the individual level, we can use the average worker's valuation v_{worker} to construct an individual estimate of α for each manager. Recall that under no projection, α is equal to 0, while under full projection $\alpha = 1$.

Appendix Figure A.9 plots the distribution of α we estimate from the manager data. We find that a substantial share (29%) of managers exhibit $\alpha = 1$, i.e., their own valuations and their beliefs about workers' valuations are identical. Appendix Figure A.10 displays that there is very little heterogeneity in the degree of projection between amenities.

Result 2. *We find evidence for interpersonal projection as a driver of firm beliefs: a € 1 increase in own valuations is associated with an increase of € 0.51 in beliefs about workers' valuations. Managers' own preferences explain 33% of the variation in beliefs. A substantial share (29%) of managers exhibits full projection.*

Table 3: Managers' own valuations predict their beliefs

	Belief about Worker Valuation					
	(1)	(2)	(3)	(4)	(5)	(6)
Own Valuation	0.512***	0.462***	0.464***	0.465***	0.462***	0.450***
	(0.040)	(0.039)	(0.040)	(0.040)	(0.040)	(0.040)
Constant	142.464***	137.485***	143.705***	136.955***	229.892***	175.215***
	(12.207)	(19.165)	(23.866)	(37.009)	(60.060)	(64.562)
Amenity FE	No	Yes	Yes	Yes	Yes	Yes
Gender FE	No	No	Yes	No	Yes	Yes
Age FE	No	No	No	Yes	Yes	Yes
Gender × Age FE	No	No	No	No	Yes	Yes
Occupation FE	No	No	No	No	No	Yes
Average Belief	309.73	309.73	307.92	307.92	307.92	307.92
Observations	758	758	742	742	742	742
R^2	0.329	0.389	0.386	0.385	0.389	0.412

Notes. OLS estimates, robust standard errors in parentheses. This table shows results from regressions of managers' beliefs on their own valuation conditional on the same amenity. Columns (1)–(6) sequentially add controls. Column (1) reports the raw pass-through from own valuations to beliefs. Column (2) adds amenity fixed effects. Column (3) further includes a gender indicator, column (4) adds a continuous age control, column (5) adds gender–age interactions, and column (6) additionally controls for occupation fixed effects.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Robustness. A concern with eliciting both beliefs and managers' own valuations is that the first response could mechanically influence the second—for example through numerical anchoring. To test for such order effects, we randomized the order of the two elicitations. In the *Beliefs First* condition (80% of the sample), managers reported their beliefs before stating their own valuations; in the *Beliefs Second* condition (20%), this order was reversed. If the order mattered, we would expect the distribution of managers' valuations to differ across these two conditions. Appendix Table A.14 shows that this is not the case: although the estimated IPB slope is slightly smaller in the *Beliefs Second* condition, the difference is not statistically significant. This indicates that the elicitation order does not systematically affect managers' stated valuations.

To assess the potential for anchoring directly, we conduct another test. Appendix Figure A.11 plots the average estimated α—our measure of projection—by the distance (in number of intervening questions) between the elicitation of a manager's own valuations and their beliefs about workers' valuations for that amenity. If numerical anchoring were driving the results, we would expect α to be highest when this distance is small. Contrary to this prediction, we find no systematic relationship between distance and the estimated α. If anything, the values of α are smallest at both minimal and maximal distances, consistent with the absence of a mechanical anchoring effect.

6 Consequences: A Model of Amenity Misperceptions

We develop a simple model to illustrate the economic consequences of firms' misperceptions about workers' preferences over non-wage amenities. The framework links biased beliefs to observable labor-market outcomes and yields predictions testable in our data.

We begin with a benchmark in which two firms compete for workers while holding correct beliefs about workers' valuations. We then allow one firm to *underestimate* workers' marginal utility of amenities, consistent with our empirical evidence. This misperception leads the biased firm to provide fewer amenities than the unbiased firm. The unbiased competitor, in turn, gains market power and lowers wages below the benchmark level. The resulting equilibrium is inefficient: the biased firm experiences labor shortages and has inefficiently high labor costs. All workers are worse off—those at the biased firm receive fewer amenities, and those at the unbiased firm receive lower wages. We later test these predictions empirically.

6.1 Summary of Assumptions, Implications, and Intuitions

Two horizontally differentiated firms compete for workers by offering wage-amenity bundles. Providing either component is costly, and workers value both. The key assumption is that one firm may underestimate workers' marginal utility of amenities. We compare market outcomes when both firms are unbiased with a scenario in which one firm holds biased beliefs.

When both firms are unbiased, a symmetric equilibrium arises: each offers the same wage-amenity bundle and attracts half of the workforce. When one firm underestimates workers' valuations, it *underprovides* amenities and offers a suboptimal bundle. The immediate consequence is labor shortages at the biased firm—it attracts fewer workers than anticipated. The unbiased firm benefits from its rival's reduced competitiveness and optimally lowers its wage below the competitive benchmark. As a consequence, anti-competitive *contamination* occurs: *all* workers become worse off. Those employed by the biased firm receive fewer amenities, while those employed by the unbiased firm receive lower wages. Firm-level misperceptions thus generate monopsony power at the market level.

In the longer run, these wage-amenity bundles can persist. Observing continued hiring difficulties, the biased firm negatively updates about the labor-market conditions, leading it to believe that there is only a small mass of workers available in the market, resulting in a stable Berk-Nash Equilibrium.

6.2 Setup

General setup. We consider two firms, A and B, located at opposite ends of a unit interval, competing for workers. Workers are uniformly distributed along the interval and differ in their idiosyncratic preferences for the two firms: the closer a worker's position to a firm is, the lower the worker's disutility of working for that specific firm. Each firm i simultaneously chooses a wage-amenity bundle (w_i, a_i). Worker x selects the firm offering higher utility, i.e., $U_A(x) > U_B(x)$.

We focus on equilibria with full employment, both firms active, and interior solutions for (w_i, a_i).

Workers. A continuum of workers with mass ϕ is uniformly distributed on a unit interval, i.e., $x \sim U[0,1]$. When employed at a firm at location Λ, worker x derives utility

$$U(x) = w + \theta v(a) - \tau|x - \Lambda|, \tag{5}$$

where w denotes the wage and $\theta v(a)$ utility from amenities with $\theta \in [0,1]$; a is the amenity level, and $v(\cdot)$ is increasing and concave with $v'(a) > 0$, $v''(a) < 0$, and $v'(0) > 1$. The parameter $\tau \geq 0$ governs the degree of horizontal differentiation.

When $\tau = 0$, workers are indifferent between firms apart from compensation and simply choose the firm offering the preferred wage-amenity bundle. For $\tau > 0$, workers also have idiosyncratic preferences—reflecting, for instance, differences in task enjoyment or variation in the effort required to achieve a given productivity level.

Firms. Two firms, A and B, are located at opposite ends of the unit interval: firm A at 0 and firm B at 1. Each firm $i \in \{A, B\}$ competes for workers by simultaneously setting a wage-amenity bundle $(w_i, a_i) \in \mathbb{R}^2_+$ to maximize profits

$$\pi_i(w_i, a_i, w_{-i}, a_{-i}) = (y - w_i - a_i)\, \phi\, L_i(w_i, a_i, w_{-i}, a_{-i}), \tag{6}$$

where y denotes worker productivity and $L_i(\cdot)$ the share of workers employed by firm i, weighted by the total mass of workers ϕ. Costs for both wages and amenities are linear.

Firms do not observe the effective mass of workers ϕ ex ante but infer it from market outcomes. Intuitively, firms may be uncertain about prevailing labor-market conditions and update their beliefs after observing realized labor supply.

Labor supply. Labor supply to each firm is determined by the location of the indifferent worker. Worker x is indifferent between firm A and firm B when $U_A(x) = U_B(x)$, that is,

$$w_A + \theta v(a_A) - \tau x = w_B + \theta v(a_B) - \tau(1-x). \tag{7}$$

Solving for x yields the location of the indifferent worker:

$$x = \frac{1}{2} + \frac{(w_A + \theta v(a_A)) - (w_B + \theta v(a_B))}{2\tau} =: L_A(w_A, a_A, w_B, a_B). \tag{8}$$

Total labor supply to firm A is then $\phi L_A(w_A, a_A, w_B, a_B)$ and to firm B $\phi(1-L_A(w_A, a_A, w_B, a_B))$. Labor supply to firm i increases in its own wage–amenity bundle and decreases in the competing firm's bundle. The parameter τ captures workers' sensitivity to differences in the two bundles.

6.3 Benchmark: Unbiased Firms

As a benchmark for the subsequent analysis, consider the case in which both firms have correct beliefs about worker preferences and hold priors $\bar{\phi}_i$ over the market size.

Optimal wage-amenity bundle. Each firm i chooses (w_i, a_i) to maximize

$$\pi_i(w_i, a_i, w_{-i}, a_{-i}) = (y - w_i - a_i)\,\bar{\phi}_i \left(\frac{1}{2} + \frac{(w_i + \theta v(a_i)) - (w_{-i} + \theta v(a_{-i}))}{2\tau} \right). \tag{9}$$

With linear costs, the firm equalizes the marginal return to wages and amenities:

$$\frac{\partial U(x)}{\partial w_i} = \frac{\partial U(x)}{\partial a_i}, \tag{10}$$

which implies

$$1 = \theta v'(a_i). \tag{11}$$

Solving for a_i yields

$$a_i^* = a^{BM} = (v')^{-1}(1/\theta), \tag{12}$$

so that the optimal amenity level increases with workers' marginal utility of amenities θ.

The corresponding best-response function in wages is

$$w_i(a_i, w_{-i}, a_{-i}) = \frac{y - a_i - \tau + w_{-i} + \theta[v(a_{-i}) - v(a_i)]}{2}, \tag{13}$$

and symmetry implies identical optimal wages for both firms,

$$w_A^* = w_B^* = w^{BM} = y - a^{BM} - \tau. \tag{14}$$

Wages rise with productivity y and fall with the degree of differentiation τ. As in

the logic of compensating differentials (Rosen, 1986; Mas, 2025), wages and amenities are (imperfect) substitutes. When $\tau = 0$, the market is perfectly competitive and $y = w + a$; for $\tau > 0$, firms exercise market power and set a markdown equal to τ—greater differentiation implies stronger monopsony power.

Equilibrium choices are independent of labor-market size ϕ. Since both firms hold correct beliefs about worker preferences and expect to play the symmetric equilibrium, each correctly anticipates employing $\phi/2$ workers. Observing realized labor supply then allows firms to recover ϕ exactly.

Profits. Substituting w^{BM} into the profit function yields firm-level profits

$$\pi^{BM} = \phi \frac{\tau}{2}. \tag{15}$$

Profits increase in the degree of differentiation τ. When $\tau = 0$, firms make zero profits and the market is perfectly competitive.

Worker surplus. A worker located at x receives surplus $w^{BM} + \theta v(a^{BM}) - \tau|x - \Lambda|$. Exploiting the symmetry of firms, aggregate worker surplus is

$$U = 2\phi \int_0^{\frac{1}{2}} \left[y - a^{BM} - \tau + \theta v(a^{BM}) - \tau x \right] dx, \tag{16}$$

which simplifies to

$$U^{BM} = \phi \left[y - (v')^{-1}(1/\theta) + \theta v((v')^{-1}(1/\theta)) - \tfrac{5}{4}\tau \right]. \tag{17}$$

By strict concavity of $v(\cdot)$, $(v')^{-1}(1/\theta) < \theta v((v')^{-1}(1/\theta))$, implying that $U^{BM} > \phi[y - \frac{5}{4}\tau]$, the surplus that would arise in a setting without amenities. In equilibrium, amenities raise worker welfare: they are a cost-effective means of providing utility, and competition ensures that the resulting gains are fully passed on to workers.

6.4 Introducing a Biased Firm

We now introduce heterogeneity in firm beliefs, departing from the full-information benchmark. In line with our empirical evidence, assume that firm *A underestimates* workers' valuation of amenities, believing that utility from amenities is given by $\tilde{\theta} v(a)$ with $\tilde{\theta} < \theta$.[10]

[10]While a full microfoundation of $\tilde{\theta}$ lies beyond the scope of this paper, we briefly outline how firms may come to underestimate workers' valuations, consistent with the mechanism in Section 5. Specifically, managers may exhibit *interpersonal projection* (Bushong and Gagnon-Bartsch, 2024), anchoring their

Firm A also believes that this valuation applies to both firms, including firm B. Firm B, by contrast, holds correct beliefs about θ and recognizes firm A's misperception. This structure parallels models in Behavioral Industrial Organization (Gabaix and Laibson, 2006; Heidhues and Kőszegi, 2018), where biased agents are unaware of their misperceptions and unbiased agents can exploit these belief distortions. Our core theoretical results—summarized below in Proposition 1—are robust to relaxing the assumption that Firm B knows that firm A is biased.

The biased firm's wage-amenity bundle. Believing it plays the symmetric equilibrium, the biased firm chooses the following wage-amenity bundle:

$$\tilde{w}_A = y - (v')^{-1}(1/\tilde{\theta}) - \tau \tag{18}$$

$$\tilde{a}_A = (v')^{-1}(1/\tilde{\theta}). \tag{19}$$

Since $\tilde{\theta} < \theta$, it follows that $\tilde{a}_A < a_A^{BM}$: the biased firm systematically underprovides amenities relative to the unbiased benchmark.

Best response of the unbiased firm. Firm B correctly perceives workers' preferences and anticipates the biased firm's behavior. Its optimal amenity level satisfies

$$a_B = (v')^{-1}(1/\theta), \tag{20}$$

and given $(\tilde{w}_A, \tilde{a}_A)$, its best-response wage is

$$w_B(a_B) = \frac{y - a_B - \tau + \tilde{w}_A + \theta[v(\tilde{a}_A) - v(a_B)]}{2}, \tag{21}$$

which simplifies to

$$w_B^* = y - \tau - \frac{a_B + \tilde{a}_A}{2} + \frac{\theta[v(\tilde{a}_A) - v(a_B)]}{2}. \tag{22}$$

When firms are symmetric and hold accurate beliefs—that is, $\tilde{\theta} = \theta$ and $\tilde{a}_A = a_B$—this expression collapses to the benchmark wage $y - a^{BM} - \tau$. Hence, the unbiased firm's optimal wage lies below the competitive benchmark whenever its rival underestimates workers' valuation of amenities.

beliefs about worker valuations toward their own. Suppose a manager personally places no value on amenities and partially anchors the firm's perceived worker utility toward this baseline. If the degree of projection is $(1-\alpha)$ with $\alpha \in [0,1)$, the firm perceives amenity utility as $\alpha\theta v(a) + (1-\alpha)\theta 0 = \tilde{\theta} v(a)$, generating the functional form of the model.

6.5 Closing the Model: When are Misperceptions Stable?

The market outcome described above is not a stable Nash equilibrium: from its labor supply, the biased firm could in principle infer the true value of θ, eliminating the bias. To show how misperceptions can persist in the long run, we utilize the appropriate solution concept for models of biased beliefs: *Berk-Nash Equilibrium* (Berk, 1966; Esponda and Pouzo, 2016).

We assume that the biased firm stubbornly believes that $\tilde{\theta}$ describes workers' valuations of non-wage amenities. Given this misspecified model, the firm may misinterpret observed outcomes and form incorrect inferences about other features of the market. When labor supply outcomes deviate from its expectations, it rationalizes the discrepancy by adjusting its belief about the mass of workers in the labor market, denoted $\tilde{\phi} \neq \phi$.

The firm then solves the following maximization problem:

$$\max_{w_i, a_i} \pi(w_i, a_i, w_{-i}, a_{-i}, \tilde{\phi}) = (y - w_i - a_i)\tilde{\phi} L_i(w_i, a_i, w_{-i}, a_{-i}) \tag{23}$$

We next define a Berk-Nash equilibrium for this game.

Definition 1. *A Berk-Nash equilibrium is a tuple* $(\tilde{w}_A, \tilde{a}_A, w_B^*, a_B^*, \tilde{\phi}_A, \phi_B^*)$ *that satisfies the following properties:*

1. *Firm A maximizes its profit given its subjective model* $\tilde{\phi}_A$*:*

$$(\tilde{w}_A, \tilde{a}_A) \in \arg\max_{(w_A, a_A)} \pi_A\big(w_A, a_A; \tilde{w}_B, \tilde{a}_B, \tilde{\phi}_A\big).$$

2. *Firm B maximizes its profit given firm A's behavior:*

$$(w_B^*, a_B^*) \in \arg\max_{(w_B, a_B)} \pi_B\big(w_B, a_B; \tilde{w}_A, \tilde{a}_A, \phi_B^*\big).$$

3. *Both firms hold correct expectations about their labor supply given their subjective models of the labor market conditions:*

$$\tilde{\phi}_A L_A(\tilde{w}_A, \tilde{a}_A, \tilde{w}_B, \tilde{a}_B) = \phi L_A(\tilde{w}_A, \tilde{a}_A, w_B^*, a_B^*)$$

$$\phi_B^* L_B(w_B^*, a_B^*, \tilde{w}_A, \tilde{a}_A) = \phi L_B(w_B^*, a_B^*, \tilde{w}_A, \tilde{a}_A)$$

Intuition. Firm A holds a biased belief about worker valuations, perceiving amenity utility as $\tilde{\theta} v(a)$ with $\tilde{\theta} < \theta$, and forms a subjective belief $\tilde{\phi}_A$ about market size. Firm B, by contrast, has correct beliefs about worker valuations and fully anticipates firm A's bias.

Each firm chooses its wage-amenity bundle to maximize profits under its respective beliefs and interprets observed labor supply through the lens of its subjective model. The Berk-Nash equilibrium ensures that each firm's belief about market size is consistent with what it observes in equilibrium. While firm A updates $\tilde{\phi}_A$ within its misspecified model, firm B—being fully rational—learns about the labor market through its correctly specified model.

Berk-Nash equilibrium outcome. Equipped with an equilibrium definition, we are ready to derive the market outcome when firm A is biased. First, note that optimal wages and amenities are independent from $\tilde{\phi}$, so that the solutions for wages and amenities derived above still hold in equilibrium.

Finally, note that $\tilde{\phi}_i L_A(\tilde{w}_A, \tilde{a}_A, \tilde{w}_B, \tilde{a}_B) = \phi L_A(\tilde{w}_A, \tilde{a}_A, w_B^*, a_B^*)$ has the unique solution

$$\tilde{\phi}_A = \phi \frac{L_A(\tilde{w}_A, \tilde{a}_A, w_B^*, a_B^*)}{L_A(\tilde{w}_A, \tilde{a}_A, \tilde{w}_B, \tilde{a}_B)}. \tag{24}$$

Following the same logic, firm B's belief is

$$\tilde{\phi}_B = \phi. \tag{25}$$

A Berk-Nash equilibrium is thus given by Equations 18, 19, 20, 22, 24 and 25.

6.6 Biased Beliefs Have Consequences

Consequences for the biased firm. Equipped with equilibria for the unbiased and biased cases, we are now ready to analyze the equilibrium implications of firm-level misperceptions of workers' valuations. The consequences for the biased firm are summarized in the following proposition (proofs are delegated to Appendix G).

Proposition 1. *A firm's biased beliefs about workers' valuations of non-wage amenities results in the following equilibrium consequences for the biased firm:*

1. *(Labor Shortages) The biased firm experiences labor shortages:*

$$\tilde{L}_A < L_A^{BM}$$

2. *(Excess Labor Costs) The biased firm could lower labor costs while holding worker utility constant: there exists a wage-amenity bundle w'_A, a'_A, s.t., $\tilde{U}_A(x) = U'_A(x)$ and*

$$\tilde{w}_A + \tilde{a}_A > w'_A + a'_A$$

3. *(Pessimism) The biased firm is pessimistic about the labor market condition:*

$$\tilde{\phi}_A < \phi$$

The intuitions behind these effects are as follows. Underestimating workers' valuations of amenities leads firm A to underprovide them, despite their relatively low cost. This makes the firm less attractive, resulting in a firm-level *labor shortage*.

Excess labor costs means that the biased firm could offer another wage-amenity that delivers the same utility—but is less costly to provide. In equilibrium, the biased firm could decrease wages and increase amenities, lowering labor costs and holding utility constant.

Since firm A holds a misspecified model of workers' valuations but believes it is playing an optimal strategy, it does not attribute low labor supply to its own choices. Instead, it rationalizes the shortage by updating downward its belief about market size. This gives rise to *pessimism* about the labor market conditions.

Our model thus generates an explanation for labor shortages: the phenomenon that firms in many advanced economies are struggling to hire workers, even though there are sufficiently many workers available to work in the market (Le Barbanchon et al., 2023; Friedrich and Zator, 2024). Importantly, labor shortages are stable in equilibrium: the biased firm does not revise its view of worker preferences. This contrasts with models in which shortages are temporary and vanish as firms adjust their strategies over time (Friedrich and Zator, 2024).

Spillovers to the unbiased firm and workers. The misperception affects not only the biased firm but also other participants in the labor market. The following proposition summarizes the equilibrium implications for the unbiased firm and workers:

Proposition 2. *A firm's biased beliefs about workers' valuations of non-wage amenities results in the following equilibrium consequences for other labor market participants:*

1. *(Market Power) The unbiased firm reduces wages:* $w_B^* < w_B^{BM}$
2. *(Contamination) All workers are worse off:* $U^*(x) < U^{BM}(x) \; \forall x \in [0,1]$

The intuitions behind these effects are as follows. The biased firm underprovides non-wage amenities, making it less attractive for workers. As firm A's relative competitiveness goes down, firm B becomes relatively more attractive. Due to this *Market Power Effect*, firm B can reduce wages compared to the unbiased benchmark. This results in a *Contamination Effect*: not only are the biased firm's workers worse off compared to the unbiased benchmark, but even workers at the other firm do less well.

7 Testing the Model Predictions

Proposition 1 yields three testable implications. Firms whose managers hold biased beliefs should (i) be more likely to experience labor shortages and (ii) incur excess labor costs. Managers in firms facing labor shortages should (iii) hold more pessimistic beliefs about labor market conditions. We test these predictions in our data.

7.1 Prediction 1: Labor Shortages

Biased firms and labor shortages. Our model's central prediction is that biased firms are more likely to experience labor shortages. The intuition is as follows: when firms underestimate workers' valuation of non-wage amenities, they offer a non-optimal wage-amenity bundle—they underprovide amenities, making them less attractive to workers. As a result, they will thus face more labor shortages. To test this prediction, we elicited firms' self-reported labor shortages—which have been shown to correlate with actual labor shortages (Friedrich and Zator, 2024).

Table 4 displays the relationship between an indicator for firm-reported labor shortages and misperceptions in a regression framework. Columns (1)–(2) use an OLS format. In line with the model's prediction, underestimation is positively associated with labor shortages: an increase in underestimation of 1 standard deviation is associated with a 2.1 percentage points increase in labor shortages ($p < 0.10$). Column (2) reveals that this association is robust to the inclusion of controls.

This correlation from the OLS regression is likely attenuated, given that self-reported beliefs are noisy. To address this measurement error, we employ an *obviously related instrumental variable* (ORIV) approach following Gillen et al. (2019), leveraging the fact that we elicit multiple beliefs about workers' valuations at the manager level. ORIV uses these separate elicitations as instruments for the manager's belief, thereby reducing classical measurement error. Columns (3)–(6) present the ORIV results based on two different strategies: columns (3) and (4) exclude work-from-home amenities, as we do not observe beliefs for this amenity for all managers; columns (5) and (6) impute missing beliefs for work-from-home using the median value from other observations. All specifications increase both the magnitude and precision of our estimates: a one standard deviation increase in misperceptions is now associated with an increase in labor shortages of 8 to 10 percentage points, or roughly 20% to 25%, suggesting a link between managerial misperceptions and labor shortages.

Appendix Table A.15 explores heterogeneity in the relationship between misperceptions and labor shortages by labor market tightness. To measure tightness, we draw on Bossler and Popp (2026) at the 1-digit occupation-state level for 2022, the most recent

year for which their measure is available. We use the same specifications as above and interact tightness with misperceptions. Across all specifications, the interaction term is insignificant at conventional levels, suggesting that the relationship between misperceptions and labor shortages does not vary systematically with labor market tightness.

Table 4: Managers' biased beliefs predict labor shortages

	Labor Shortages					
	OLS		*ORIV*			
	(1)	(2)	(3)	(4)	(5)	(6)
Underestimation	0.021*	0.021*	0.095**	0.099**	0.080*	0.083**
	(0.012)	(0.011)	(0.045)	(0.046)	(0.042)	(0.042)
Constant	0.395***	0.477***	0.398***	0.466***	0.396***	0.445***
	(0.018)	(0.125)	(0.018)	(0.127)	(0.018)	(0.129)
Controls	No	Yes	No	Yes	No	Yes
Clustered SE	Yes	Yes	Yes	Yes	Yes	Yes
Bootstrapped SE	No	No	Yes	Yes	Yes	Yes
Number Instruments	0	0	3	3	4	4
Observations	3,527	3,450	3,024	2,960	3,522	3,445

Notes. This table reports OLS and ORIV estimates of the relationship between firms' misperceptions of worker amenity valuations and labor shortages. The dependent variable is an indicator equal to one if the firm reports had problems filling their positions at least 3 of the last 5 years, and zero otherwise. Underestimation is the standardized difference between workers' average valuations of an amenity and the firm's belief about that valuation, rescaled so that higher values denote greater underestimation. Columns (1)–(2) present OLS regressions with heteroskedasticity-robust standard errors clustered at the firm level; columns (3)–(6) present ORIV (Obviously Related Instrumental Variables) estimates, where the beliefs about other amenities serve as instruments for the focal amenity's misperception. Specifications differ in the number of instruments available: columns (3)–(4) use three instruments (excludes firms that have no work-from-home possibilities) and columns (5)–(6) use all four, imputing median work-from-home values from our sample. All ORIV specifications are estimated using a cluster bootstrap at the firm level with 1,000 resamples; the reported standard errors are bootstrap standard errors. Controls include the following: occupation segment fixed effects, salary grid, age, manager gender, collective bargaining agreement indicator, and works council indicator. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Result 3. *As predicted by the model, firms' misperceptions are related to labor shortages: an increase in underestimation of 1 standard deviation predicts labor shortages to increase by 8 to 10 percentage points (20% to 25%).*

7.2 Prediction 2: Excess Labor Costs

A two-step approach. We test the model's prediction of excess labor costs in two steps: we first derive a condition for excess labor costs in a simplified binary version of the model. Then, we map its parameters to our survey measures.

Setup. To calibrate excess labor costs, consider a simplified version of the model in Section 6. Once again, workers value wages and amenities: $U(w,a) = w + v(a)$. There exists one binary amenity $a \in \{0,1\}$ with $v(1) > v(0) = 0$. The amenity is costly to provide, according to the cost function $c(a)$ with $c(1) > c(0) = 0$. To increase the realism of our calibration, we also allow that the amenity might affect worker productivity $y(a)$.[11]

A condition for excess labor costs. Consider two wage–amenity bundles that leave the worker indifferent, $(w', 1)$ and $(w'', 0)$, so that $U(w', 1) = U(w'', 0)$. To measure excess labor costs, we ask: which of these bundles is cheaper for the firm to provide? Not providing the amenity entails excess labor costs whenever

$$w'' + c(0) > w' + c(1) - [y(1) - y(0)]$$

Using the indifference condition $w' = w'' - v(1)$ (recalling that $v(0) = 0$) and substituting into the expression above yields the following condition for excess labor costs:

$$\frac{w''}{w'' - [v(1) - c(1)] - [y(1) - y(0)]} > 1 \tag{26}$$

Calibration of parameters. The parameters in Equation 26 can be identified from our survey data. We restrict attention to non-providing firms. For each response, we set w'' to the firm's average wage and use the workers' average valuation in the firm's most common occupational group to identify $v(1)$.

To measure costs, we elicited managers' perceived monthly costs of providing each amenity on a discrete scale and assign the midpoint of the stated interval to $c(1)$. Reported costs are modest, suggesting that costs alone rarely deter adoption.[12]

To identify productivity effects $y(1) - y(0)$, we ask managers whether the amenity increases, decreases, or does not affect worker productivity. We then assign 1% of the average worker salary for positive beliefs, 0% for neutral perceptions, and −5% for negative perceptions. These values are intentionally conservative relative to existing estimates.[13]

[11] For example, workers' productivity might increase or decrease when working from home (Bloom et al., 2015).

[12] Average perceived monthly provision costs are € 63 for work-from-home, € 54 for predictable schedules, € 56 for mentoring, € 117 for on-the-job training, and € 94 for a four-day week, with most managers placing costs below € 50. See Appendix D.2.

[13] The literature suggests productivity effects of about 10% for work-from-home (Aksoy et al., 2025), no measurable effect for mentoring (Wu and Liu, 2024), and 10–20% for on-the-job training (Adhvaryu et al., 2023; Espinosa and Stanton, 2026; de Grip and Sauermann, 2012). Credible causal estimates for predictable schedules or four-day workweeks are not yet available.

Non-adopters exhibit excess labor costs. Appendix Table A.16 Panel (A) summarizes the calibration results. On average, non-adopting firms face excess labor costs of 4.9% across amenities. Work-from-home exhibits the highest excess cost (7%), followed by predictable schedules (6%), on-the-job training (5.8%), the four-day week (4.2%), and mentoring (3.4%).

Most non-adopters would benefit from providing the amenity: the share of firms with non-negative excess labor costs is 93.7% for work-from-home, 93.4% for on-the-job training, 91.9% for predictable schedules, 87.2% for mentoring, and 79.7% for the four-day workweek. These results indicate that a majority of non-providing firms could reduce labor costs by adopting amenities.

Result 4. *Non-providing firms could reduce their labor costs by offering the amenity. The implied excess labor costs are economically significant: on average, non-provision increases firms' monthly labor costs by 4.9%.*

7.3 Prediction 3: Pessimism about Labor Market Conditions

Shortages and pessimism. The third prediction of our model is that firms experiencing labor shortages tend to be more pessimistic about the general labor market conditions within the occupational group. For this purpose, we also elicited managers' perceptions of current labor market conditions. We classify managers as perceiving the labor market to be difficult if they perceive it as "difficult" or "very difficult".

Appendix Table A.18 displays the results in a regression framework. Column (1) shows the unconditional relation: reporting labor shortages is associated with an increase in the likelihood to perceive the labor market as difficult by 35 percentage points, a 62% increase compared to the baseline. Columns (2)–(6) gradually add controls for occupations, wage levels, manager characteristics, and firm characteristics. Across all specifications, the effect size remains stable and statistically significant at any conventional level ($p < 0.01$).

8 Conclusion

In this paper, we test the accuracy of firms' beliefs about workers' valuations of non-wage amenities. Using data from a novel, large-scale survey with German workers and firms, we find that firms' beliefs—unlike implicitly assumed in traditional models—are not unbiased. Instead, managers systematically underestimate workers' valuations of non-wage amenities.

We find evidence for interpersonal projection explaining this finding: managers themselves value amenities less than workers do—they then project their own tastes onto workers, leading to a systematic underestimation of workers' valuations.

We set up a simple model and test the model's predictions in our survey data and linked employer-employee data. Taken together, we find that these distorted beliefs have consequences: biased firms offer fewer amenities. As a result, these firms have higher labor costs and are more likely to experience hiring difficulties.

An explanation for labor shortages. Firms in many countries have been reporting difficulties in hiring workers. Policymakers have mostly seen this as a structural problem so far: there simply is excess demand for workers in the economy. This paper offers a novel, complementary explanation: some firms hold systematically more biased beliefs about workers' valuations, resulting in non-optimal wage-amenity bundles that draw workers toward other firms. In light of our findings, labor shortages may be partially alleviated if firms adjust their wage-amenity offers to better reflect workers' preferences.

Why do managers not learn over time? If firms are making a mistake by not offering amenities, a natural question emerges: why do managers fail to learn over time? We present two pieces of evidence on how misperceptions persist. First, we elicited managers' confidence in the accuracy of their beliefs. Appendix Figure A.12 shows that the most biased managers are also the most confident, so that precisely the firms that stand to gain the most from information are the least inclined to seek it. Second, we conducted a light-touch information intervention in April–May 2026, providing managers with truthful information about workers' valuations of working from home; as Appendix Table D.1 reports, it left their beliefs essentially unchanged. Together, these results indicate that managerial beliefs are sticky. Identifying which interventions can shift them—and, in turn, firms' amenity-provision decisions—would be a promising direction for future research.

Why do biased firms not run out of business? The coexistence of persistent belief distortions and firm longevity points to substantial market power or unobserved heterogeneity in the labor market. For example, biased managers might be able to compensate distorted beliefs with extraordinary productivity. We believe that studying the relationship between managerial biases and firm productivity is a fruitful avenue for future research.

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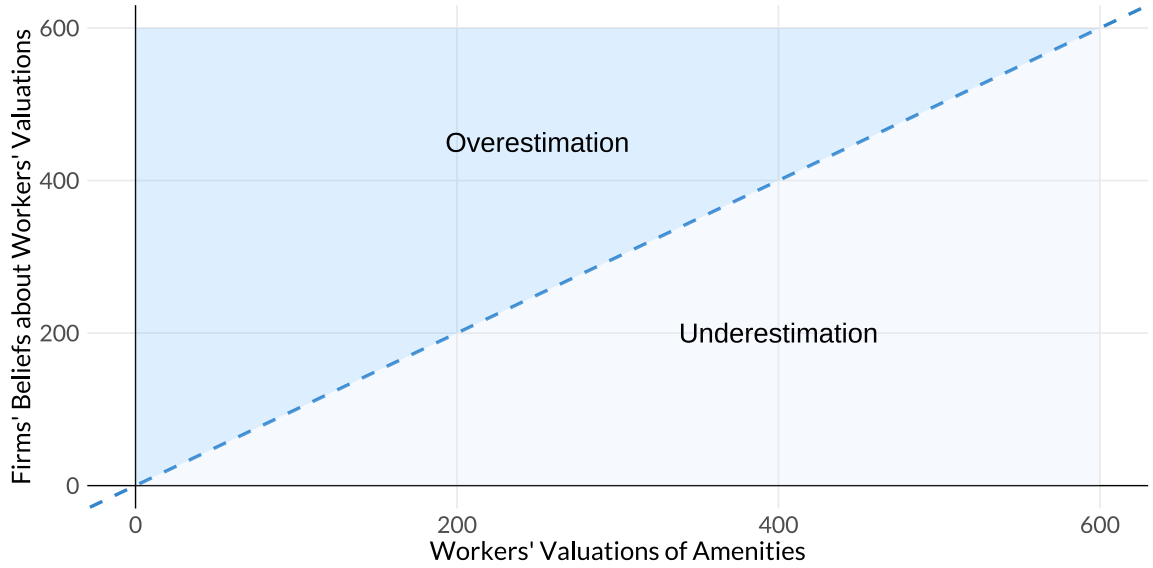
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Appendix

A Additional Figures and Tables

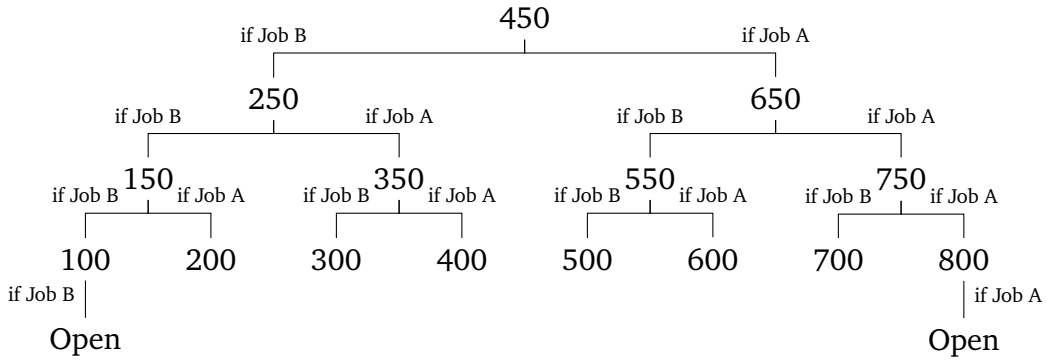
A.1 Additional Figures

Figure A.1: Research design



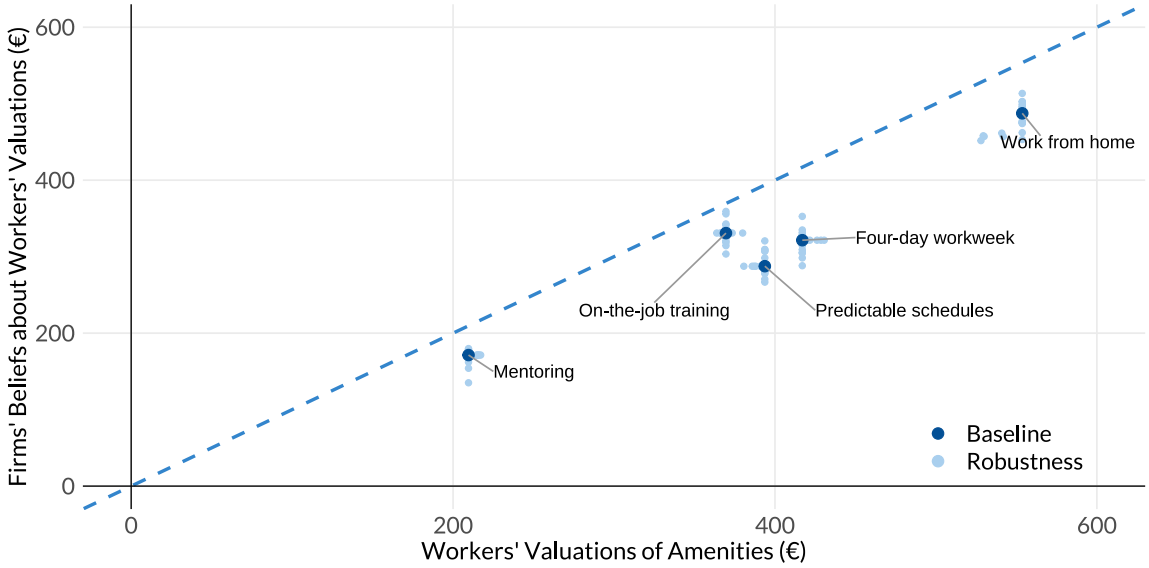
Notes. This figure plots our main research design. The x-axis represents workers' average valuations (in euros) for each non-wage amenity, while the y-axis shows firms' average beliefs about these valuations.

Figure A.2: Decision tree for job selection



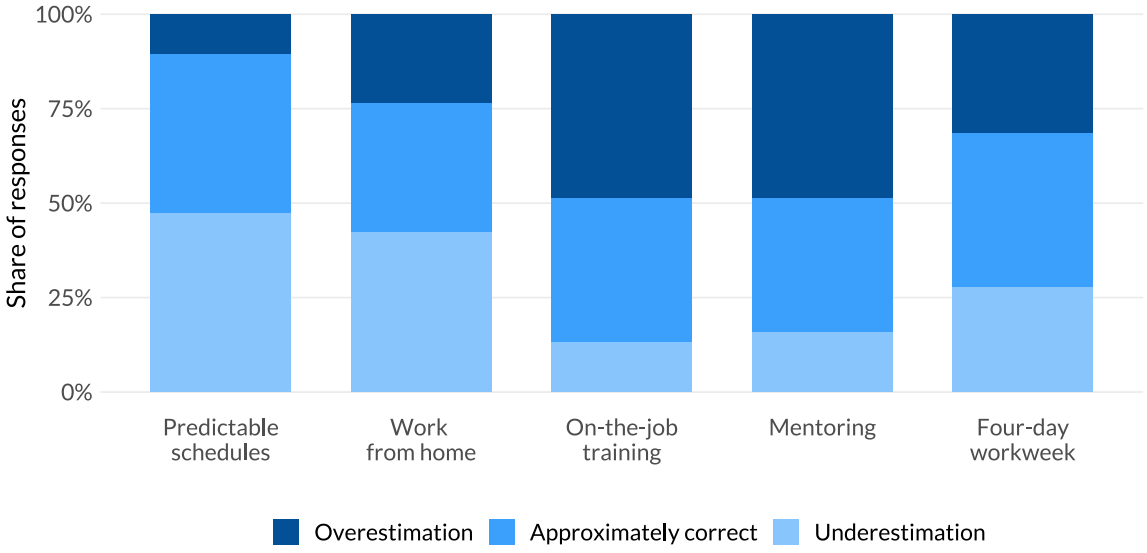
Notes. This figure displays the decision-making process between Job A and Job B. The numbers display the monthly pay differential between Job A and Job B, with Job B paying more. All respondents start at a differential of € 450. When a respondent chooses job A, they move to the next node with a higher wage differential, while choosing job B leads to a choice with a smaller wage differential. If a respondent always chooses Job A or Job B four times in a row, we follow up with an open-text box to directly elicit their valuation.

Figure A.3: Underestimation is robust across specifications



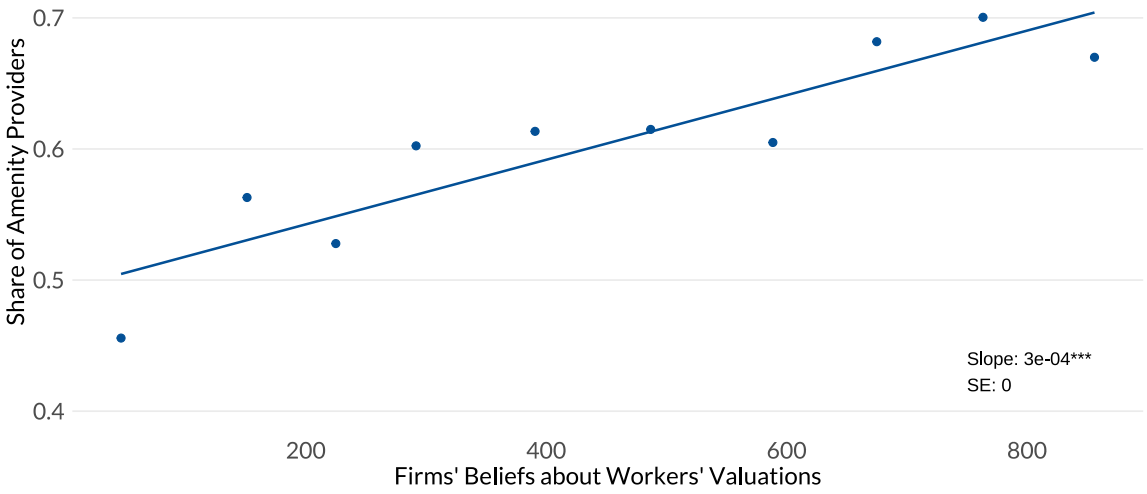
Notes. This figure displays workers' average valuation of amenities (x-axis) and firms' beliefs about workers' valuation (y-axis). Each dot in the x-y space corresponds to the average valuation and belief about one of the following amenities: *predictable schedules*, *work from home*, *on-the-job training*, *mentoring*, and a *four-day workweek*. The dashed 45-degree line indicates where firms' beliefs would exactly match workers' valuations. Dark blue dots correspond to the baseline specification and light blue dots to alternative robustness specifications. The alternative specifications are, in order: restricting the sample to firm decision makers who set these amenities; including only firm participants who report giving their best effort in the survey; restricting the sample to firms that are currently hiring; estimating the three treatments separately (marginal worker, mean worker, and mode worker); reweighting workers' valuations to match the managers' occupational distribution; reweighting workers' valuations to match both the managers' occupational distribution and their occupational and salary distributions using salary grids with three and with five categories; restricting the firm sample to only owners; restricting to firm owners who passed the comprehension check; and excluding speeders.

Figure A.4: Experts do not predict underestimation across all amenities



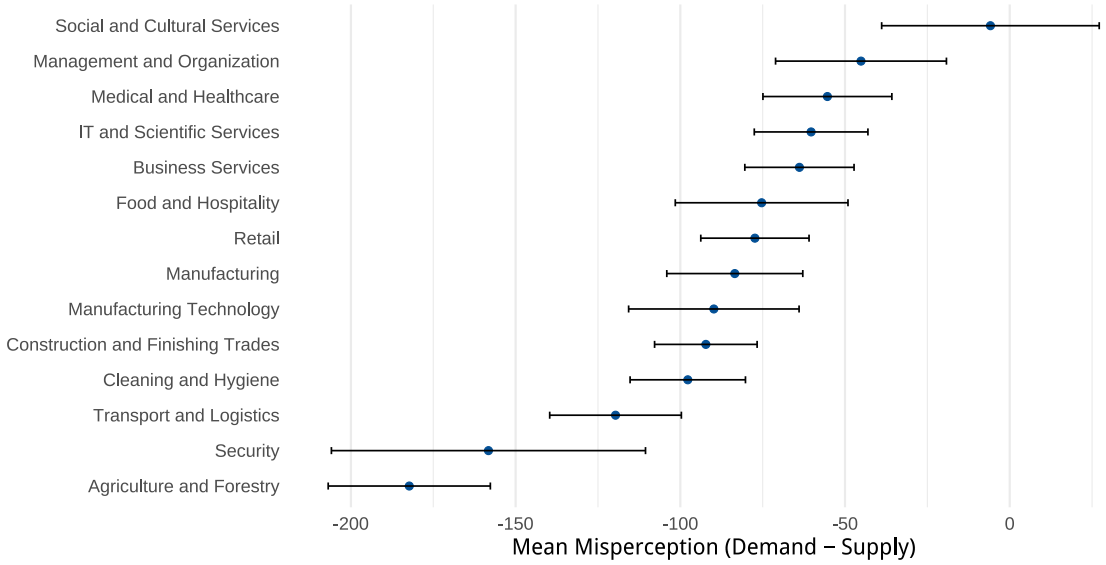
Notes. This figure displays expert forecasts about the qualitative difference between workers' valuations of non-wage amenities and managers' beliefs about workers' valuations. The dark blue area corresponds to the share of forecasters who predict that managers overestimate ($p < 0.05$) workers' valuations. The medium blue corresponds to the share of forecasters who predict that managers hold approximately correct ($p > 0.05$) beliefs about worker valuations. The light blue area corresponds to forecasters who predict that managers underestimate ($p < 0.05$) workers' valuations.

Figure A.5: Managerial beliefs predict the provision of amenities



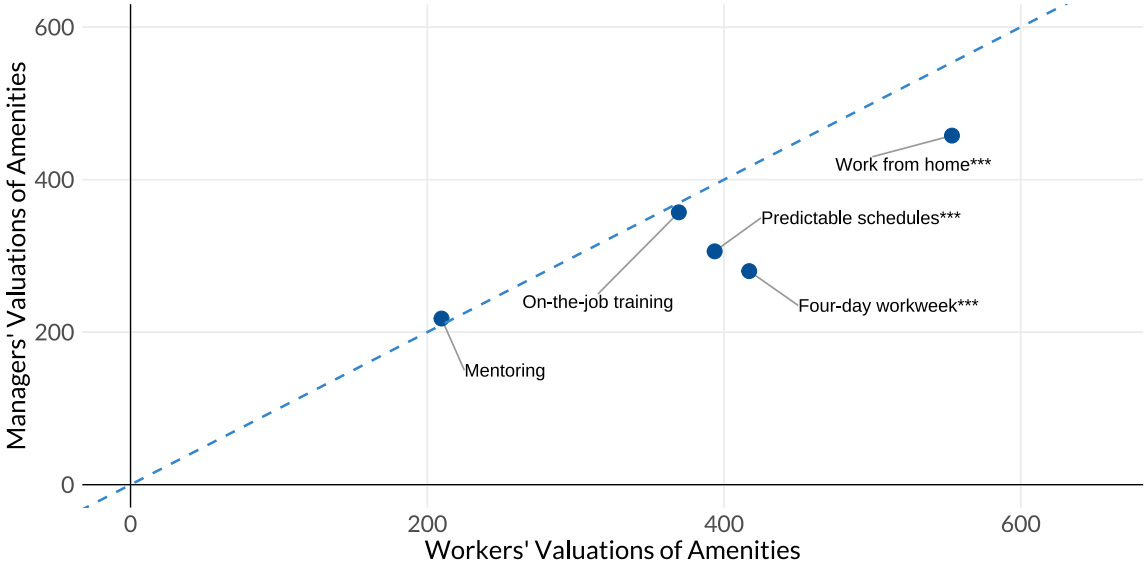
Notes. This plot shows the relationship between firms' beliefs about workers' valuations of non-wage amenities (x-axis) and the provision rate of the amenity (y-axis). We aggregate data across all amenities.

Figure A.6: Managerial misperceptions by occupational group



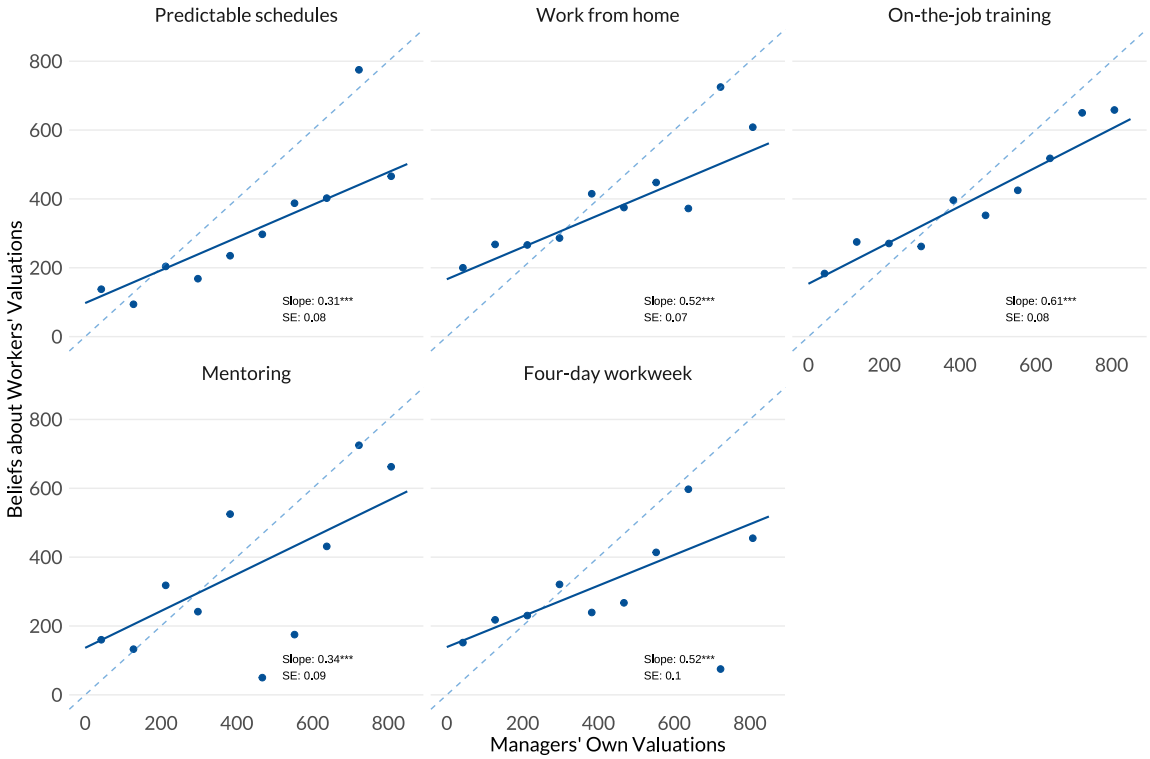
Notes. This figure displays firms' average misperceptions—the difference between their beliefs and workers' valuations—by occupational group. For each group, we aggregate individual valuations and beliefs by pooling responses across all amenities and computing the mean. We then calculate the difference between beliefs and valuations. Whiskers represent standard errors calculated at the 5% level.

Figure A.7: Workers' valuations and managers' own valuations



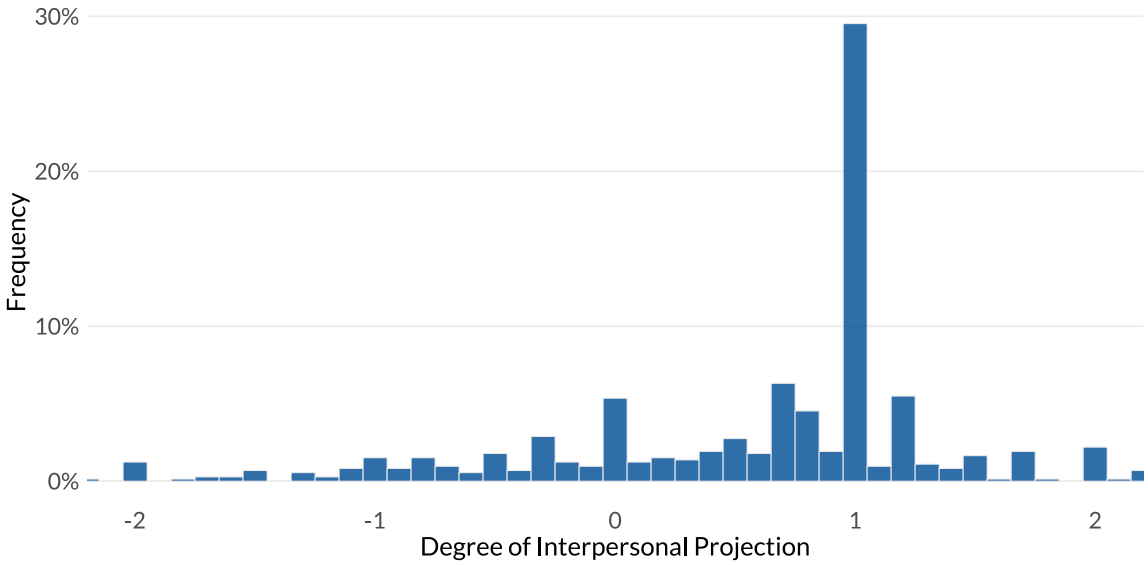
Notes. This figure displays workers' average valuation of amenities (x-axis) and managers' own valuations (y-axis). Each dot in the x-y space corresponds to the average valuations of one of the following amenities: *work from home*, *four-day workweek*, *mentoring*, *on-the-job training*, and *predictable schedules*.

Figure A.8: Interpersonal Projection Holds For All Amenities



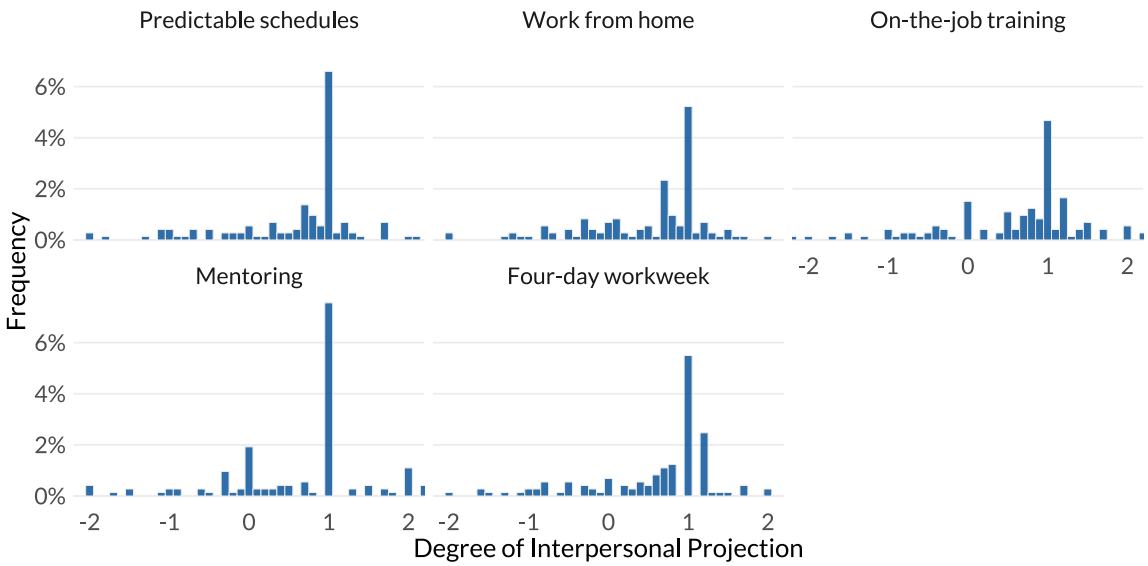
Notes. This plot displays managers' own average valuation of amenities (x-axis) and managers' beliefs about workers' valuation (y-axis). Each dot corresponds to the average manager beliefs in a specific bin of manager valuations, separately for each of the following amenities: *work from home*, *four-day workweek*, *mentoring*, *on-the-job training*, and *predictable schedules*.

Figure A.9: Most managers exhibit full interpersonal projection



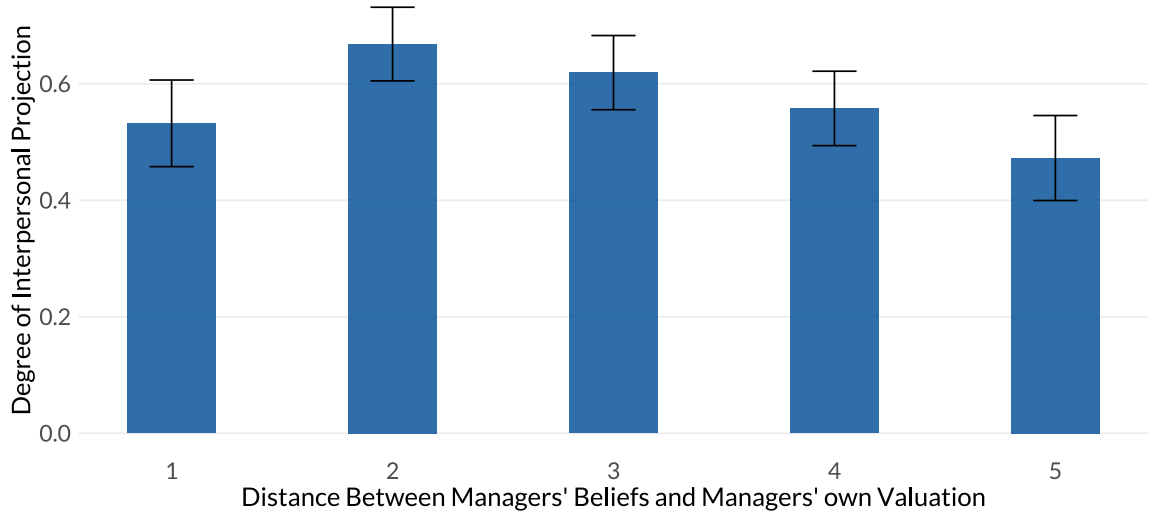
Notes. This figure displays the distribution of interpersonal projection (α) across managers. A value of zero means that the manager has correct beliefs about workers' valuations, while a value of one corresponds to full projection: the manager's belief about workers' valuations equals the manager's own valuation.

Figure A.10: Distribution of interpersonal projection by amenities



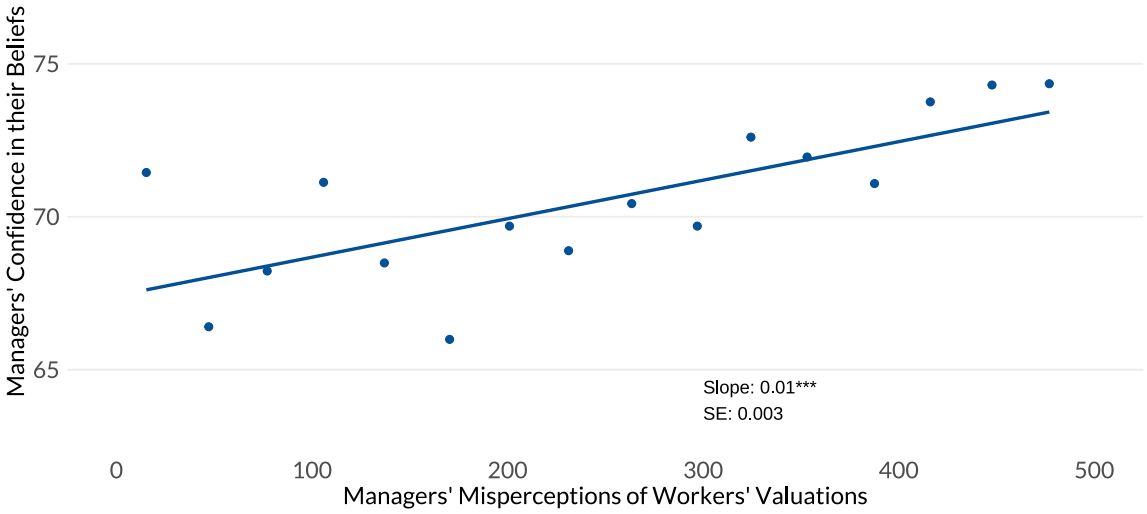
Notes. This figure displays the distribution of interpersonal projection (α) across managers. A value of zero means that the manager has correct beliefs about workers' valuations, while a value of one corresponds to full projection: the manager's belief about workers' valuations equals the manager's own valuation. Each panel corresponds to one of the following amenities: *work from home*, *four-day workweek*, *mentoring*, *on-the-job training*, and *predictable schedules*.

Figure A.11: Degree of interpersonal projection by distance between elicitations



Notes. This figure displays the average degree of interpersonal projection (α) across managers (y-axis) plotted against the number of belief-elicitation questions that occurred between the belief and own-valuation elicitations (x-axis). A value of zero means that the manager has correct beliefs about workers' valuations, while a value of one corresponds to full projection: the manager's belief about workers' valuations equals the manager's own valuation. We elicit beliefs about all five amenities in random order. For one randomly selected amenity, we also elicit the manager's own valuation. Because the order is randomized, the number of belief questions that fall between the two elicitations varies from 1 (valuation follows immediately after belief) to 5 (valuation is elicited after all other belief questions).

Figure A.12: The most biased managers are the most confident in their beliefs



Notes. This figure plots average confidence against the absolute level of misperception. The x-axis shows the absolute difference between firms' perceived and true amenity valuations. The y-axis reports the mean self-reported confidence level within each bin. Observations are grouped into 25 equal-width bins based on the x-axis variable; each point represents the average misperception and average confidence in that bin. A linear fit summarizes the relationship between misperception and confidence. All amenities are pooled.

A.2 Additional Tables

Table A.1: Beliefs about worker valuations predict amenity provision

	Amenity Provision Rate				
	Predictable schedules	Work from home	On-the-job training	Mentoring	Four-day workweek
	(1)	(2)	(3)	(4)	(5)
Belief about Worker Valuation	0.0004***	0.0004***	0.0001**	0.0003***	0.0001*
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	0.411***	0.505***	0.716***	0.556***	0.205***
	(0.026)	(0.042)	(0.026)	(0.023)	(0.025)
Observations	747	495	753	743	759
R^2	0.056	0.064	0.007	0.019	0.004

Notes. OLS estimates, robust standard errors in parentheses. *Belief about Worker Valuation* is a manager's belief about worker's valuation of non-wage amenities. The dependent variable is an indicator for whether the firm provides the amenity. Columns (1)–(5) refer to the different amenities: predictable schedules, work from home, on-the-job training, mentoring and the four-day workweek. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.2: Adopting firms hold less biased beliefs than non-adopters

	Beliefs and Valuations				
	Predictable schedules	Work from home	On-the-job training	Mentoring	Four-day workweek
	(1)	(2)	(3)	(4)	(5)
Panel A: Non-adopters					
Manager	−174.942***	−192.382***	−80.806***	−73.916***	−105.802***
	(14.579)	(24.086)	(20.276)	(11.425)	(11.729)
Constant	395.047***	555.545***	371.784***	210.217***	417.963***
	(6.912)	(9.447)	(5.266)	(4.002)	(5.685)
Observations	3,443	2,182	3,266	3,406	3,720
R^2	0.019	0.013	0.004	0.009	0.015
Panel B: Adopters					
Manager	−49.444***	−15.272	−27.302**	−14.504	−68.100***
	(15.243)	(19.816)	(12.330)	(11.203)	(19.721)
Constant	395.047***	555.545***	371.784***	210.217***	417.963***
	(6.912)	(9.446)	(5.266)	(4.002)	(5.685)
Observations	3,502	2,383	3,659	3,571	3,327
R^2	0.002	0.0002	0.001	0.0005	0.002

Notes. OLS estimates, robust standard errors in parentheses. The dependent variable in each column is the valuation of workers/beliefs of managers in euros. *Manager* is an indicator taking value 1 if the respondent is a manager, Columns (1)–(5) refer to different amenities: predictable schedule, work from home, on-the-job training, mentoring, and the four-day workweek. Panel A is restricted to firms that do not offer the respective amenity, while Panel B regresses separately for firms that offer the amenity. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.3: Firms with works council do not hold less biased beliefs

	Misperceptions					
	Predictable schedules	Work from home	On-the-job training	Mentoring	Four-day workweek	Pooled
	(1)	(2)	(3)	(4)	(5)	(6)
Works Council	38.736	11.476	23.849	−36.731**	−19.993	2.986
	(28.833)	(36.212)	(27.269)	(18.495)	(24.806)	(16.847)
Constant	−106.377***	−76.784***	−53.009***	−40.505***	−96.149***	−74.407***
	(10.056)	(15.001)	(10.382)	(8.463)	(9.808)	(6.498)
Observations	758	495	757	758	759	3,527
R^2	0.003	0.0002	0.001	0.004	0.001	0.00002

Notes. OLS estimates, Columns (1)–(5) robust standard errors, Column (6) firm-clustered robust standard errors in parentheses. The dependent variable is the difference between managers' beliefs about workers' valuations and workers' valuations. *Works Council* is an indicator taking value 1 if the manager's firm has a works council (*Betriebsrat*), while taking value 0 otherwise. Columns (1)–(5) refer to different amenities: *predictable schedules*, *work from home*, *on-the-job training*, *mentoring*, and a *four-day workweek*. Column (6) pools all amenities. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.4: Misperceptions: heterogeneity by firm size

	Beliefs and Valuations				
	1–9	10–49	50–149	150–249	250+
	(1)	(2)	(3)	(4)	(5)
Manager	−72.296***	−72.433***	−79.201***	−88.193***	−72.196***
	(10.759)	(11.765)	(14.811)	(26.277)	(21.915)
Constant	389.336***	388.736***	391.119***	403.247***	401.636***
	(35.116)	(34.663)	(37.448)	(39.598)	(38.815)
Occupation Controls	Yes	Yes	Yes	Yes	Yes
Observations	16,133	16,074	15,453	15,057	15,160
R^2	0.011	0.011	0.010	0.009	0.009

Notes. OLS estimates with firm- and worker-clustered robust standard errors in parentheses. The dependent variable is the individual-level belief or valuation (in euros) for a given amenity. *Manager* is an indicator taking value 1 if the respondent is a managers, and 0 else. Each column includes only managers from a specific firm size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.5: Misperceptions: heterogeneity by manager characteristics

	Misperceptions		
	(1)	(2)	(3)
Male	−28.650**		
	(13.018)		
Young Manager		29.636*	
		(16.973)	
Owner			−3.178
			(14.125)
HR			11.782
			(19.500)
Observations	745	745	745
R^2	0.006	0.003	0.001

Notes. OLS estimates, robust standard errors in parentheses. The dependent variable *Misperceptions* is the firm-level average difference between managers' beliefs and workers' valuations across all five amenities, expressed in euros. Each observation corresponds to a firm. *Male* is an indicator taking value 1 if the manager is male, and 0 else. *Young Manager* is an indicator taking value 1 if the manager is younger than 35 years old, and 0 else. *Owner* is an indicator taking value 1 if the manager is the owner of the firm, and 0 else, while *HR* is an indicator taking value 1 if the respondent is a human resources manager and 0 else. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.6: Firms' underestimation — robustness when comparing workers within firm and local labor market

	Beliefs and Valuations					
	Linear			XGBoost		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: All Workers						
Manager	−71.150***	−66.725***	−66.682***	−51.473**	−44.259***	−45.193***
	(22.853)	(8.517)	(8.509)	(22.278)	(8.551)	(8.504)
Constant	389.582***	482.817***	482.851***	369.905***	418.462***	417.539***
	(21.332)	(8.583)	(8.578)	(20.702)	(5.730)	(6.014)
Firm Controls	No	Yes	Yes	No	Yes	Yes
Occupation FE	No	Yes	Yes	No	Yes	Yes
Firm FE	No	No	Yes	No	No	Yes
Observations	814,539	814,539	814,539	891,169	891,169	891,169
R^2	0.001	0.199	0.199	0.0003	0.191	0.191
Panel B: Inflows						
Manager	−51.281***	−76.940***	−76.866***	−22.652*	−55.086***	−55.237***
	(15.664)	(8.563)	(8.562)	(11.626)	(9.234)	(9.238)
Constant	369.713***	494.693***	495.478***	341.084***	430.259***	428.063***
	(13.453)	(7.512)	(7.598)	(8.252)	(14.313)	(14.619)
Firm Controls	No	Yes	Yes	No	Yes	Yes
Occupation FE	No	Yes	Yes	No	Yes	Yes
Firm FE	No	No	Yes	No	No	Yes
Observations	35,804	35,804	35,804	37,354	37,354	37,354
R^2	0.008	0.151	0.151	0.001	0.153	0.153
Panel C: Local Labor Markets						
Manager	−59.634***	−59.646***	−61.733***	−45.926***	−45.941***	−48.030***
	(8.295)	(8.300)	(8.298)	(8.293)	(8.299)	(8.304)
Constant	378.067***	395.685***	327.700***	364.358***	383.896***	272.042***
	(2.872)	(22.205)	(26.661)	(3.323)	(22.778)	(25.294)
Firm Controls	No	Yes	Yes	No	Yes	Yes
Local Labor Market FE	No	No	Yes	No	No	Yes
Observations	3,804	3,804	3,804	3,804	3,804	3,804
R^2	0.011	0.012	0.085	0.020	0.020	0.086

Notes. OLS estimates with firm- and worker-clustered robust standard errors in parentheses. The dependent variable is the individual-level belief or valuation (in euros) for a given amenity. Worker valuations on the supply side are imputed using either a linear model or an XGBoost model, as indicated in the column headings. The main independent variable, *Manager*, is an indicator equal to 1 if the respondent is a manager and 0 if the respondent is a worker. Specifications progressively include firm-level controls (industry, firm size, and location), two-digit occupation fixed effects, and—in columns (3) and (6)—firm fixed effects, so that identification in these columns comes from within-firm comparisons between managers' beliefs and workers' valuations. Panel A uses all workers that have been in the firm in the last 10 years (2014 -2024), Panel B restricts the sample to worker inflows in the last two years (2023 and 2024), and Panel C uses aggregate characteristics (imputed valuations based on commuting zone, occupation, industry, age, gender and salary) from the local labor market level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.7: Firms' underestimation — robustness to the inclusion of controls

	Beliefs and Valuations					
	(1)	(2)	(3)	(4)	(5)	(6)
Manager	−68.736***	−73.866***	−71.317***	−76.601***	−60.846***	−54.414***
	(7.372)	(7.357)	(7.232)	(7.324)	(7.650)	(8.072)
Occupation Controls	No	Yes	No	Yes	Yes	Yes
Wage Controls	No	No	Yes	Yes	Yes	Yes
Individual Controls	No	No	No	No	Yes	Yes
Firm Controls	No	No	No	No	No	Yes
Observations	18,407	18,407	18,407	18,407	18,316	18,306
R^2	0.007	0.017	0.022	0.029	0.033	0.035

Notes. OLS estimates, firm- and worker-clustered robust standard errors in parentheses. The dependent variable in each column is the valuation of workers / belief of managers about workers' valuations in euros. The indicator *Manager* takes on the value 1, if the respondent is a manager, 0 otherwise. All specifications are pooling amenities together. The first column reports the raw difference, column two controls for occupational segment, column three for wage levels and column four for both. Column five then adds individual controls (gender and age) and column six adds further firm controls (presence of CBA's and works councils). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.8: Firms' underestimation — robustness to varying occupational group definitions

	Predictable schedules	Work from home	On-the-job training	Mentoring	Four-day workweek
Panel A: 14 occpational segments					
Manager	-100.590***	-75.936***	-47.896***	-45.275***	-97.929***
	(11.877)	(17.001)	(11.123)	(8.804)	(10.950)
Constant	388.375***	578.750***	351.788***	241.265***	372.631***
	(42.160)	(69.250)	(35.667)	(30.423)	(34.715)
Observations	3963	2555	3962	3963	3964
R2	0.027	0.039	0.014	0.013	0.023
Panel B: 37 occupational groups					
Manager	-97.559***	-69.952***	-45.769***	-43.144***	-95.086***
	(12.005)	(17.092)	(11.089)	(8.804)	(11.003)
Constant	287.958***	415.540***	318.075***	222.938***	359.869***
	(32.107)	(53.177)	(28.497)	(25.798)	(31.101)
Observations	3963	2555	3962	3963	3964
R2	0.032	0.056	0.027	0.023	0.032
Panel C: 5 occupational sectors					
Manager	-102.530***	-81.363***	-46.949***	-45.352***	-99.175***
	(11.595)	(16.627)	(10.942)	(8.644)	(10.759)
Constant	404.194***	578.354***	360.508***	197.227***	426.646***
	(10.738)	(13.299)	(7.616)	(5.654)	(8.780)
Observations	3963	2555	3962	3963	3964
R2	0.025	0.032	0.013	0.012	0.018

Notes. OLS estimates, firm-clustered robust standard errors in parentheses. The dependent variable in each column is the valuation of workers / belief of managers about workers' valuations in euros. *Manager* is an indicator taking value 1 if the respondent is a manager, that is, a belief is measured and 0 if the respondent is a worker, that is, a valuation is measured. Columns (1)–(5) correspond to five amenities: *predictable schedules*, *work from home*, *on-the-job training*, *mentoring*, and a *four-day workweek*. Panel A matches firms and workers within 14 occupational segments; Panel B matches within 37 occupational groups; and Panel C matches within 5 occupational sectors. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.9: Workers' stated valuations are not reduced by incentives

	Worker Valuations					
	Predictable schedules	Work from home	On-the-job training	Mentoring	Four-day workweek	Pooled
	(1)	(2)	(3)	(4)	(5)	(6)
Incentive	−26.657	31.623	7.200	−20.328	1.360	−3.897
	(25.948)	(43.213)	(17.803)	(21.142)	(20.109)	(16.857)
Constant	439.177***	532.433***	324.034***	246.190***	347.159***	329.616***
	(19.061)	(30.322)	(12.065)	(15.080)	(14.238)	(12.307)
Amenity FE	No	No	No	No	No	Yes
Observations	1,001	644	1,000	1,002	1,003	4,650
R^2	0.001	0.001	0.0002	0.001	0.00000	0.063

Notes. OLS estimates, robust standard errors in parentheses. The dependent variable in each column is the valuation of workers for the respective amenity. *Incentive* is an indicator taking value 1 if the workers' responses were incentivized, and 0 else. Columns (1)–(5) refer to different amenities: *predictable schedules*, *work from home*, *on-the-job training*, *mentoring*, and a *four-day workweek*. Column (6) pools all amenities. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.10: Firms' underestimation — robustness to varying the type of worker

	Beliefs and Valuations			
	Pooled	Mean	Marginal	Mode
	(1)	(2)	(3)	(4)
Manager	−68.736***	−75.105***	−57.859***	−72.545***
	(7.372)	(11.653)	(11.522)	(11.351)
Constant	375.990***	375.990***	375.990***	375.990***
	(3.883)	(3.883)	(3.883)	(3.883)
Observations	18,407	16,095	16,001	16,051
R^2	0.007	0.003	0.002	0.003

Notes. OLS estimates, firm- and worker-clustered robust standard errors in parentheses, amenities pooled. The dependent variable in each column is the valuation of workers / belief of managers about workers' valuations in euros. *Manager* is an indicator taking value 1 if the respondent is a manager, that is, a belief is measured and 0 if the respondent is a worker, that is, a valuation is measured. Column (1) reports all treatment arms pooled. Column (2) reports the estimation when we elicited beliefs over the mean worker, Column (3) reports the estimation when we elicited beliefs over the marginal worker, Column (4) reports the estimation when we elicited beliefs over the mode worker. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.11: Firms' underestimation — robustness across subgroups

	Beliefs and Valuations					
	Owners	Deciders	Hiring	Slow	Comprehension	Effort
	(1)	(2)	(3)	(4)	(5)	(6)
Manager	−69.991***	−65.431***	−70.490***	−70.699***	−71.488***	−74.292***
	(9.094)	(9.094)	(8.288)	(7.445)	(7.638)	(7.498)
Constant	375.990***	375.990***	375.990***	375.990***	375.990***	375.909***
	(3.883)	(3.883)	(3.883)	(3.883)	(3.883)	(3.885)
Observations	16,985	17,007	17,483	18,224	17,962	18,156
R^2	0.005	0.004	0.006	0.007	0.007	0.007

Notes. OLS estimates, firm- and worker-clustered robust standard errors in parentheses, amenities pooled. The dependent variable in each column is the valuation of workers / belief of managers about workers' valuations in euros. *Manager* is an indicator taking value 1 if the respondent is a manager, that is, a belief is measured and 0 if the respondent is a worker, that is, a valuation is measured. Each column filters for a different subgroup of managers. Column (1) contains owners of the firm. Column (2) only includes managers who participate in the amenity provision decision. Column (3) focuses on firms that are currently hiring. Column (4) excludes managers who speed through the survey, i.e., are in among the 5% fastest respondents. Column (5) includes managers who passed the comprehension check. Column (6) selects managers who self-reported to have exerted high effort during the survey. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.12: Managers' own valuations are lower than workers' valuations

	Valuations						
	Predictable schedules	Work from home	On-the-job training	Mentoring	Four-day workweek	Pooled	Pooled
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Manager	−87.740***	−95.895***	−12.430	8.252	−136.942***	−49.710***	−37.449***
	(30.565)	(32.523)	(21.852)	(19.090)	(19.352)	(11.959)	(12.392)
Constant	393.697***	553.637***	369.552***	209.593***	416.977***	375.990***	444.410***
	(6.782)	(9.371)	(5.141)	(3.932)	(5.638)	(3.883)	(13.829)
Controls	No	No	No	No	No	No	Yes
Observations	3,344	2,213	3,375	3,352	3,347	15,631	15,601
R^2	0.002	0.003	0.0001	0.0001	0.008	0.001	0.004

Notes. OLS estimates, firm-clustered robust standard errors in parentheses. The dependent variable in each column is the valuation of workers and managers in euros. *Manager* is an indicator taking value 1 if the respondent is a manager, that is, a valuation of a manager is measured and 0 if the respondent is a worker, that is, a valuation of a worker is measured. Columns (1)–(5) refer to different amenities: predictable schedules, work from home, on-the-job training, mentoring, and four-day workweek. Column (6) pools all these amenities together, while column (7) does the same and additionally controls for sex and age. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.13: Managers' own valuations predict their beliefs — by amenity

	Belief about Worker Valuation				
	Predictable schedules	Work from home	On-the-job training	Mentoring	Four-day workweek
	(1)	(2)	(3)	(4)	(5)
Panel A: No Controls					
Own Valuation	0.309***	0.518***	0.608***	0.336***	0.520***
	(0.079)	(0.066)	(0.076)	(0.091)	(0.095)
Constant	199.610***	243.835***	85.141***	80.389***	163.239***
	(25.007)	(33.608)	(21.379)	(17.225)	(28.148)
Gender	No	No	No	No	No
Age	No	No	No	No	No
Gender × Age	No	No	No	No	No
Occupation FE	No	No	No	No	No
Average Belief	293.83	481.06	303.07	153.90	308.85
Observations	140	155	171	148	144
R^2	0.175	0.390	0.392	0.180	0.249
Panel B: All Controls					
Own Valuation	0.291***	0.493***	0.558***	0.363***	0.502***
	(0.087)	(0.076)	(0.074)	(0.095)	(0.108)
Constant	371.501*	278.329**	58.529	173.394	209.529
	(191.498)	(125.839)	(98.965)	(146.126)	(164.979)
Gender	Yes	Yes	Yes	Yes	Yes
Age	Yes	Yes	Yes	Yes	Yes
Gender × Age	Yes	Yes	Yes	Yes	Yes
Occupation FE	Yes	Yes	Yes	Yes	Yes
Average Belief	290.37	473.10	301.92	156.35	309.33
Observations	139	150	169	142	142
R^2	0.232	0.469	0.489	0.270	0.297

Notes. OLS estimates, robust standard errors in parentheses. This table shows results from regressions of managers' beliefs on their own valuation, separately for each amenity. Panel (A) shows results without controls, while Panel (B) adds a gender indicator, controls for age, gender–age interactions, and occupation fixed effects. Each column uses data from one amenity: column (1) for *predictable schedules*, column (2) for *work from home*, column (3) for *on-the-job training*, column (4) for *mentoring*, and column (5) for the *four-day workweek*.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.14: Managers' own valuations predict their beliefs — robustness

	Belief about Worker Valuation			
	(1)	(2)	(3)	(4)
Own Valuation	0.512***	0.559***	0.462***	0.510***
	(0.040)	(0.054)	(0.039)	(0.053)
Beliefs Second		−41.633		−35.361
		(27.984)		(27.333)
Own Valuation × Beliefs Second		−0.092		−0.098
		(0.081)		(0.077)
Constant	142.464***	144.439***	137.485***	139.964***
	(12.207)	(15.063)	(19.165)	(21.524)
Controls	No	No	Yes	Yes
Observations	758	758	758	758
R^2	0.329	0.344	0.389	0.402

Notes. OLS estimates, robust standard errors in parentheses. This table shows results from regressions of managers' beliefs on their own valuation conditional on the same amenity. We also check for heterogeneities in the slope and a shift if the elicitation of managers own valuations takes place before the measuring their beliefs in columns (2) and (4). Controls include the occupational group. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.15: Managers' biased beliefs predict labor shortages — heterogeneity

	Labor Shortages					
	OLS		*ORIV*			
	(1)	(2)	(3)	(4)	(5)	(6)
Underestimation	0.023*	0.022*	0.109**	0.109**	0.077*	0.075*
	(0.012)	(0.012)	(0.048)	(0.050)	(0.042)	(0.044)
Tightness	−0.019	−0.015	−0.015	−0.013	−0.018	−0.015
	(0.015)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
Underestimation × Tightness	−0.008	−0.005	−0.037	−0.031	−0.014	−0.005
	(0.010)	(0.010)	(0.046)	(0.047)	(0.040)	(0.041)
Constant	0.402***	0.472***	0.404***	0.457***	0.402***	0.444***
	(0.019)	(0.126)	(0.018)	(0.131)	(0.018)	(0.131)
Controls	No	Yes	No	Yes	No	Yes
Clustered SE	Yes	Yes	Yes	Yes	Yes	Yes
Bootstrapped SE	No	No	Yes	Yes	Yes	Yes
Number Instruments	0	0	3	3	4	4
Observations	3,490	3,413	2,992	2,928	3,485	3,408

Notes. This table reports OLS and ORIV estimates of the relationship between firms' misperceptions of worker amenity valuations and labor shortages and its heterogeneity by labor market tightness. The dependent variable is an indicator equal to one if the firm reports had problems filling their positions at least 3 of the last 5 years, and zero otherwise. Underestimation is the standardized difference between workers' average valuations of an amenity and the firm's belief about that valuation, rescaled so that higher values denote greater underestimation. Tightness is the labor market tightness at the 1-digit-occupation-state level in 2022. Columns (1)–(2) present OLS regressions with heteroskedasticity-robust standard errors clustered at the firm level; columns (3)–(6) present ORIV (Obviously Related Instrumental Variables) estimates, where the beliefs about other amenities serve as instruments for the focal amenity's misperception. Specifications differ in the number of instruments available: columns (3)–(4) use three instruments (excludes firms that have no work-from-home possibilities) and columns (5)–(6) use all four, imputing median work-from-home values from our sample. All ORIV specifications are estimated using a cluster bootstrap at the firm level with 1,000 resamples; the reported standard errors are bootstrap standard errors. Controls include the following: occupation segment fixed effects, salary grid, age, manager gender, collective bargaining agreement indicator, and works council indicator. sym* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.16: Calculating excess labor costs

Predictable schedules	Work from home	On-the-job training	Mentoring	Four-day workweek	Average
Panel A: Share of excess labor cost					
0.06	0.07	0.058	0.034	0.042	0.049
Panel B: Share of firms with excess labor costs					
0.919	0.937	0.934	0.872	0.797	
Panel C: Implied productivity effects to rationalize non-adoption					
-0.058	-0.094	-0.052	-0.032	-0.054	

Notes. The table presents the results of our calibration exercise and highlights potential mistakes firms make. It consists of three panels (A-C). Panel A reports the share of excess labor cost for each amenity and the total average according to equation 26. Panel B shows the share of firms, where excess labor costs are above 0 by each amenity. Panel C shows the implied productivity differences that the provision of the amenity would have to have to make firms indifferent between provision and non-provision.

Table A.17: Bounding Exercise Results

Amenity	Share of Mistaken Firms	Mean Average Mistake	Share of Workers Above Threshold
Panel A			
Four-day workweek	0.911	229.302	0.700
Mentoring	0.874	143.634	0.721
Predictable schedules	0.943	296.855	0.739
On-the-job training	0.969	365.675	0.809
Work-from-home	0.939	314.860	0.689
Panel B			
Four-day workweek	0.909	228.524	0.700
Mentoring	0.871	131.617	0.658
Predictable schedules	0.940	281.187	0.738
On-the-job training	0.969	292.326	0.789
Work-from-home	0.939	289.391	0.685
Panel C			
Four-day workweek	0.895	177.063	0.633
Mentoring	0.858	99.421	0.602
Predictable schedules	0.929	218.072	0.651
On-the-job training	0.933	187.300	0.659
Work-from-home	0.933	248.842	0.647

Notes. The table presents the results of our bounding exercise and highlights potential mistakes firms make. It consists of three panels (A-C), moving from our preferred specification to more conservative ones. Column (1) reports the share of mistaken firms for each amenity, where a firm is considered mistaken if the average valuation within their occupational group, v_i, exceeds $c(a=1)-(y(a=1)-y(a=0))-(y_s(a=1)-y_s(a=0))$. Column (2) shows the mean magnitude of the mistake, calculated as the difference between valuations and the mean of the right-hand side (RHS) of the above inequality. Column (3) displays the share of workers within each occupation whose valuations exceed the respective firm's RHS value; this is computed for each firm and then averaged across all firms by amenity.

Table A.18: Labor shortages predict pessimism about the labor market

	Perceived Labor Market Conditions					
	(1)	(2)	(3)	(4)	(5)	(6)
Labor Shortages	0.350***	0.321***	0.353***	0.329***	0.324***	0.336***
	(0.028)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
Constant	0.563***	0.778***	0.587***	0.821***	0.675***	0.550***
	(0.023)	(0.065)	(0.040)	(0.081)	(0.110)	(0.117)
Occupation Controls	No	Yes	No	Yes	Yes	Yes
Wage Controls	No	No	Yes	Yes	Yes	Yes
Individual Controls	No	No	No	No	Yes	Yes
Firm Controls	No	No	No	No	No	Yes
Observations	759	759	759	759	745	743
R^2	0.140	0.171	0.151	0.180	0.183	0.196

Notes. OLS estimates, robust standard errors in parentheses. The dependent variable in each column is the pessimism about the labor market expressed as 1 if the firm reports having a hard or very hard time finding suitable candidates. *Labor Shortages* is an indicator equal to one if the firm reports had problems filling their positions at least 3 of the last 5 years, and zero otherwise. Column (1) reports the raw correlation. Columns (2)–(6) sequentially add controls. Occupation fixed effects are included at the aggregated 14-group KldB-2-digit level, and wage controls correspond to five wage levels. Individual controls include age and sex. Firm controls include indicators for coverage by a collective bargaining agreement (CBA) and the presence of a works council. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

B Amenity Selection Criteria

There are numerous amenities that one could study. When selecting the amenities for our study, three principles guided us: (i) observability, (ii) adjustability, and (iii) firm as the unique provider.

Observability. When measuring workers' valuations and firms' beliefs about workers' valuations, it is critical that we measure both over the same underlying object. Hence, we select amenities with a well-defined and observable definition only. For example, firms and workers might disagree about what a "good work culture" is, making it not suitable for our approach. Monthly mentoring meetings, however, are a well-defined amenity about which the definition firms and workers cannot disagree.

Adjustability. Our goal is to study whether firms offer the optimal wage-amenity bundle to workers. Hence, it is necessary to study amenities that firms can decide about offering or not. For example, working indoors might be non-wage factors workers care about, but a construction firm will not be able to offer this amenity to its workers. On-the-job training, however, is feasible to implement for most firms, as it is not a job-specific feature.

Unique provider. For example, many workers may value child care, making company-provided child care a valuable amenity. However, even when the firm does not offer child care, workers can still substitute this by purchasing a child-care service. That is, company-provided child care can be transformed into an objective monetary value, making it a perfect substitute for money when workers have the opportunity to select into a child-care plan, making child care violate the unique provision property. The option for work from home, however, can be provided only by the firm. If the firm decides not to offer work from home to its workers, they cannot purchase this option on the free market, making work from home an amenity meeting the unique provision criterion.

C Details on the data collections

Table C.1: Firm Demographics Summary

Group	Category	Share
Recruitment Channel	IHK/HWK	0.148
	Trade Register	0.852
Role in Firm	Owner	0.603
	Manager	0.258
	Human Resources	0.139
Sex	Male	0.706
	Female	0.294
Age	Young (18-34)	0.101
	Middle-aged (35-49)	0.369
	Old (50+)	0.530

Notes. Descriptive statistics of the *manager* sample. The table depicts the share of firms from each recruitment channel, the distribution of manager roles, gender, and age.

Table C.2: Characteristics of surveyed firms relative to German labor market

Variable	Survey	ORBIS
Panel A: Industries		
Administration	0.101	0.138
Finance	0.026	0.079
Information	0.108	0.047
Manufacturing	0.143	0.203
Professional Services	0.121	0.229
Real Estate	0.166	0.092
Retail	0.192	0.183
Transport	0.143	0.029
Panel B: Firm Size		
1 - 9	0.361	0.76
10 - 49	0.341	0.183
50 - 149	0.163	0.037
150 - 249	0.053	0.007
250+	0.082	0.012
Total (number of firms)	761	1592171

Notes. This table compares the sectoral and firm-size distribution of the survey sample to the population of German firms observed in ORBIS. Survey refers to firms that participated in our demand-side questionnaire. ORBIS refers to all German firms available in the ORBIS database after applying standard cleaning and restricting to firms with non-missing NACE Rev. 2 main sector and employment size. Shares are computed within each dataset separately.

Table C.3: Worker demographics: representativeness of the German labor market

Worker Characteristics	Survey Sample		German Labor Market
	Median	Std. Dev.	Median
Demographics			
Female	0.50	(0.50)	0.47
Age	42.11	(12.91)	46.3
Employment			
Monthly Wage	3656.88	(1359.42)	3816
Tenure	12.69	(5.30)	11.50

Notes. Descriptive statistics of the *worker* sample. The table depicts the average female share and the median age, wage and tenure. It also includes standard deviation for female, age, monthly wage, and tenure, separately for the *worker* sample. For the german labor market we were able to use data from the Federal Employment Agency to construct median values for the four statistics.

Table C.4: Distribution of Firms and Workers Across Occupational Groups

Occupational Group	Firms (Count)	Firms (%)	Workers (Count)	Workers (%)
Agriculture and Forestry	22	2.9	51	1.6
Business Services	99	13.0	507	15.8
Cleaning and Hygiene	13	1.7	39	1.2
Construction and Finishing Trades	119	15.6	222	6.9
Food and Hospitality	41	5.4	134	4.2
IT and Scientific Services	113	14.8	213	6.7
Management and Organization	31	4.1	183	5.7
Manufacturing	64	8.4	229	7.1
Manufacturing Technology	34	4.5	236	7.4
Medical and Healthcare	71	9.3	387	12.1
Retail	83	10.9	380	11.9
Security	5	0.7	138	4.3
Social and Cultural Services	33	4.3	196	6.1
Transport and Logistics	33	4.3	288	9.0
Observations	761		3203	

Notes. Descriptive statistics of both the *manager* and the *worker* samples. The table depicts The number of and share of respondents from each occupational group, using the aggregated KldB 2-digit occupational group. Here we aggregate from 37 to 14 groups.

Table C.5: Differences Between Consenting and Non-Consenting Firms

Variable	Consent	No Consent	p-value
Industry			
Administration	0.100	0.113	0.728
Finance	0.032	0.011	0.191
Information Services	0.113	0.102	0.787
Manufacturing	0.116	0.145	0.368
Professional Services	0.122	0.129	0.898
Real Estate	0.170	0.167	1.000
Retail	0.204	0.172	0.394
Transport	0.142	0.161	0.590
Number of Employees			
1–49	0.711	0.677	0.429
50–149	0.160	0.172	0.798
150–249	0.055	0.047	0.817
250+	0.074	0.104	0.245
Other Firm Characteristics			
Collective bargaining agreement	0.353	0.293	0.157
Total (number of firms)	567	194	

Notes. This table compares firm characteristics of respondents that did and did not provide consent for their responses to be linked to Social Security records out of our firm-level sample of 761 respondents. Column 1 describes the firms of consenting respondents. Column 2 describes the firms of non-consenting respondents. Column 3 presents the p-value from a test of equality of means. Firms with missing consent information are counted as non-consenting firms. We elicit collective bargaining agreement (CBA) coverage in the survey.

D Firm Survey: Additional Results

D.1 The Role of Inattention

Figure D.1: Valuations and beliefs: symmetric inattention



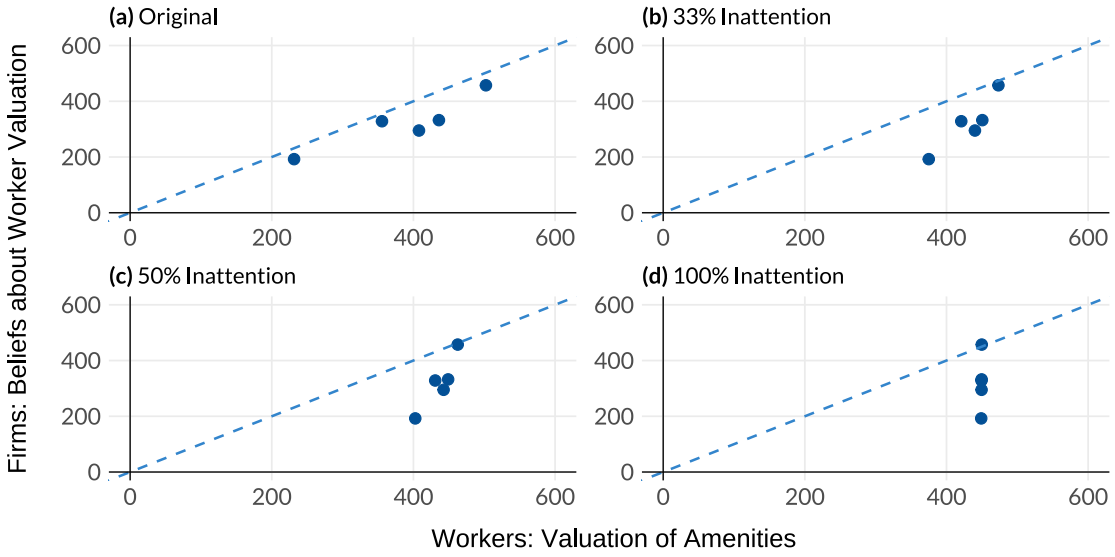
Notes. This figure displays workers' average valuation of amenities (x-axis) and firms' beliefs about workers' valuation (y-axis). Panel (A) shows the original data. Panels (B)–(D) add simulated inattentive respondents. We simulate inattentive respondents to select Job A or Job B randomly in each choice set. Panel (B) corresponds to a share of 33% inattentive respondents, Panel (C) to 50% inattentive respondents, and Panel (D) to a situation in which all respondents are inattentive. Each dot in the x-y space corresponds to the average valuation and belief about one of the following amenities: *work from home*, *four-day workweek*, *mentoring*, *on-the-job training*, and *predictable schedules*.

Figure D.2: Valuations and beliefs: inattentive firms



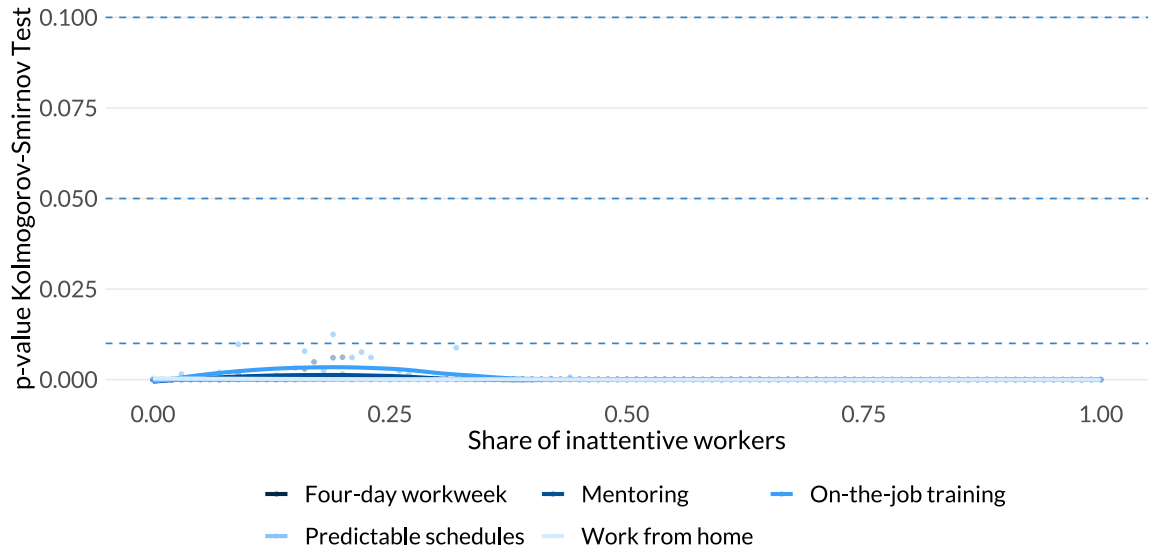
Notes. This figure displays workers' average valuation of amenities (x-axis) and firms' beliefs about workers' valuation (y-axis). Panel A shows the original data. Panels (B)–(D) add simulated inattentive respondents. We simulate inattentive firms to select Job A or Job B randomly in each choice set. Panel (B) corresponds to a share of 33% inattentive firms, Panel (C) to 50% inattentive firms, and Panel (D) to a situation in which all firms are inattentive. Each dot in the x-y space corresponds to the average valuation and belief about one of the following amenities: *work from home*, *four-day workweek*, *mentoring*, *on-the-job training*, and *predictable schedules*.

Figure D.3: Valuations and beliefs: inattentive workers



Notes. This figure displays workers' average valuation of amenities (x-axis) and firms' beliefs about workers' valuation (y-axis). Panel A shows the original data. Panels (B)–(D) add simulated inattentive respondents. We simulate inattentive workers to select Job A or Job B randomly in each choice set. Panel (B) corresponds to a share of 33% inattentive workers, Panel (C) to 50% inattentive workers, and Panel (D) to a situation in which all workers are inattentive. Each dot in the x-y space corresponds to the average valuation and belief about one of the following amenities: *work from home*, *four-day workweek*, *mentoring*, *on-the-job training*, and *predictable schedules*.

Figure D.4: Asymmetric inattention can not generate managers' misperceptions

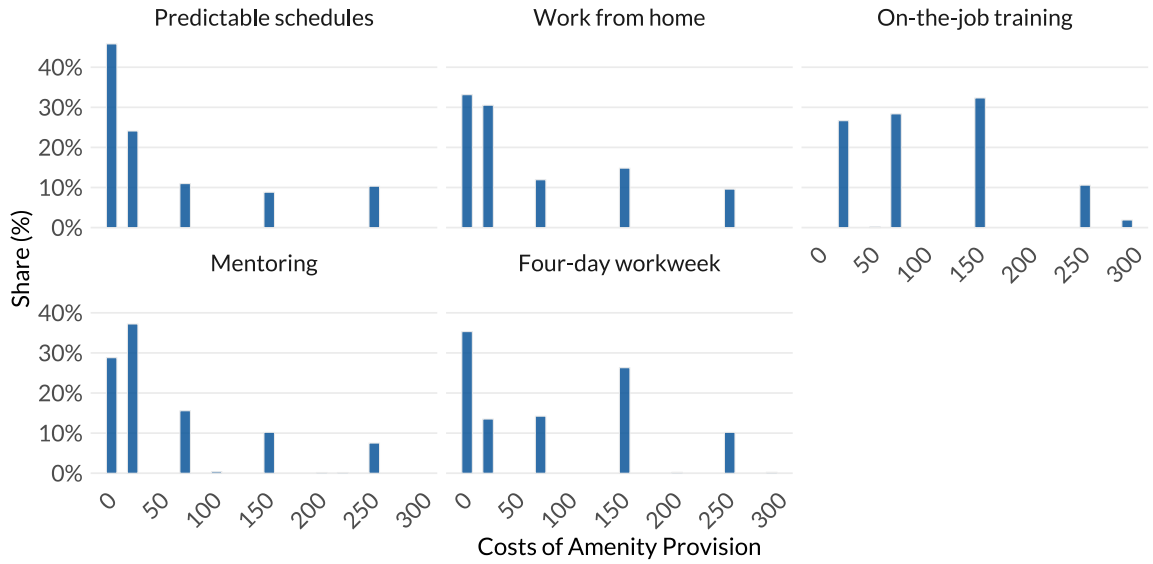


Notes. This figure displays the share of simulated inattentive workers η in the sample (x-axis) and the p-values from a Kolmogorov-Smirnov test (y-axis) testing equivalence of the distributions of workers' valuations and a mixture distribution of firms' beliefs and inattentive respondents. An η equal to 0 corresponds to the original data. If η equals 1, the worker sample consists of inattentive respondents only. The blue horizontal lines represents a p-value of 0.1, 0.05, and 0.01. Each of the lines corresponds to one of the following amenities: *work from home*, *four-day workweek*, *mentoring*, *on-the-job training*, and *predictable schedule*.

D.2 Firm Survey: Additional Analyses

Cost parameters. In the manager survey, we ask firms to report their perceived monthly costs of providing each amenity in € 50 intervals. We document substantial heterogeneity in perceived costs across amenities: on average, managers estimate that offering work-from-home arrangements entails a monthly cost of approximately € 63, while the corresponding figures are € 54 for predictable schedules, € 56 for regular mentoring, € 117 for on-the-job training, and € 94 for a four-day workweek. Appendix Figure D.5 presents the distribution of perceived costs for each amenity separately. For all amenities, the majority of managers report perceived costs below € 50 per month, suggesting that cost considerations alone are unlikely to be the primary constraint to offering these amenities.

Figure D.5: Managers' perceived provision costs of amenities

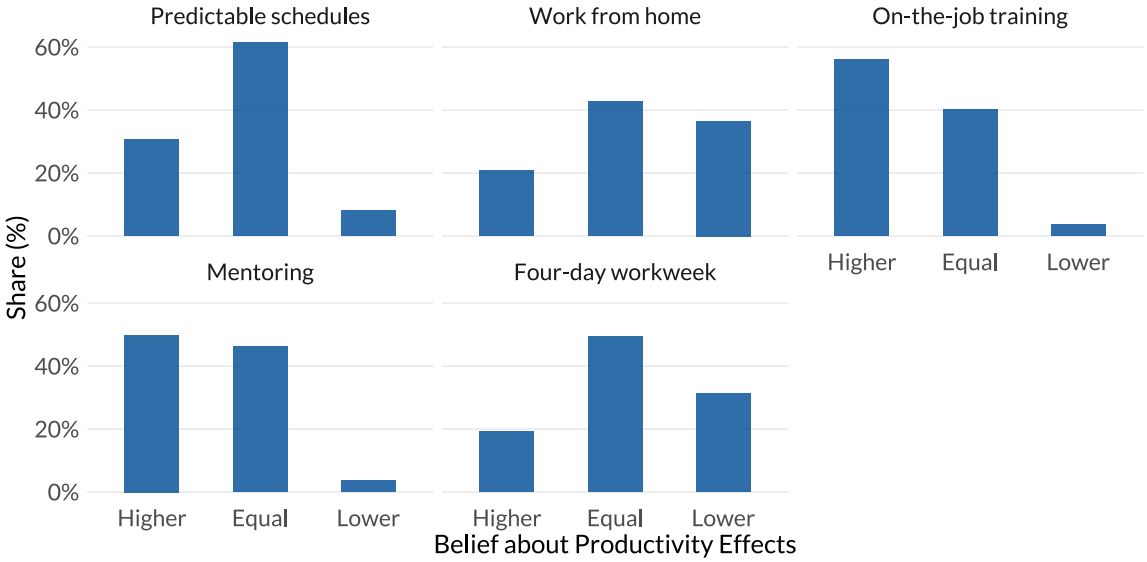


Notes. This figure displays the empirical distribution of managers' cost-of-provision beliefs for each of the following amenities: *work from home*, *four-day workweek*, *mentoring*, *on-the-job training*, and *predictable schedules*.

Productivity parameters. We also elicit firms' beliefs about the relationship between amenities and worker productivity using a qualitative approach. Specifically, we ask managers whether they believe workers become more productive, equally productive, or less productive when granted access to a given amenity. Appendix Figure D.6 displays the distribution of responses. The data reveal that most managers perceive on-the-job training and regular mentoring as productivity-enhancing, with very few reporting negative effects. For flexible scheduling, the modal response is that productivity remains unchanged; however, a larger share of managers view it as more likely to enhance rather

than reduce productivity. In contrast, beliefs about the four-day workweek and work-from-home arrangements are more mixed. While a majority believes these amenities do not affect productivity, the second most common view is that they reduce it.

Figure D.6: Managers' perceived productivity effects of amenities

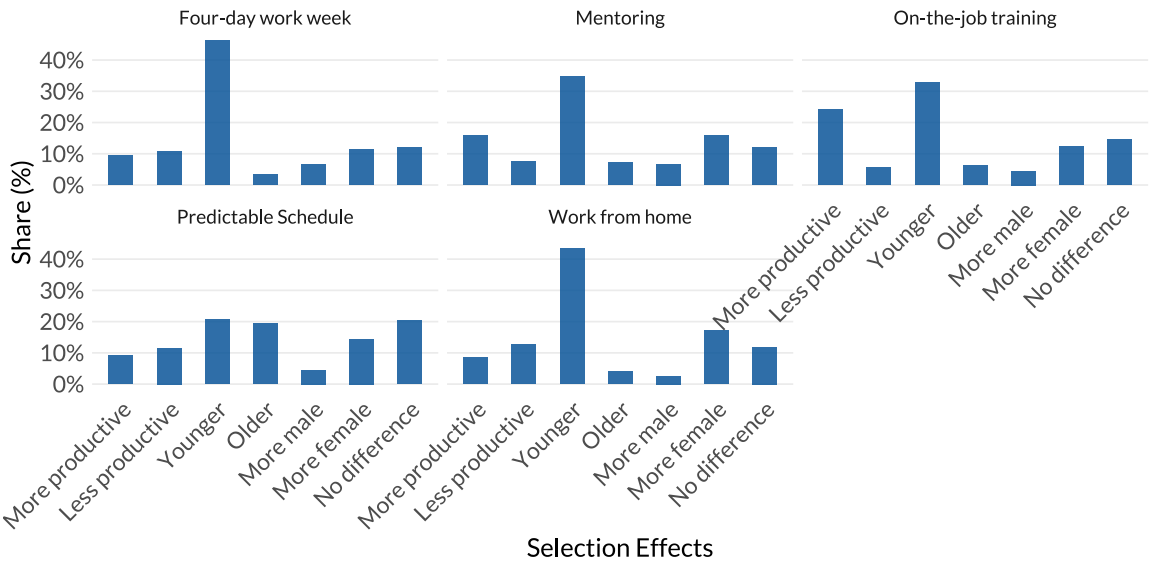


Notes. This figure displays the qualitative distribution of managers' beliefs about productivity effects for each of the following amenities: *work from home*, *four-day workweek*, *mentoring*, *on-the-job training*, and *predictable schedules*.

Selection parameters. We also presented firms with a simplified version of the initial screen from the iterated discrete choice experiment, holding wages constant so that the only difference between Job A and Job B was the presence of the amenity. We then asked whether they believed different types of workers would apply to each job. Appendix Figure D.7 shows the results. The pattern closely resembles that of the productivity beliefs: managers expect that on-the-job training and regular mentoring attract more productive applicants, while views on the other three amenities are mixed. Managers also appear to recognize demographic selection effects: they anticipate that amenities tend to attract a younger applicant pool, and in the case of flexible work, a more female one.

Quantifying excess labor costs. We derive excess labor costs as follows. Suppose that—as in the model in Section 6—a worker's utility is $U = w + v(a)$, where $a \in \{0, 1\}$. The firm is interested in minimizing labor costs holding constant U, i.e., there are optimal wages $w^*(a = 0)$ and $w^*(a = 1)$ that satisfy

Figure D.7: Managers' perceived selection effects of amenities



Notes. This figure displays the qualitative distribution of managers' beliefs about selection effects into the workplace if an amenity is offered. This is shown for each of the following amenities: *work from home*, *four-day workweek*, *mentoring*, *on-the-job training*, and *predictable schedules*.

$$w^*(a=0) = w^*(a=1) + v(a=1) \tag{27}$$

so that $w^*(a=1) = w^*(a=0) - v(a=1)$. A firm's overspending from non-provision in % is then

$$\frac{\text{Labor Costs (a = 0)}}{\text{Labor Costs (a = 1)}} - 1 = \frac{w(a=0)}{w(a=1) + c(a=1) - [y(a=1) - y(a=0)]} - 1 \tag{28}$$

Plugging the expression for $w^*(a=1)$ from above yields the following expression, which is identified by our data:

$$\frac{\text{Labor Costs (a = 0)}}{\text{Labor Costs (a = 1)}} - 1 = \frac{w(a=0)}{w(a=0) - [v(a=1) - c(a=1)] - [y(a=1) - y(a=0)]} - 1 \tag{29}$$

D.3 Information Provision Experiment

D.3.1 Survey Design

Design and Implementation. To test whether manager update their beliefs in response to a light-touch intervention, we designed an information experiment. To increase power,

we focused on one amenity—work from home. Our design closely follows our main survey.

We fielded the survey in April–May 2026 and obtained 356 completed responses. To ensure respondents understood the decision environment, we included a comprehension check at the end of the instructions. Comprehension was high: 90% of respondents answered correctly.

The survey began by eliciting respondents' roles within their firm. Individuals identifying as owners, managers, or HR professionals were routed into the survey; all others were screened out.

Pre-treatment beliefs. In the first step, we elicit firms' beliefs about workers' valuations of work from home, following the same approach used in our main survey (Section 3). We also ask firms about the likelihood to provide work from home to their workers in the next 12 months. Reassuringly, we replicate our finding that firms underestimate workers' valuations of work from home: managers beliefs are on average 131 euros smaller than workers' valuations ($p < 0.01$).

Information treatment. Respondents were randomly assigned to either a *Treatment* or a *Control* condition. All managers first received a summary of their previously stated belief—recovered from the iterative discrete-choice experiment—on workers' valuation of work from home. Managers in the *Treatment* group were then shown truthful information about workers' average valuations of work from home in their main occupational group. We also *complemented* this quantitative information with a *qualitative* message from real workers in the German labor market.[14] The *Control* group received no additional information.

Post treatment beliefs and actions. After the information block, we elicit managers' beliefs about valuations of work from home of workers *in their firm* to test whether managers updated their beliefs in response to the information provision. We then re-elicit intended amenity provision in the next 12 months—separately for both incumbent workers and new hires. We further elicit managers' intentions to (i) ask their workers about the valuations of working from home, (ii) the likelihood of recommending to other firms to implement working from home, and (iii) managers' confidence about the accuracy of their beliefs.

[14]We collected the qualitative messages in April 2026 on the survey platform *Prolific*. We asked workers to write a short open-text response to the following question: *Why is working from home important/unimportant to you when looking for a job?*.

D.3.2 Instrumental Variable Approach

We leverage an instrumental variable (IV) strategy to estimate the causal effect of our information intervention on firms' amenity-provision strategy through the channel of shifting managers' beliefs. We instrument the endogenous variable—managers' beliefs about workers' valuations—with a treatment indicator and its interaction with the size of managers' bias. This allows us to exploit the variation in pre-treatment belief biases to identify the causal effect of biased beliefs on managers' labor amenity-provision strategies. Specifically, we estimate the following model with two-stage least-squares (2SLS):

$$\text{Belief}_i^{\text{Post}} = \beta_0 + \beta_1 \, \text{Bias}_i^{\text{Pre}} + \beta_2 \, \text{Treatment}_i + \beta_3 \left(\text{Treatment}_i \times \text{Bias}_i^{\text{Pre}} \right) + \epsilon_i \tag{30}$$

$$\text{Action}_i^{\text{Post}} = \delta_0 + \delta_1 \, \text{Bias}_i^{\text{Pre}} + \delta_2 \, \widehat{\text{Belief}}_i^{\text{Post}} + \eta_i \tag{31}$$

Equation (30) formalizes the first stage of our IV strategy. We regress manager i's post-treatment belief about workers' valuation of amenity a denoted by $\text{Belief}_i^{\text{Post}}$ on their pre-treatment bias $\text{Bias}_i^{\text{Pre}}$, a treatment indicator Treatment_i, and an interaction term of pre-treatment bias and the treatment indicator. In the second stage, displayed in Equation (31), we regress manager i's intended likelihood to provide work from home, $\text{Action}_i^{\text{Post}}$, on the predicted values from the first stage $\widehat{\text{Belief}}_i^{\text{Post}}$ while controlling for the pre-treatment bias. We denote the error terms from the first stage and second stage by ϵ_i and η_i.

In this model, the first-stage coefficient β_3 measures the effect of the information treatment on managers' beliefs, scaled by managers' initial bias. A negative estimate of β_3 implies that managers who initially underestimate workers' valuation adjust their beliefs upward (and vice versa). The coefficient β_2 captures the treatment effect independent of managers' initial bias.

The second stage estimates the effect of managers' beliefs about workers' valuations of amenities, instrumented by the pre-treatment beliefs interacted with the treatment indicator, on their intended amenity provision strategy. The coefficient δ_2 measures how much an increase in beliefs of € 1 affects the likelihood of adopting work from home.

D.3.3 Results

No effect on manager beliefs. Table D.1 column (1) displays the first-stage results in regression form, estimating the model from equation (30). We find a baseline treatment effect that decreases beliefs by roughly 5 euros. This relation is weak in magnitude and statistically not significant at any conventional level (p = 0.857). More biased managers

adjust their beliefs slightly more—an increase in misperceptions of 100 euros is linked to a stronger relative updating of 16 euros—but again, this difference is not significant at any conventional level. The instrumental variable is weak: the value of the F-statistic is 6.65.

No detectable effect on intended provision. As the instrument is weak, we are unable to measure clean causal effect in the second stage. For transparency, we still report the second stage in Appendix Table D.1, columns (2)–(5). For each of our downstream outcomes, we find small point estimates that are indistinguishable from zero, with p-values ranging from 0.355 (offer work from home to new workers) to 0.595 (recommending work from home to other firms).

Table D.1: Firms do not update beliefs and actions

	Dependent Variable				
	Posterior Belief	Offer Inflows	Offer Incumbent	Ask Workers	Recommend Others
	OLS	*IV*	*IV*	*IV*	*IV*
	(1)	(2)	(3)	(4)	(5)
Bias	0.813***	0.126	0.114	0.074	0.010
	(0.070)	(0.088)	(0.092)	(0.073)	(0.061)
Bias × Treatment	−0.160				
	(0.104)				
Treatment	−5.179				
	(28.809)				
Posterior Belief		−0.111	−0.099	−0.062	0.044
		(0.119)	(0.124)	(0.101)	(0.083)
Constant	365.218**	59.005	50.435	44.965	18.184
	(159.042)	(59.073)	(57.807)	(44.903)	(37.888)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	356	356	356	356	356
R^2	0.560				
F Statistic	6.647*** (df = 57; 298)				

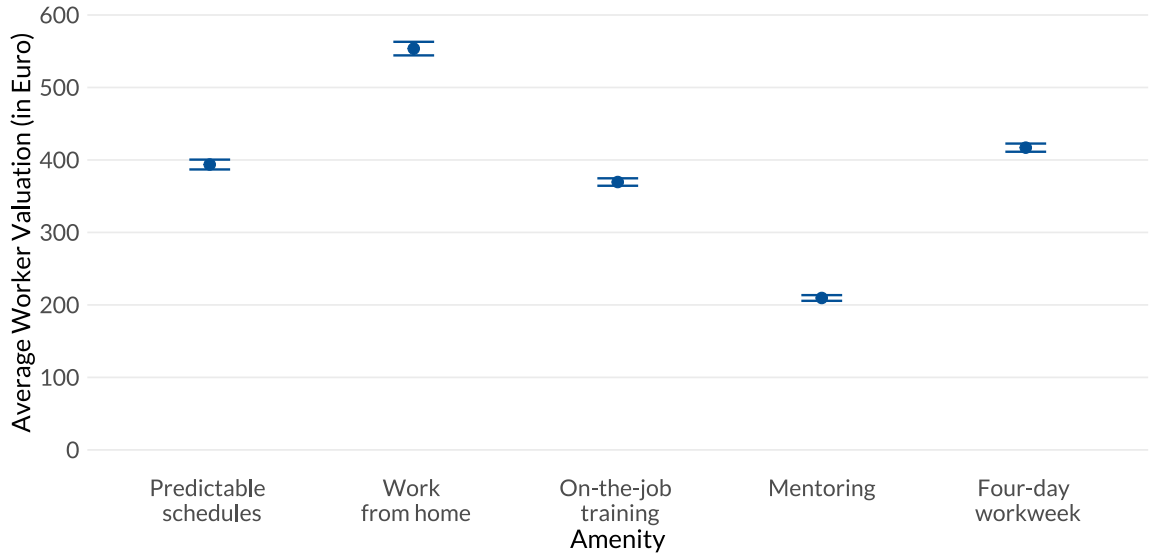
Notes. This table reports the first- and second-stage estimates from the instrumental-variables specification described in equations (30) and (31). Columns (1) and (2) present first-stage regressions of managers' post-treatment beliefs about workers' valuation of work from home on pre-treatment bias, the information-treatment indicator, and their interaction. Columns (3) to (6) report the corresponding second-stage IV estimates, where the dependent variable is the stated likelihood to provide work from home to new hires or incumbents in the next 12 months, to ask workers about their valuations of work from home, and to recommend work from home to other firms, respectively. The endogenous regressor is the posterior belief, instrumented using the interaction between pre-treatment bias and the information-treatment indicator. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

E Worker Survey: Results

In this section, we report additional results from the *worker survey*. See (Bleser et al., 2026) for complementary evidence using a larger set of amenities.

E.1 Worker Survey: Main Text Analyses

Figure E.1: Workers' valuations of non-wage amenities



Notes. This figure displays workers' average valuation of amenities separately for each of the following amenities: *predictable schedules*, *work from home*, *on-the-job training*, *mentoring*, and a *four-day workweek*. Whiskers represent standard errors calculated at the 5% level.

Heterogeneity. Appendix Figure E.2 presents the average valuation of the five workplace amenities, disaggregated by gender. Consistent with prior studies, we find that women exhibit a higher and statistically significant ($p < 0.05$) valuation of predictable schedules, a form of workplace flexibility (Maestas et al., 2023; Mas and Pallais, 2017; Wiswall and Zafar, 2018; De Schouwer and Kesternich, 2025). While women's valuation of work from home is also slightly higher than men's, the point estimate is imprecise and not statistically significant. In contrast, male workers exhibit a higher valuation of on-the-job training ($p < 0.05$), mentoring ($p < 0.01$) and a four-day workweek ($p < 0.10$) relative to their female counterparts. Appendix Table E.2 reports these findings in a regression format. Overall, our results paint a more nuanced picture compared to existing estimates, which typically show that women value amenities more than men. See Bleser et al. (2026) for a more in-depth treatment.

Table E.1: Amenity Provision and Job Satisfaction

	Dependent variable:			
	Job satisfaction	Job satisfaction	Job switching prob.	Job switching prob.
	(1)	(2)	(3)	(4)
Amenity provided	9.396***	8.968***	−5.531***	−6.032***
	(0.496)	(0.491)	(0.692)	(0.656)
Constant	67.300***	69.981***	34.589***	39.005***
	(0.513)	(4.353)	(0.656)	(5.358)
Controls	No	Yes	No	Yes
Observations	14,481	14,469	14,481	14,469
R^2	0.039	0.060	0.007	0.087

Notes. OLS estimates, clustered robust standard errors on the worker level in parentheses. *Amenity provided* is an indicator taking value 1 if the worker's job features the amenity and 0 otherwise. The dependent variable in Columns (1)–(2) is job satisfaction on a scale from 0 to 100, while the dependent variable in Columns (3)–(4) is the self-reported probability to switch jobs during the next 12 months. Controls include the workers' occupation, position within the firm, and tenure. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Appendix Figure E.3 presents the average valuation of the five workplace amenities, disaggregated by age group. We find that valuations of amenities are decreasing in age. Relative to younger workers aged 18–34, we find that workers aged 35–49 exhibit slightly lower valuations of four of five amenities, though the differences are small in magnitude and statistically insignificant for four of the five amenities. In contrast, workers aged 50 and above show substantially lower valuations—often exceeding a € 50 gap—for most amenities. These differences are statistically significant ($p < 0.01$) for predictable schedules, on-the-job training, and mentoring, and marginally significant ($p < 0.10$) for the four-day workweek. Appendix Table E.3 reports these findings in a regression format.

Appendix Figure E.4 shows the average valuation for the pooled set of amenities across occupational groups. Workers in manual sectors—such as manufacturing, construction, agriculture, and logistics—report the lowest valuations, with averages of € 322 in cleaning and hygiene. In contrast, individuals in IT and scientific services report the highest valuations of € 458.

Implication: compensation inequality. A longstanding question is how amenities affect compensation inequality across the income distribution (Maestas et al., 2023; Sockin, 2022; Caldwell et al., 2026) and between genders (Wiswall and Zafar, 2018). Our unique data containing individual-level valuations of five different amenities and information about amenity provision allows us to shed new light. We calculate worker i's total compensation TC_i as the sum of their wage w_i and their valuations of amenity k, denoted by v_{ik}:

Table E.2: The Gender Gap in Amenity Valuations

	Worker Valuation of Amenities					
	Predictable schedules	Work from home	On-the-job training	Mentoring	Four-day workweek	Pooled
	(1)	(2)	(3)	(4)	(5)	(6)
Female	39.620***	17.061	−22.303**	−24.425***	−21.624*	−2.845
	(13.536)	(18.785)	(10.289)	(7.872)	(11.282)	(7.783)
Constant	373.404***	544.884***	380.631***	222.006***	427.936***	377.356***
	(9.172)	(13.731)	(7.530)	(5.901)	(8.240)	(5.763)
Observations	3,200	2,056	3,200	3,200	3,200	14,856
R^2	0.003	0.0004	0.001	0.003	0.001	0.00002

Notes. OLS estimates, Columns (1)–(5) robust standard errors, Column (6) clustered robust standard errors in parentheses. The dependent variable in each column is the valuation of workers in euros. *Female* is an indicator taking value 1 if the respondent is a woman, Columns (1)–(5) refer to different amenities: predictable schedule, work from home, on-the-job training, mentoring, and the four-day workweek. Column (6) pools all amenities. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table E.3: The Age Gap in Amenity Valuations

	Worker Valuation of Amenities					
	Predictable schedules	Work from home	On-the-job training	Mentoring	Four-day workweek	Pooled
	(1)	(2)	(3)	(4)	(5)	(6)
Age 35-49	−9.842	19.871	−18.358	−26.311***	−10.265	−9.504
	(16.574)	(21.847)	(12.375)	(9.995)	(13.522)	(9.543)
Age 50+	−77.762***	−35.230	−56.207***	−58.499***	−27.091*	−52.524***
	(16.620)	(23.253)	(12.679)	(9.654)	(13.952)	(9.436)
Constant	422.436***	557.504***	394.197***	238.058***	429.456***	396.401***
	(11.829)	(15.139)	(8.791)	(7.412)	(9.571)	(6.786)
Observations	3,200	2,056	3,200	3,200	3,200	14,856
R^2	0.008	0.003	0.006	0.011	0.001	0.004

Notes. OLS estimates, Columns (1)–(5) robust standard errors, Column (6) clustered robust standard errors in parentheses. The dependent variable in each column is the valuation of workers in euros. The reference group is workers aged 18-34. *Age 35-49* is an indicator taking value 1 if the respondent is between 35 and 49 years old, while *Age 50+* takes value 1 if the respondent is 50 or older. Columns (1)–(5) refer to different amenities: predictable schedule, work from home, on-the-job training, mentoring, and the four-day workweek. Column (6) pools all amenities. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

$$TC_i = w_i + \sum_{k=1}^{5} v_{ik} \mathbb{1}_{a_{ik}=1} \tag{32}$$

where $\mathbb{1}_{a_{ik}=1}$ is an indicator equal to 1 if worker i receives amenity k, and 0 otherwise. Appendix Table E.4 summarizes our findings. Starting with income inequality, we find that accounting for amenities only mildly affects compensation inequality. The interquartile percentage difference in total compensation—that is, the difference between the 75th and 25th percentiles—remains relatively stable, increasing slightly from 80% to 86.4%. This finding is in line with prior evidence which typically finds that amenities exacerbate inequality across the income distribution (Maestas et al., 2023; Sockin, 2022; Caldwell et al., 2026).

Figure E.2: Workers' valuations of non-wage amenities by gender



Notes. This figure displays workers' average valuation of amenities by gender, separately for each of the following amenities: *work from home*, *four-day workweek*, *mentoring*, *on-the-job training*, and *predictable schedules*. Whiskers represent standard errors calculated at the 5% level.

We next examine gender inequality. Consistent with existing evidence from the German labor market (Destatis, 2025), we find an unconditional gender wage gap of 25% when comparing median earnings. When incorporating workers' valuations of non-wage amenities, this gap decreases to 16.67%, echoing prior findings that show a modest narrowing of the gender gap when amenities are taken into account (Mas and Pallais, 2017; Maestas et al., 2023).

Table E.4: Compensation Inequality and Gender Gaps (Raw vs. Amenity-Adjusted)

Metric	Overall	Male	Female	Gender Gap
Median Raw		4,000	3,000	1,000
Median Raw (%)				25
IQR Raw (%)	80	66.67	100	
Median Amenity		4,800	4,000	800
Median Amenity (%)				16.67
IQR Amenity (%)	86.40	73.97	95.41	

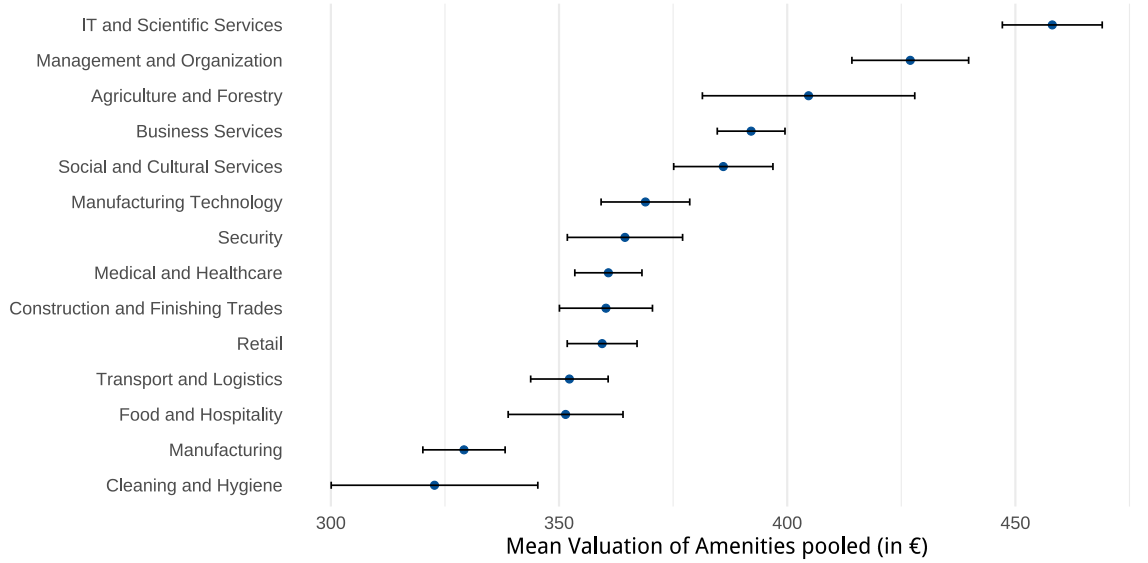
Notes. The table describes raw wage percentiles and total compensation adjusted with individual-specific amenity valuations and provisions for multiple quintiles. We then split the raw numbers by male and female and compute averages across the raw and the total valuations. We also provide interquartile Ranges (IQR) and calculate gender gaps in absolute and relative terms in the raw and total valuations.

Figure E.3: Workers' valuations of non-wage amenities by age groups



Notes. This figure displays workers' average valuation of amenities by age groups, separately for each of the following amenities: *work from home*, *four-day workweek*, *mentoring*, *on-the-job training*, and *predictable schedules*. The age groups are 18–35, 35–49, and 50+. Whiskers represent standard errors calculated at the 5% level.

Figure E.4: Workers' valuations of non-wage amenities by occupational group



Notes. This figure displays workers' average valuation of amenities by occupational groups. For each group, we aggregate individual valuations by pooling responses across all amenities and computing the mean. Whiskers represent standard errors calculated at the 5% level.

E.2 Worker Survey: Additional Analyses

Within-worker correlations: valuations and provision. To the best of our knowledge, the worker survey is the first data set containing individual-level estimates of valuations of non-wage amenities, allowing us to measure the within-worker correlations of worker valuations. We will also conduct the same exercise using the provision of amenities at the worker level.

Appendix Table E.5 displays the within-worker correlations of valuations of non-wage amenities. To account for level effects, we transform the valuations into percentages of worker income. For each of the amenities, we find positive pairwise correlations, ranging from comparably low correlations of 0.17 between work from home and mentoring up to 0.47 between on-the-job training and mentoring.

Table E.5: Pairwise correlations of amenity valuations

	Predictable schedules	Work from home	On-the-job-training	Mentoring	Four-day workweek
Predictable schedules	1	0.27	0.32	0.29	0.29
Work from home	0.27	1	0.24	0.17	0.39
On-the-job-training	0.32	0.24	1	0.47	0.27
Mentoring	0.29	0.17	0.47	1	0.25
Four-day workweek	0.29	0.39	0.27	0.25	1

Notes. Correlation table. Each cell shows a pairwise correlation between workers' valuation of two non-wage amenities. Columns (1)–(5) refer to different amenities: predictable schedule, work from home, on-the-job training, mentoring, and the four-day workweek.

Appendix Table E.6 shows the within-worker correlation of the provision of non-wage amenities. Again, we find a positive correlation between all amenities, although slightly weaker than for valuations. The strongest correlation is in the mentoring / on-the-job training pair (0.40), while the weakest correlation is between work from home and the four-day workweek (0.06).

Sorting. How are workers' valuations over non-wage amenities related to their jobs? Appendix Figure E.5 displays the relationship between workers' valuations (x-axis) and the share of workers being provided with the amenity, pooled across all amenities. We find a positive and significant relationship: moving from the 25th to 75th percentile in valuations is associated with an increase in the likelihood of provision by 10.7 percentage points. Appendix Table E.7 replicates these findings in a regression format, both pooled and separately for each amenity. Each of the amenities is positively associated with its provision and statistically significant at any conventional level ($p < 0.01$). The strongest

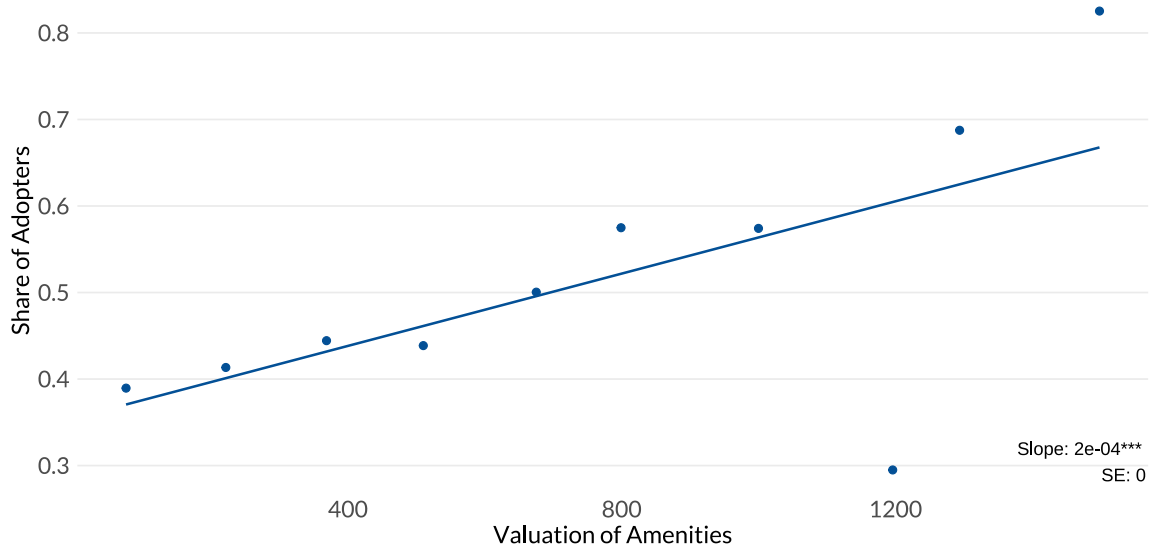
Table E.6: Pairwise correlations of amenity provision

	Predictable schedules	Work from home	On-the-job-training	Mentoring	Four-day workweek
Predictable schedules	1	0.18	0.21	0.20	0.07
Work from home	0.18	1	0.26	0.29	0.06
On-the-job-training	0.21	0.26	1	0.40	0.11
Mentoring	0.20	0.29	0.40	1	0.07
Four-day workweek	0.07	0.06	0.11	0.07	1

Notes. Correlation table. Each cell shows a pairwise correlation between workers' provision of two non-wage amenities. Columns (1)–(5) refer to different amenities: *predictable schedules*, *work from home*, *on-the-job training*, *mentoring*, and the *four-day workweek*.

relationships hold for predictable schedules and work from home, suggesting that these amenities play an important role for workers' occupational choice.

Figure E.5: Sorting into amenities



Notes. This plot shows the relationship between workers' valuations of non-wage amenities (x-axis) and the provision rate of the amenity (y-axis). We aggregate data across all amenities.

Valuations over the life cycle. We next investigate how valuations of non-wage amenities change over the life cycle. Appendix Figure E.6 plots this relationship: the x-axis displays workers' age, while the y-axis shows the average valuation of amenities, separately for each amenity. Two patterns emerge. First, for on-the-job training and mentoring, the valuation of workers is strictly decreasing in age. This pattern is in line with human capital theory. Second, worker valuations of predictable schedules, work from home, and the four-day workweek spike in the 30s to monotonically decrease afterwards. This pattern is in line with shifting preferences after the birth of a child.

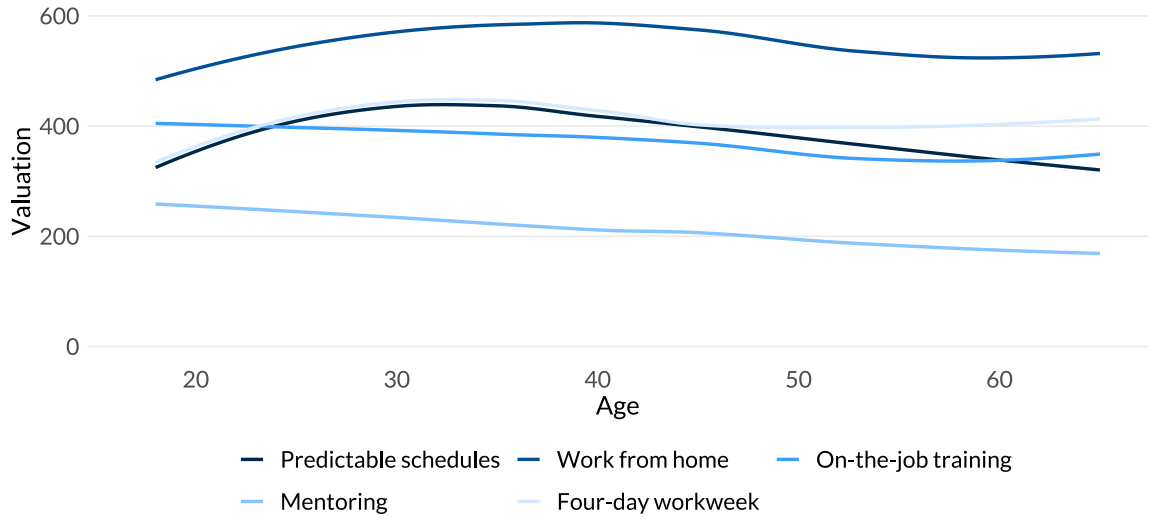
Table E.7: Sorting into amenities

	Amenity Provision Rate					
	Predictable schedules	Work from home	On-the-job training	Mentoring	Four-day workweek	Pooled
	(1)	(2)	(3)	(4)	(5)	(6)
Valuation	0.0003***	0.0003***	0.0001***	0.0002***	0.0001***	0.0002***
	(0.00002)	(0.00002)	(0.00003)	(0.00004)	(0.00002)	(0.00001)
Constant	0.435***	0.472***	0.477***	0.419***	0.092***	0.366***
	(0.013)	(0.017)	(0.015)	(0.012)	(0.010)	(0.007)
Observations	3,099	2,035	3,086	3,117	3,144	14,481
R^2	0.043	0.073	0.007	0.005	0.013	0.022

Notes. OLS estimates, Columns (1)–(5) report robust standard errors, and Column (6) reports clustered robust standard errors, in parentheses. The dependent variable is an indicator for whether the firm provides the respective amenity. The main regressor is workersâ valuation of that amenity, measured in euros. Columns (1)–(5) refer to different amenities: *predictable schedules*, *work from home*, *on-the-job training*, *mentoring*, and the *four-day workweek* Column (6) pools all amenities.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

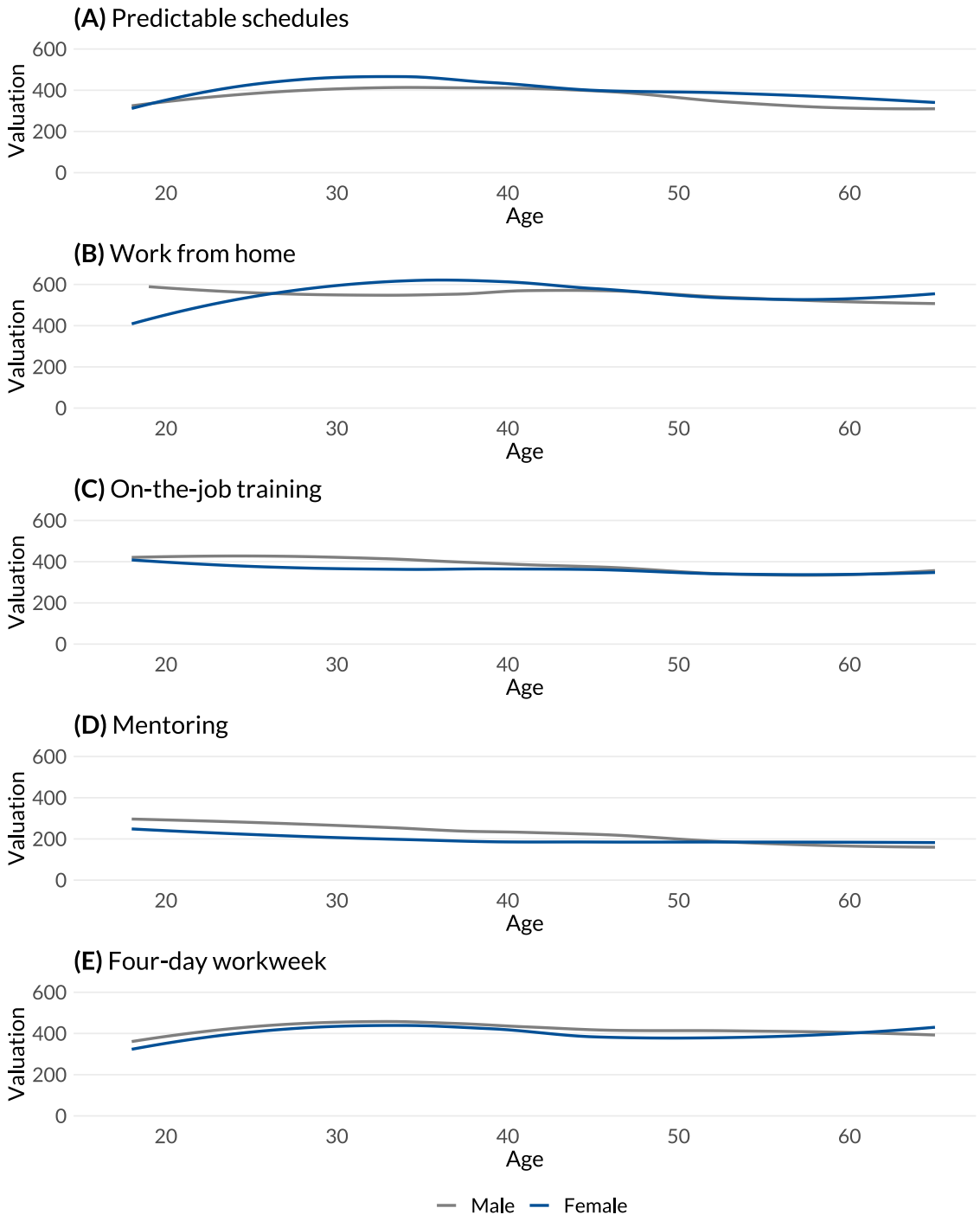
Appendix Figure E.7 zooms in on gender differences in valuations over the life cycle. We find that the spike in the 30s for predictable schedules and work from home is driven by women—again pointing towards a maternity component. In contrast to existing literature, we do not find higher valuations of amenities for all amenities we consider. Younger men have larger valuations of mentoring and on-the-job training than younger women. At roughly age 50, these gaps converge.

Figure E.6: Valuations over the life cycle



Notes. This figure plots workers' valuations of non-wage amenities (y-axis) by age (x-axis), separately for each amenity. The colored lines from dark to bright represent the following amenities: *predictable schedules*, *work from home*, *on-the-job training*, *mentoring*, and the *four-day workweek*

Figure E.7: Valuations over the life cycle: gender differences



Notes. This figure plots workers' valuations of non-wage amenities (y-axis) by age (x-axis), separately for women (blue lines) and men (gray lines). Panels (A)–(E) show this relationship for each of the following amenities: *predictable schedules*, *work from home*, *on-the-job training*, *mentoring*, and the *four-day workweek*

F Robustness to Alternative Belief Specifications

As we pre-registered, our main analyses used the sample we collected without accounting for potential imbalances via re-balancing. In this section, we test the robustness of our main results to different weighting schemes. First, we re-weight workers to be representative of German workers in terms of occupations, gender and age using data from administrative employment records. Second, we re-weight the manager survey to be representative of German firms in terms of firm size and occupations. We implement these weights using a standard raking algorithm.

Table F.1: Underestimation reweighted to population

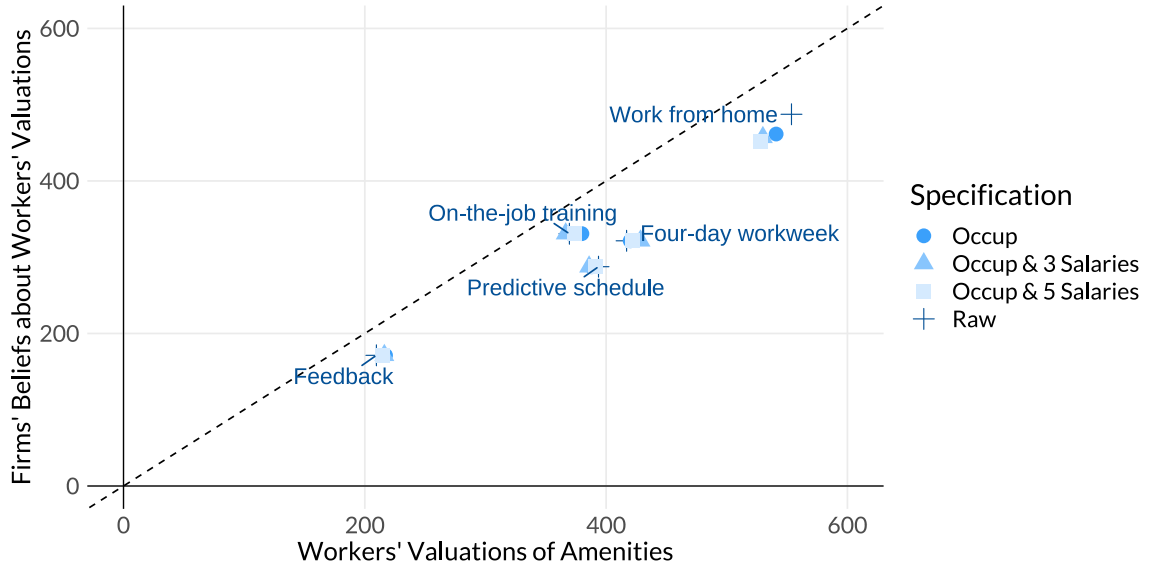
	Beliefs and Valuations				
	Predictable schedules	Work from home	On-the-job training	Mentoring	Four-day workweek
	(1)	(2)	(3)	(4)	(5)
Panel A: Worker Weights					
Manager	−98.128***	−54.471***	−38.417***	−39.363***	−86.750***
	(12.099)	(17.700)	(11.237)	(8.748)	(10.902)
Constant	385.686***	541.896***	369.200***	210.706***	408.274***
	(7.378)	(10.403)	(5.739)	(4.364)	(6.110)
Observations	3,963	2,555	3,962	3,963	3,964
R^2	0.011	0.003	0.003	0.005	0.012
Panel B: Firm Weights					
Manager	−116.149***	−95.649***	−31.008	−44.896***	−84.885***
	(18.083)	(28.658)	(19.088)	(13.334)	(17.557)
Constant	393.697***	553.637***	369.552***	209.593***	416.977***
	(6.782)	(9.371)	(5.141)	(3.932)	(5.638)
Observations	3,963	2,555	3,962	3,963	3,964
R^2	0.016	0.008	0.002	0.006	0.012
Panel C: Combined Weights					
Manager	−108.138***	−83.908***	−30.656	−46.009***	−76.183***
	(18.315)	(29.012)	(19.258)	(13.468)	(17.715)
Constant	385.686***	541.896***	369.200***	210.706***	408.274***
	(7.378)	(10.403)	(5.739)	(4.364)	(6.110)
Observations	3,963	2,555	3,962	3,963	3,964
R^2	0.014	0.006	0.002	0.007	0.010

Notes. OLS estimates, robust standard errors in parentheses. The dependent variable in each column is the valuation of workers / belief of managers about workers' valuations in euros, we only report the coefficient of the indicator *Manager* of various specifications here. The columns refer to the following amenities: *predictable schedules*, *work from home*, *on-the-job training*, *mentoring*, and the *four-day workweek*. Panel A reports using the worker weights (occupation, age and gender) while panel B uses firm weights (occupation and firm size). Panel C combines both. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Firms underestimate workers' valuations. Appendix Table F.1 tests the sensitivity of our main result—firms underestimate workers' valuations of non-wage amenities—to the reweighting of managers and workers. Reassuringly, we find that the point estimates differ only marginally between the baseline specification and the reweighted specifications. Moreover, 13 of the 15 manager coefficients are statistically significant at the 1 percent level.

Appendix Figure F.1 shows that the estimates remain robust across alternative ways of conditioning on occupations and salary grids. Across all four specifications—three of which reweight workers' valuations to match the managers' occupational distribution and two vary the salary grids—the results remain both quantitatively and qualitatively similar.

Figure F.1: Underestimation reweighted with controls



Notes. This figure displays workers' average valuation of amenities (x-axis) and firms' beliefs about workers' valuation (y-axis). Each dot in the x-y space corresponds to the average valuation and belief about one of the following amenities: *predictable schedules*, *work from home*, *on-the-job training*, *mentoring*, and a *four-day workweek*. The figure presents four different specifications. The crosses show raw averages. The second reweighs the workers' valuations to match the managers' occupational distribution. The final two further adjust for both occupational and salary distributions of the managers, using salary grids with three and five categories, respectively.

Finally, Appendix Table F.2 shows that our main manager coefficients reflect a robust underestimation, irrespective of how we clean the valuation and belief variables. We report results with winsorization at the 1, 5, and 10 percent levels, as well as a specification in which all boundary elicitations are set to the boundary. The underestimation remains statistically significant across all specifications.

Table F.2: Amenity valuations and beliefs - robustness of tails

	Predictable schedules	Work from home	On-the-job training	Mentoring	Four-day workweek
Preferred	-100.590***	-75.936***	-47.896***	-45.275***	-97.929***
	(11.877)	(17.001)	(11.123)	(8.804)	(10.950)
1% Winsorized	-167.281***	-238.175***	-113.549***	-202.183***	-155.089***
	(38.273)	(51.611)	(31.912)	(39.220)	(33.492)
10% Winsorized	-87.716***	-119.688***	-63.689***	-91.244***	-94.684***
	(11.370)	(18.292)	(10.447)	(7.892)	(10.393)
Bounded	-55.179***	-28.105*	-35.390***	-37.161***	-64.794***
	(10.585)	(13.117)	(10.412)	(8.331)	(10.146)

Notes. OLS estimates, robust standard errors in parentheses. The dependent variable in each column is the valuation of workers / belief of managers about workers' valuations in euros, we only report the coefficient of the indicator *Manager* of various specifications here. The columns refer to the following amenities: *predictable schedules*, *work from home*, *on-the-job training*, *mentoring*, and the *four-day workweek*. The first row reports our preferred specifications winsorized at the 5% level, while row 2 winsors at the 1% and row 3 at the 10% level. Row 4 caps all our tails, meaning everything that is elicited openly at the tails gets set to 75 at the lower bound and 825 at the upper bound. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Beliefs predict provision. Appendix Table F.3 replicates our provision analysis splitting the sample into adopters and non-adopters of each specific amenity. We then apply the same reweighting scheme to match firms' size and occupational structure, as well as workers' age, gender, and occupation distributions in the population. The estimates are very similar, significant at the 1 percent level for non-providers, while providers remain much closer to workers' true valuations.

Evidence for Interpersonal Projection. Appendix Table F.4 shows the reweighted version of Table 3. The estimates are larger when reweighted by the population distributions of workers and firms, indicating that the interpersonal projection is robust and appears to be driven mainly by older and male managers.

Biased firms and labor shortages. Appendix Table F.5 replicates the analysis in Table 4. When we reweigh firms and workers to match population distributions, the association between underestimation and firm-level shortages becomes stronger. This is particularly pronounced for the ORIV strategy, where all estimates are significant at the 1 percent level.

Table F.3: Underestimation by provision status — reweighted

	Beliefs and Valuations				
	Predictable schedules	Work from home	On-the-job training	Mentoring	Four-day workweek
	(1)	(2)	(3)	(4)	(5)
Panel A: Non-adopters					
Manager	−159.433***	−190.521***	−100.486***	−79.979***	−82.058***
	(22.744)	(36.579)	(27.543)	(15.954)	(20.309)
Constant	386.564***	543.991***	371.522***	210.917***	409.345***
	(7.526)	(10.495)	(5.888)	(4.438)	(6.162)
Observations	3,443	2,182	3,266	3,406	3,720
R^2	0.018	0.016	0.008	0.011	0.009
Panel B: Adopters					
Manager	−60.255**	−10.753	3.039	−16.196	−59.975*
	(26.197)	(38.248)	(24.478)	(20.363)	(32.901)
Constant	386.564***	543.991***	371.522***	210.917***	409.345***
	(7.526)	(10.494)	(5.887)	(4.438)	(6.162)
Observations	3,502	2,383	3,659	3,571	3,327
R^2	0.003	0.0001	0.00001	0.001	0.002

Notes. OLS estimates, robust standard errors in parentheses. The dependent variable in each column is the valuation of workers/beliefs of managers in euros. *Manager* is an indicator taking value 1 if the respondent is a manager, Columns (1)–(5) refer to different amenities: *predictable schedules*, *work from home*, *on-the-job training*, *mentoring*, and the *four-day workweek* Panel A is restricted to firms that do not offer the respective amenity, while Panel B regresses separately for firms that offer the amenity. All regressions are reweighted according to firm size and occupations and workers age, gender and occupations to match the population distribution. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table F.4: Interpersonal projection — reweighted

	Belief about Worker Valuation					
	(1)	(2)	(3)	(4)	(5)	(6)
Own Valuation	0.537***	0.494***	0.495***	0.507***	0.500***	0.499***
	(0.065)	(0.067)	(0.067)	(0.066)	(0.065)	(0.064)
Constant	116.510***	133.845***	148.742***	138.381***	187.743***	242.465***
	(19.187)	(38.449)	(43.733)	(32.467)	(37.343)	(82.879)
Amenity FE	No	Yes	Yes	Yes	Yes	Yes
Gender FE	No	No	Yes	No	Yes	Yes
Age FE	No	No	No	Yes	Yes	Yes
Gender × Age FE	No	No	No	No	Yes	Yes
Occupation FE	No	No	No	No	No	Yes
Average Belief	309.73	309.73	307.92	307.49	307.49	307.49
Observations	758	758	742	738	738	738
R^2	0.314	0.347	0.349	0.355	0.358	0.393

Notes. OLS estimates, robust standard errors in parentheses. This table shows results from regressions of managers beliefs on their own valuation conditional on the same amenity. Columns (1)–(6) sequentially add controls. Column (1) reports the raw pass-through from own valuations to beliefs. Column (2) adds amenity fixed effects. Column (3) further includes a gender indicator, column (4) adds a continuous age control, column (5) adds gender–age interactions, and column (6) additionally controls for occupation fixed effects. All regressions are reweighted according to firm size and occupations and workers age, gender and occupations to match the population distribution. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table F.5: Managers' biased beliefs and labor shortages — reweighted

	Labor Shortages					
	OLS		*ORIV*			
	(1)	(2)	(3)	(4)	(5)	(6)
Underestimation	0.029	0.031*	0.116***	0.136***	0.130***	0.155***
	(0.019)	(0.018)	(0.045)	(0.047)	(0.042)	(0.043)
Constant	0.368***	0.912***	0.373***	0.904***	0.369***	0.852***
	(0.033)	(0.182)	(0.018)	(0.206)	(0.018)	(0.201)
Controls	No	Yes	No	Yes	No	Yes
Clustered SE	Yes	Yes	Yes	Yes	Yes	Yes
Bootstrapped SE	No	No	Yes	Yes	Yes	Yes
Number Instruments	0	0	3	3	4	4
Observations	3,527	3,433	3,024	2,944	3,522	3,428

Notes. This table reports OLS and ORIV estimates of the relationship between firms' misperceptions of worker amenity valuations and labor shortages. The dependent variable is an indicator equal to one if the firm reports had problems filling their positions at least 3 of the last 5 years, and zero otherwise. Underestimation is the standardized difference between workers' average valuations of an amenity and the firm's belief about that valuation, rescaled so that higher values denote greater underestimation. Columns (1)–(2) present OLS regressions with heteroskedasticity-robust standard errors clustered at the firm level; columns (3)–(6) present ORIV (Obviously Related Instrumental Variables) estimates, where the beliefs about other amenities serve as instruments for the focal amenity's misperception. Specifications differ in the number of instruments available: columns (3)–(4) use three instruments (excludes firms that have no work-from-home possibilities) and columns (5)–(6) use all four, imputing median work-from-home values from our sample. All ORIV specifications are estimated using a cluster bootstrap at the firm level with 1,000 resamples; the reported standard errors are bootstrap standard errors. Controls include the following: occupation segment fixed effects, salary grid, age, manager gender, collective bargaining agreement indicator, and works council indicator. All regressions are reweighted according to firm size and occupations and workers age, gender and occupations to match the population distribution.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

G Theoretical Appendix

G.1 Proofs

Before we prove our main propositions, we will introduce a lemma that will be useful throughout the proofs.

Lemma 1. *Let there be two firms characterized by θ and $\tilde{\theta}$. For any $0 < \tilde{\theta} < \theta \leq 1$, the optimal amenity levels a_θ and $a_{\tilde{\theta}}$ satisfy the following relationship:*

$$1/\theta < \frac{v(a_\theta) - v(a_{\tilde{\theta}})}{a_\theta - a_{\tilde{\theta}}} < 1/\tilde{\theta}$$

Proof. First, notice that using the arguments from the main text, for any $\theta' \in (0, 1]$, the optimal amenity level satisfies $a' = (v')^{-1}(1/\theta')$. As $v(\cdot)$ is twice continuously differentiable, increasing, concave, it holds that both v' and $(v')^{-1}$ are decreasing, hence $a_\theta > a_{\tilde{\theta}}$. We can then invoke the mean-value theorem to conclude that there exists $z \in (a_{\tilde{\theta}}, a_\theta)$ such that $v'(z) = \frac{v(a_\theta) - v(a_{\tilde{\theta}})}{a_\theta - a_{\tilde{\theta}}}$. By concavity of $v(\cdot)$, it must hold that

$$v'(a_\theta) = 1/\theta < v'(z) < 1/\tilde{\theta} = v'(a_{\tilde{\theta}})$$

Hence, the postulated relationship holds.

□

Proposition 1. *A firm's biased beliefs about workers' valuations of non-wage amenities results in the following equilibrium consequences for the biased firm:*

1. *(Labor Shortages) The biased firm experiences labor shortages:*

$$\tilde{L}_A < L_A^{BM}$$

2. *(Excess Labor Costs) The biased firm could lower labor costs while holding worker utility constant: there exists a wage-amenity bundle w'_A, a'_A, s.t., $\tilde{U}_A(x) = U'_A(x)$ and*

$$\tilde{w}_A + \tilde{a}_A > w'_A + a'_A$$

3. *(Pessimism) The biased firm is pessimistic about the labor market condition:*

$$\tilde{\phi}_A < \phi$$

Proof. We will show each of the properties separately. To show *labor shortages*, recall that

$$L_A(\tilde{w}, \tilde{a}, w_B^*, a_B^*) = \frac{1}{2} + \frac{\tilde{w} - w_B^* + \theta[(v(\tilde{a}) - v(a_B^*))]}{2\tau}$$

and $L_A^{BM} = \frac{1}{2}$. it thus suffices to show that

$$\tilde{w} - w_B^* + \theta[(v(\tilde{a}) - v(a_B^*))] < 0. \tag{33}$$

Plugging in the equilibrium wages yields

$$(y - \tilde{a} - \tau) - (y - \tau - \frac{a_B^* + \tilde{a}_A}{2} + \frac{\theta(v(\tilde{a}_A)) - v(a_B^*))}{2}) + \theta[(v(\tilde{a}) - v(a_B^*))] < 0$$

which we can simplify and rearrange to

$$a_B^* - \tilde{a}_A < \theta[v(a_B^*) - v(\tilde{a}_A)]$$

and thus

$$1/\theta < \frac{v(a_B^*) - v(\tilde{a}_A)}{a_B^* - \tilde{a}_A}$$

We can then apply Lemma 1 to verify that the inequality holds, proving the *labor shortages effect*.

To show *excess labor costs*, simply note that the biased firm can increase amenities from $\tilde{a}_A$ until $a' = (v')^{-1}(1/\theta) = a^{BM}$. By then reducing $\tilde{w}_A$ to w' such that $U(\tilde{w}_A, \tilde{a}_A) = U(w', a')$, we have found a bundle (w', a') such that $w' + a' < \tilde{w}_A + \tilde{a}_A$ and $U(\tilde{w}_A, \tilde{a}_A) = U(w', a')$ holds.

To prove *pessimism*, recall that firm A's equilibrium belief about labor market conditions satisfies $\tilde{\phi}_A L_A(\tilde{w}_A, \tilde{a}_A, \tilde{w}_B, \tilde{a}_B) = \phi L_A(\tilde{w}_A, \tilde{a}_A, w_B^*, a_B^*)$. As we have just shown $L_A(\tilde{w}_A, \tilde{a}_A, w_B^*, a_B^*) < L_A(\tilde{w}_A, \tilde{a}_A, \tilde{w}_B, \tilde{a}_B)$ in the first part of the proof, it must hold that $\tilde{\phi} < \phi$. □

Proposition 2. *A firm's biased beliefs about workers' valuations of non-wage amenities results in the following equilibrium consequences for the labor market:*

1. *(Market Power) The unbiased firm reduces wages:* $w_B^* < w_B^{BM}$
2. *(Contamination) All workers are worse off:* $U^*(x) < U^{BM}(x) \; \forall x \in [0, 1]$

Proof. We will prove both statements separately.

First, we will show the *Market Power Effect*. Recall that in the benchmark case $w^{BM} = y - a^{BM} - \tau$ while $w_B^* = y - \tau - \frac{a_B^* + \tilde{a}_A}{2} + \frac{\theta[v(a_B^*) - v(\tilde{a}_A)]}{2}$. Plugging in the condition $w_B^* < w^{BM}$ becomes

$$y - \tau - \frac{a_B^* + \tilde{a}_A}{2} + \frac{\theta[v(a_B^*) - v(\tilde{a}_A)]}{2} < y - a^{BM} - \tau$$

which simplifies using $a^{BM} = a_B^*$ to

$$a_B^* - \tilde{a}_A < \theta[v(a_B^*) - v(\tilde{a}_A)]$$

which can be verified to hold using Lemma 1.

Finally, to prove the *Contamination Effect*, note that there are three types of workers: (i) those who work at firm A in both equilibria, (ii) those who work at firm B in both equilibria, and (iii) those who work at firm A in the unbiased equilibrium but at firm B in the biased equilibrium. We will show that all types of workers become worse off. For (i), we will show that $\tilde{w}_A + \theta v(\tilde{a}_A) < w^{BM} + \theta v(a^{BM})$. Plugging in the equilibrium values yields

$$y - \tilde{a}_A - \tau + \theta v(\tilde{a}_A) < y - a^{BM} - \tau + \theta v(a^{BM})$$

which simplifies to

$$1/\theta < \frac{v(a^{BM}) - v(\tilde{a}_A)}{a^{BM} - \tilde{a}_A}$$

which holds using Lemma 1 as $\theta > \tilde{\theta}$ and hence $a^{BM} > \tilde{a}_A$.

For (ii), note that $a^{BM} = a_B^*$ and $w^{BM} > w_B^*$ as shown above. Hence, $w^{BM} + \theta v(a^{BM}) > w_B^* + \theta v(a_B^*)$.

Finally, to show (iii), note that the same arguments as for (ii) hold and in addition, the worker works for the less preferred firm, establishing our claim.

□

H Research Transparency

Pre-registration. We pre-registered the study under #217553 at AsPredicted.

The pre-registration includes details on the survey design, treatment variations, the sampling process and planned sample size, exclusion criteria, our main hypothesis, the predicted mechanism, and additional hypotheses. The following notes document where we deviate from the pre-registration.

- The sample sizes for both firms and workers are slightly lower than our target sample sizes. This is due to two reasons: (i) a slightly lower response rate than expected and (ii) unexpected reductions in the research team's budget. Note that all our main results are highly significant, making it very unlikely that they would not be robust to an increase in sample size.
- We slightly adjusted our exclusion criteria to be more conservative: we only exclude participants who state inconsistent valuations or beliefs in the free-form elicitation question for all amenities instead of only one. We further decided to exclude observations that state implausibly large or small valuations / beliefs and then winsorize valuations and beliefs at the 5% level. Our qualitative results are unaffected by this decision. In fact, these exclusion criteria are more conservative as they reduce the gap between firms' beliefs and workers' valuations.

Ethics approval. The study obtained ethics approval from the German Association for Experimental Economic Research (#1BLomxz9, 11/11/2024).

Data and code availability. All data and code will be made available online.

Competing interests. The authors declare that they have no competing interests.

I Survey Instruments

I.1 Firm Survey: English

Below we have the english translation of our questionnaire on the firm side.

Role in firm. What is your position in your current company?

- Owner
- Department head / Manager
- Human Resources / HR department
- Team leader
- Employee
- Trainee / Apprentice
- Other

Sector. In which industry is your company primarily active?

- Construction
- Provision of financial and insurance services
- Provision of professional, scientific, and technical services as well as other business services
- Real estate activities
- Trade, transportation, and storage
- Information and communication
- Agriculture, forestry, and fishing
- Public administration, defense; social security, education, health, and social work
- Other services
- Manufacturing, mining and quarrying, other industries

Most-frequent occupation. For which occupational group are you currently hiring the most employees?

- (List of 48 occupational groups.)

Work from home filter. Do you have employees in the occupational group just mentioned who work in the office or from home?

- Yes
- No

Collective bargaining agreements. Are employees in this occupational group in your company mainly paid according to collective bargaining agreements?

- Yes
- No

Worked in occupational group before? Have you ever worked yourself in the occupational group just mentioned?

- Yes
- No

Salary in occupational group. The average gross monthly salary of your employees in this occupational group is approximately:

- 1,000 – 1,500 euros
- 1,500 – 2,000 euros
- 2,000 – 2,500 euros
- 2,500 – 3,000 euros
- 3,000 – 3,500 euros
- 3,500 – 4,000 euros
- 4,000 – 4,500 euros
- 4,500 – 5,000 euros

- 5,000 – 5,500 euros
- 5,500 – 6,000 euros
- More than 6,000 euros

Main instructions. In the following parts of this survey, we ask you to imagine different situations. Imagine a worker in Germany in the field of **[Occupational Group]**. This worker receives two job offers from the same company: Job A and Job B. The tasks of the jobs are identical. However, the jobs differ in two respects: the gross salary and one non-wage amenity. The worker must now decide between Job A and Job B. We would like to know: Does the average worker prefer Job A or Job B? Such a decision will be presented to you 4 times for the same amenity (for example: company car). However, the gross monthly salary of Job B (see figure) will change in each round. Example in the figure: Job A includes a company car, Job B offers 500 euros more salary without a company car. Please decide which job the average worker finds better.

Comprehension. Please select the correct statement.

- We would now like to know: Does the average worker prefer Job A or Job B?
- The salaries remain the same in each round.
- In each round, you will be presented with 5 jobs.

Belief: Predictable Schedules This section is about long-term planning of work schedules. This means that employees know their working hours 2 months in advance or are informed the day before the week begins.

- Job A: Schedule announced 2 months in advance [Base Salary]
- Job B: Schedule announced the day before the week begins [Base Salary + X euros]

Does the average worker prefer Job A or Job B?

- Job A
- Job B

Belief: Work from home This section is about working from home. This means that employees can also work from home or on the go and do not always have to be physically present.

- Job A: Working from home possible [Base Salary]
- Job B: Working from home not possible [Base Salary + X euros]

Does the average worker prefer Job A or Job B?

- Job A
- Job B

Belief: On-the-job training This section is about training opportunities at the workplace. This means that employees have the option to take 3 free training courses per year. Alternatively, there are no training opportunities.

- Job A: 3 free training courses per year [Base Salary]
- Job B: No training [Base Salary + X euros]

Does the average worker prefer Job A or Job B?

- Job A
- Job B

Belief: mentoring This section is about feedback meetings. This means that employees receive monthly feedback on their performance and discuss their goals.

- Job A: Monthly feedback meeting [Base Salary]
- Job B: No feedback meetings [Base Salary + X euros]

Does the average worker prefer Job A or Job B?

- Job A
- Job B

Belief: Four-day workweek This section is about the four-day workweek. This means that employees can arrange their workweek so that, with the same weekly hours, they work either 4 or 5 days.

- Job A: Option of 4 days of 10 hours each [40 hours / week] [Base Salary]
- Job B: 5 days of 8 hours each [40 hours / week] [Base Salary + X euros]

Does the average worker prefer Job A or Job B?

- Job A
- Job B

Manager's own valuation. [1 randomly selected amenity. For the sake of brevity, we show the instructions for predictable schedules.] We would now like to show you one of the amenities mentioned earlier. This time, however, it is about which job *you* would prefer if you currently had to choose between two offers.

This section is about long-term planning of work schedules. This means that you either know your working hours 2 months in advance or you are always informed the day before the week begins.

- Job A: Schedule announced 2 months in advance [Base Salary]
- Job B: Schedule announced the day before the week begins [Base Salary + X euros]

Which job do you prefer?

- Job A
- Job B

Amenity Provision Are the following amenities currently offered in your company, or have they been offered in the past? [Four-day workweek, predictable schedules, Feedback meetings, On-the-job training, Work from home]

- Yes, currently
- Yes, in the past
- No
- I don't know

Belief: productivity effects. Do you believe that employees with the following amenities are more productive, about equally productive, or less productive? [Four-day workweek, predictable schedules, Feedback meetings, On-the-job training, Work from home]

- Less productive
- About equally productive
- More productive

Belief: costs of provision. Approximately how much would it cost you per person per month to provide the following amenities? Example: If a computer costs 300 euros and is used by an employee for 5 years or 60 months, then it costs 300 euros / 60 months = 5 euros per month. Your approximate cost per person per month:

- 0 euros
- 1 – 50 euros
- 51 – 100 euros
- 101 – 200 euros
- More than 200 euros
- I don't know
- More: [Open Text Field]

Amenities: decision maker. Who in your company decides on the provision of these or similar amenities? (multiple answers possible)

- Owner
- Department head / Manager
- Human Resources / HR department
- Works council

Perceived labor market conditions. How easy is it under the current market conditions to find suitable workers in the field of [Occupational Group]?

- Very easy
- Easy
- Neither easy nor difficult
- Difficult
- Very difficult

Selection Effects [1 randomly selected amenity. For the sake of brevity, we show the instructions for predictable schedules.] If you were to post the following two jobs, would the applicants for Job A and Job B differ? The jobs are almost identical. The only difference is the information about the working schedules.

- Job A: Schedule announced 2 months in advance [Base Salary]
- Job B: Schedule announced the day before the week begins [Base Salary + X euros]

In what way are people who apply for Job A different from those who apply for Job B?

- They are younger
- They are older
- They are more productive
- They are less productive
- They are more likely to be male
- They are more likely to be female
- The applicants would not differ

Firm size. How many employees does your company have?

- 1 – 9
- 10 – 49
- 50 – 149
- 150 – 249
- More than 250

Hiring policy. Is your company planning to hire new employees within the next 12 months?

- Yes
- No

Works council. Does your company have a works council?

- Yes
- No

Labor shortages. In how many of the last 5 years have you had difficulties filling vacancies?

- In 0 (none) of the years
- In one year
- In two years
- In three years
- In four years
- In five (all) years

Gender. Your gender:

- Male
- Female
- Other

Age. Your age

- (18 – 99)

Hiring committee. Are you involved in hiring new employees at your company?

- Yes
- No

Administrative data linkage. To complement the information collected in this survey, the University of Bonn would like to link it with firm and employee data already available at the Institute for Employment Research (IAB). The IAB is a special unit of the Federal Employment Agency (BA), which, within its legal mandate, studies the functioning of the labor market as well as employment opportunities and living conditions in a dynamically changing world, purely from a scientific perspective. Linking these data reduces the length of this survey. All information will be treated strictly confidentially, and legal data protection is fully guaranteed at all times, also in the case of data linkage. In addition, aggregated labor market data for your region, also available at the BA, will be linked. By agreeing, I consent to linking my responses with firm and employee data stored at the Institute for Employment Research (IAB).

- I agree.
- I do not agree.

Self-reported effort. Did you do your best to complete this questionnaire?

- Yes
- No

I.2 Worker Survey: English

Below we have the english translation of our questionnaire on the worker side

Role in firm. What is your position in your current company?

- Owner
- Department head / Manager
- Human Resources / HR department
- Team leader
- Employee
- Trainee / Apprentice
- Other

Gender. Which gender best describes you?

- Male
- Female

Age. How old are you?

- (18 – 99)

Sector. In which industry is your company primarily active?

- Construction
- Provision of financial and insurance services
- Provision of professional, scientific, and technical services as well as other business services
- Real estate activities
- Trade, transportation, and storage
- Information and communication
- Agriculture, forestry, and fishing
- Public administration, defense; social security, education, health, and social work
- Other services
- Manufacturing, mining and quarrying, other industries

Most-frequent occupation. In which of these occupational groups do you work?

- (List of 48 occupational groups.)

Work from home filter. Do you work in an office or sometimes from home?

- Yes
- No

Salary in occupational group. Please indicate the range of your monthly gross income.

- 1,000 – 1,500 euros
- 1,500 – 2,000 euros
- 2,000 – 2,500 euros
- 2,500 – 3,000 euros
- 3,000 – 3,500 euros
- 3,500 – 4,000 euros
- 4,000 – 4,500 euros
- 4,500 – 5,000 euros
- 5,000 – 5,500 euros
- 5,500 – 6,000 euros
- More than 6,000 euros

Main instructions. On the following pages, we will ask you to imagine different situations. In each situation, you will be presented with 2 jobs at the same company. Let us call them Job A and Job B. Both jobs are almost identical but differ in two respects: the gross salary and one non-wage amenity. We would like to know: Do you prefer Job A or Job B? Such a decision will be presented to you 4 times for the same additional non-wage amenity (for example: company car). However, the gross monthly salary of Job B (see figure) will change in each round. Example in the figure: Job A includes a company car, Job B offers 500 euros more salary without a company car. You then decide which job you find better.

Comprehension. Please select the correct statement.

- We would now like to know: Do you prefer Job A or Job B?
- The salaries remain the same in each round.
- In each round, you will be presented with 5 jobs.

Valuation: predictable schedules This section is about long-term planning of work schedules. This means that you know your working hours 2 months in advance or are informed the day before the week begins.

- Job A: Schedule announced 2 months in advance [Base Salary]
- Job B: Schedule announced the day before the week begins [Base Salary + X euros]

Do you prefer Job A or Job B?

- Job A
- Job B

Valuation: Work from home This section is about working from home. This means that you can also work from home or on the go and do not always have to be physically present.

- Job A: Working from home possible [Base Salary]
- Job B: Working from home not possible [Base Salary + X euros]

Do you prefer Job A or Job B?

- Job A
- Job B

Valuation: On-the-job training This section is about training opportunities at the workplace. This means that you have the option to take 3 free training courses per year. Alternatively, there are no training opportunities.

- Job A: 3 free training courses per year [Base Salary]
- Job B: No training [Base Salary + X euros]

Do you prefer Job A or Job B?

- Job A
- Job B

Valuation: mentoring This section is about feedback meetings. This means that you receive monthly feedback on your performance and discuss your goals.

- Job A: Monthly feedback meeting [Base Salary]
- Job B: No feedback meetings [Base Salary + X euros]

Do you prefer Job A or Job B?

- Job A
- Job B

Valuation: Four-day workweek This section is about the four-day workweek. This means that you can arrange your workweek so that, with the same weekly hours, you work either 4 or 5 days.

- Job A: Option of 4 days of 10 hours each [40 hours / week] [Base Salary]
- Job B: 5 days of 8 hours each [40 hours / week] [Base Salary + X euros]

Do you prefer Job A or Job B?

- Job A
- Job B

Amenity Provision At your workplace: Are the following amenities currently offered, or have they been offered in the past? [Four-day workweek, predictable schedules, Feedback meetings, On-the-job training, Work from home]

- Yes, currently
- Yes, in the past
- No
- I don't know

Third-order beliefs. Does your employer understand how important [randomly selected amenity] is to you?

- Slider 0 – 100

Within-firm communication. In the past 3 years, have you told your employer how important [randomly selected amenity] is to you?

- Yes
- No

Within-firm communication. [If within-firm communication = no] Why have you not told your employer how important [randomly selected amenity] is to you? Please explain your reasons in 2-3 sentences.

Open Text Box

Job satisfaction. How satisfied are you with your job?

- Slider 0 – 100

Probability to quit job. What is the probability that you will leave your current job within the next 12 months (in percent)?

- Slider 0 – 100

Manager and owner: gender. The gender of the... [direct supervisor / owner of the company]

- Male
- Female

Tenure. How long have you already been working at your company?

- Less than 1 year
- 1 – 5 years
- 6 – 10 years
- More than 10 years

Number of children. How many children do you have?

- 0
- 1
- 2
- 3 or more

Parental leave. [If Number of children > 0] Have you ever taken parental leave or interrupted your work for a certain period because you had a child? If yes, how long in total did you not work during this time?

- Less than 1 year
- 1 – 3 years
- 4 – 6 years
- More than 6 years
- Not applicable

Youngest child. [If Number of children > 0] The age of your youngest child:

- (0 – 99)

Collective bargaining agreement. Are you paid according to a collective bargaining agreement?

- Yes
- No

Part-time work. Do you work full-time or part-time?

- Full-time
- Part-time

Works council. Does your company have a works council?

- Yes
- No

Administrative data linkage. To complement the information collected in this survey, the University of Bonn would like to link it with firm and employee data already available at the Institute for Employment Research (IAB). The IAB is a special unit of the Federal Employment Agency (BA), which, within its legal mandate, studies the functioning of the labor market as well as employment opportunities and living conditions in a dynamically changing world, purely from a scientific perspective. Linking these data reduces the length of this survey. All information will be treated strictly confidentially, and legal data protection is fully guaranteed at all times, also in the case of data linkage. In addition, aggregated labor market data for your region, also available at the BA, will be linked. By agreeing, I consent to linking my responses with firm and employee data stored at the Institute for Employment Research (IAB).

- I agree.
- I do not agree.

Self-reported effort. Did you do your best to complete this questionnaire?

- Yes
- No

I.3 Firm Survey: German

Role in firm. Was ist Ihre Position in Ihrem derzeitigen Unternehmen?

- Eigentümer
- Bereichsleiter/Manager
- Human Resources/Personalabteilung
- Teamleiter
- Angestellter
- Auszubildender
- Andere

Sector. In welcher Branche ist Ihr Unternehmen hauptsächlich tätig?

- Baugewerbe
- Erbringung von Finanz- und Versicherungsdienstleistungen
- Erbringung von freiberuflichen, wissenschaftlichen und technischen Dienstleistungen sowie von sonstigen wirtschaftlichen Dienstleistungen
- Grundstücks- und Wohnungswesen
- Handel, Verkehr und Lagerei
- Information und Kommunikation
- Landwirtschaft, Forstwirtschaft und Fischerei
- öffentliche Verwaltung, Verteidigung; Sozialversicherung, Erziehung und Unterricht, Gesundheits- und Sozialwesen
- Sonstige Dienstleistungen
- Verarbeitendes Gewerbe, Bergbau und Gewinnung von Steinen und Erden, sonstige Industrie

Most-frequent occupation. Für welche Berufsgruppe stellen Sie derzeit die meisten Arbeitnehmer ein?

- (List of 48 occupational groups.)

Work from home filter. Haben Sie Angestellte in der eben genannten Berufsgruppe, die im Büro oder Home-Office arbeiten?

- Ja
- Nein

Collective bargaining agreements. Werden Arbeitnehmer dieser Berufsgruppe in Ihrem Unternehmen hauptsächlich nach Tarifverträgen bezahlt?

- Ja
- Nein

Worked in occupational group before? Haben Sie bereits selbst in der eben genannten Berufsgruppe gearbeitet?

- Ja
- Nein

Salary in occupational group. Das durchschnittliche Bruttomonatseinkommen Ihres Arbeitnehmers dieser Berufsgruppe liegt etwa bei:

- 1.000 – 1.500 euro
- 1.500 – 2.000 euro
- 2.000 – 2.500 euro
- 2.500 – 3.000 euro
- 3.000 – 3.500 euro
- 3.500 – 4.000 euro
- 4.000 – 4.500 euro
- 4.500 – 5.000 euro
- 5.000 – 5.500 euro
- 5.500 – 6.000 euro
- Mehr als 6.000 euro

Main instructions. In den nächsten Teilen dieser Umfrage bitten wir Sie, sich verschiedene Situationen vorzustellen. Stellen Sie sich einen Arbeitnehmer aus Deutschland im Bereich **[Occupational Group]** vor. Diesem Arbeitnehmer liegen zwei Jobangebote bei der gleichen Firma vor: Job A oder Job B. Die Aufgaben der Jobs sind identisch. Die Jobs unterscheiden sich aber in zwei Punkten: dem Bruttolohn und einer Zusatzleistung. Der Arbeitnehmer kann sich nun zwischen Job A und Job B entscheiden. Wir möchten von Ihnen wissen: Findet der durchschnittliche Arbeitnehmer Job A oder Job B besser? So eine Entscheidung wird Ihnen 4 Mal für die gleiche Zusatzleistung (im Beispiel hier: Dienstwagen) angezeigt werden. Allerdings wird sich das Bruttomonatsgehalt von Job B (siehe Bild) in jeder Runde ändern. Beispiel im Bild: Job A enthält einen Dienstwagen, Job B 500 euro mehr Gehalt ohne Dienstwagen. Entscheiden Sie, welchen Job der durchschnittliche Arbeitnehmer besser findet.

Comprehension. Bitte wählen Sie die richtige Aussage aus.

- Wir möchten nun von Ihnen wissen: Findet der durchschnittliche Arbeitnehmer Job A oder Job B besser?
- Die Gehälter bleiben in jeder Runde gleich.
- In jeder Runde werden Ihnen 5 Jobs vorgelegt.

Belief: predictable schedules Jetzt geht es um die langfristige Planung der Arbeitseinteilung. Das bedeutet, dass die Arbeitnehmer ihre Arbeitszeiten schon 2 Monate im Voraus kennen oder am Tag vor Wochenbeginn darüber informiert werden.

- Job A: Zuteilung 2 Monate im Voraus [Base Salary]
- Job B: Zuteilung am Tag vor Wochenbeginn [Base Salary + X euros]

Findet der durchschnittliche Arbeitnehmer Job A oder Job B besser?

- Job A
- Job B

Belief: Work from home Nun geht es um das Home-Office. Das bedeutet, dass die Arbeitnehmer auch von Zuhause oder unterwegs arbeiten können und nicht immer in Person anwesend sein müssen.

- Job A: Home-Office möglich [Base Salary]
- Job B: Home-Office nicht möglich [Base Salary + X euros]

Findet der durchschnittliche Arbeitnehmer Job A oder Job B besser?

- Job A
- Job B

Belief: On-the-job training Nun geht es um Fortbildungen am Arbeitsplatz. Das bedeutet, dass die Arbeitnehmer die Möglichkeit haben, 3 kostenlose Fortbildungen pro Jahr in Anspruch zu nehmen. Alternativ gibt es keine Fortbildungen.

- Job A: 3 kostenlose Fortbildungen im Jahr [Base Salary]
- Job B: Keine Fortbildungen [Base Salary + X euros]

Findet der durchschnittliche Arbeitnehmer Job A oder Job B besser?

- Job A
- Job B

Belief: mentoring Jetzt geht es um Feedbackgespräche. Das bedeutet, dass die Arbeitnehmer monatlich Feedback zu deren Arbeitsleistung erhalten und deren Ziele besprochen werden.

- Job A: Monatliches Feedbackgespräch [Base Salary]
- Job B: Keine Feedbackgespräche [Base Salary + X euros]

Findet der durchschnittliche Arbeitnehmer Job A oder Job B besser?

- Job A
- Job B

Belief: four-day workweek Jetzt geht es um die 4-Tage-Woche. Das bedeutet, dass die Arbeitnehmer ihre Arbeitswoche so gestalten können, dass diese bei gleichen Wochenstunden 4 oder 5 Tage arbeiten können.

- Job A: Option auf 4 Tage je 10 Stunden [40 hours / week] [Base Salary]
- Job B: 5 Tage je 8 Stunden [40 hours / week] [Base Salary + X euros]

Findet der durchschnittliche Arbeitnehmer Job A oder Job B besser?

- Job A
- Job B

Manager's own valuation. [1 randomly selected amenity. For the sake of brevity, we show the instructions for predictable schedules.] Jetzt möchten wir Ihnen eine der bereits zuvor genannten Zusatzleistungen zeigen. Nun geht es aber darum, welchen Job Sie besser finden würden, wenn Sie derzeit die Auswahl aus einem der beiden Angebote hätten.

Jetzt geht es um die langfristige Planung der Arbeitseinteilung. Das bedeutet, dass Sie Ihre Arbeitszeiten schon 2 Monate im Voraus kennen oder immer am Tag vor Wochenbeginn darüber informiert werden.

- Job A: Zuteilung 2 Monate im Voraus [Base Salary]
- Job B: Zuteilung am Tag vor Wochenbeginn [Base Salary + X euros]

Finden Sie Job A oder Job B besser?

- Job A
- Job B

Amenity Provision Gibt es die folgenden Zusatzleistungen in Ihrem Unternehmen oder gab es sie in der Vergangenheit schon einmal? [4-Tage-Woche, Langfristige Planbarkeit der Arbeitseinteilung, Regelmäßige Feedbackgespräche, Fortbildungsmöglichkeiten, Home-Office]

- Ja, derzeit
- Ja, in der Vergangenheit
- Nein
- Weiß ich nicht

Belief: productivity effects. Glauben Sie, dass Arbeitnehmer mit den folgenden Zusatzleistungen produktiver, in etwa gleich produktiv oder weniger produktiv sind? [4-Tage-Woche, Langfristige Planbarkeit der Arbeitseinteilung, Regelmäßige Feedbackgespräche, Fortbildungsmöglichkeiten, Home-Office]

- Weniger produktiv
- In etwa gleich produktiv
- Produktiver

Belief: costs of provision. Wie viel würde es Sie pro Person und pro Monat ca. kosten, wenn Sie die folgenden Zusatzleistungen anbieten würden? Beispiel: Wenn ein Computer 300 euro kostet und vom Mitarbeiter 5 Jahre bzw. 60 Monate genutzt werden kann, dann kostet er 300 euro / 60 Monate = 5 euro pro Monat. Ihre ungefähren Kosten pro Person pro Monat:

- 0 euro
- 1 – 50 euro
- 51 – 100 euro
- 101 – 200 euro
- Mehr als 200 euro
- Weiß ich nicht
- Mehr: [Open-text field]

Amenities: decision maker. Wer entscheidet in Ihrem Unternehmen über die Bereitstellung von diesen oder ähnlichen Zusatzleistungen? (mehrere Antworten möglich)

- Eigentümer
- Bereichsleiter / Manager
- Human Resources / Personalabteilung
- Betriebsrat

Perceived labor market conditions. Wie einfach ist es im derzeitigen Marktklima im Bereich [Occupational Group] geeignete Arbeitskräfte zu finden?

- Sehr einfach
- Einfach
- Weder einfach noch schwierig
- Schwierig
- Sehr schwierig

Selection Effects [1 randomly selected amenity. For the sake of brevity, we show the instructions for predictable schedules.] Wenn Sie die folgenden beiden Jobs ausschreiben würden, würden sich die Bewerber für Job A und Job B unterscheiden? Die Jobs sind fast genau gleich. Der einzige Unterschied ist die Information über die Arbeitszeiten.

- Job A: Zuteilung 2 Monate im Voraus [Base Salary]
- Job B: Zuteilung am Tag vor Wochenbeginn [Base Salary + X euros]

Worin sind Leute, die sich für Job A bewerben, anders als Leute, die sich für Job B bewerben?

- Sie sind jünger
- Sie sind älter
- Sie sind produktiver
- Sie sind weniger produktiv
- Sie sind eher männlich
- Sie sind eher weiblich
- Die Bewerber würden sich nicht unterscheiden

Firm size. Wie viele Beschäftigte hat Ihr Unternehmen?

- 1 – 9
- 10 – 49
- 50 – 149
- 150 – 249
- Mehr als 250

Hiring policy. Plant Ihr Unternehmen in den nächsten 12 Monaten neue Arbeitnehmer einzustellen?

- Ja
- Nein

Works council. Hat Ihr Unternehmen einen Betriebsrat?

- Ja
- Nein

Labor shortages. In wie vielen der letzten 5 Jahre hatten Sie Probleme mit der Besetzung von Arbeitsplätzen?

- In 0 (keinen) Jahren
- In einem Jahr
- In zwei Jahren
- In drei Jahren
- In vier Jahren
- In fünf (allen) Jahren

Gender. Ihr Geschlecht:

- Männlich
- Weiblich
- Andere

Age. Ihr Alter

- (18 – 99)

Hiring committee. Sind Sie im Betrieb an Einstellungen neuer Mitarbeiter beteiligt?

- Ja
- Nein

Administrative data linkage. Zur Vervollständigung der erhobenen Informationen möchte die Universität Bonn Betriebs- und Personendaten einbeziehen, die bereits am Institut für Arbeitsmarkt- und Berufsforschung (IAB) vorliegen. Das IAB ist dabei eine besondere Dienststelle der Bundesagentur für Arbeit (BA), die im Rahmen ihres gesetzlichen Auftrags die Funktionsweise des Arbeitsmarkts sowie die Erwerbschancen und Lebensbedingungen in einer sich dynamisch verändernden Welt aus rein wissenschaftlicher Sicht untersucht. Durch die Verknüpfung der Daten verkürzt sich der Umfang dieser Befragung. Alle Angaben werden streng vertraulich behandelt und der gesetzliche Datenschutz ist auch bei Verknüpfung der Daten zu jedem Zeitpunkt in vollem Umfang gewährleistet. Ebenso sollen aggregierte Arbeitsmarktdaten Ihrer Region, die ebenfalls bei der BA vorliegen, verknüpft werden. Hiermit stimme ich der Verknüpfung meiner Angaben mit Betriebs- und Personendaten, die am Institut für Arbeitsmarkt- und Berufsforschung (IAB) vorliegen, zu.

- Ich stimme zu.
- Ich stimme nicht zu.

Self-reported effort. Haben Sie Ihr Bestes gegeben, um diesen Fragebogen auszufüllen?

- Ja
- Nein

I.4 Worker Survey: German

Role in firm. Was ist Ihre Position in Ihrem derzeitigen Unternehmen?

- Eigentümer
- Bereichsleiter/Manager

- Human Resources/Personalabteilung
- Teamleiter
- Angestellter
- Auszubildender
- Andere

Gender. Welches Geschlecht trifft am ehesten auf Sie zu?

- Männlich
- Weiblich

Age. Wie alt sind Sie?

- (18 – 99)

Sector. In welcher Branche ist Ihr Unternehmen hauptsächlich tätig?

- Baugewerbe
- Erbringung von Finanz- und Versicherungsdienstleistungen
- Erbringung von freiberuflichen, wissenschaftlichen und technischen Dienstleistungen sowie von sonstigen wirtschaftlichen Dienstleistungen
- Grundstücks- und Wohnungswesen
- Handel, Verkehr und Lagerei
- Information und Kommunikation
- Landwirtschaft, Forstwirtschaft und Fischerei
- öffentliche Verwaltung, Verteidigung; Sozialversicherung, Erziehung und Unterricht, Gesundheits- und Sozialwesen
- Sonstige Dienstleistungen
- Verarbeitendes Gewerbe, Bergbau und Gewinnung von Steinen und Erden, sonstige Industrie

Most-frequent occupation. In welcher dieser Berufsgruppen arbeiten Sie?

- (List of 48 occupational groups.)

Work from home filter. Arbeiten Sie in einem Büro oder manchmal im Home-Office?

- Ja
- Nein

Salary in occupational group. Bitte geben Sie an, in welchem Bereich Ihr monatliches Bruttoeinkommen liegt.

- 1.000 – 1.500 euro
- 1.500 – 2.000 euro
- 2.000 – 2.500 euro
- 2.500 – 3.000 euro
- 3.000 – 3.500 euro
- 3.500 – 4.000 euro
- 4.000 – 4.500 euro
- 4.500 – 5.000 euro
- 5.000 – 5.500 euro
- 5.500 – 6.000 euro
- Mehr als 6.000 euro

Main instructions. Auf den nächsten Seiten werden wir Sie bitten, sich verschiedene Situationen vorzustellen. In jeder Situation werden Ihnen 2 Jobs bei der gleichen Firma vorgelegt. Nennen wir die Jobs Job A und Job B. Beide Jobs sind fast identisch, unterscheiden sich aber in zwei Punkten: Dem Bruttolohn und einer Zusatzleistung. Wir möchten von Ihnen wissen: Finden Sie Job A oder Job B besser? So eine Entscheidung wird Ihnen 4 Mal für die gleiche Zusatzleistung (im Beispiel hier: Dienstwagen) angezeigt werden. Allerdings wird sich das Bruttomonatsgehalt von Job B (siehe Bild) in jeder Runde ändern. Beispiel im Bild: Job A enthält einen Dienstwagen, Job B 500 euro mehr Gehalt ohne Dienstwagen. Sie entscheiden dann, welchen Job Sie besser finden.

Comprehension. Bitte wählen Sie die richtige Aussage aus.

- Wir möchten nun von Ihnen wissen: Finden Sie Job A oder Job B besser?
- Die Gehälter bleiben in jeder Runde gleich.
- In jeder Runde werden Ihnen 5 Jobs vorgelegt.

Valuation: predictable schedules Jetzt geht es um die langfristige Planung der Arbeitseinteilung. Das bedeutet, dass Sie Ihre Arbeitszeiten schon 2 Monate im Voraus kennen oder immer am Tag vor Wochenbeginn darüber informiert werden.

- Job A: Zuteilung 2 Monate im Voraus [Base Salary]
- Job B: Zuteilung am Tag vor Wochenbeginn [Base Salary + X euros]

Finden Sie Job A oder Job B besser?

- Job A
- Job B

Valuation: Work from home Nun geht es um das Home-Office. Das bedeutet, dass Sie auch von Zuhause oder unterwegs arbeiten können und nicht immer in Person anwesend sein müssen.

- Job A: Home-Office möglich [Base Salary]
- Job B: Home-Office nicht möglich [Base Salary + X euros]

Finden Sie Job A oder Job B besser?

- Job A
- Job B

Valuation: On-the-job training Nun geht es um Fortbildungen am Arbeitsplatz. Das bedeutet, dass Sie die Möglichkeit haben, 3 kostenlose Fortbildungen pro Jahr in Anspruch zu nehmen. Alternativ gibt es keine Fortbildungen.

- Job A: 3 kostenlose Fortbildungen im Jahr [Base Salary]
- Job B: Keine Fortbildungen [Base Salary + X euros]

Finden Sie Job A oder Job B besser?

- Job A
- Job B

Valuation: mentoring Jetzt geht es um Feedbackgespräche. Das bedeutet, dass Sie monatlich Feedback zu Ihrer Arbeitsleistung erhalten und Ihre Ziele besprechen.

- Job A: Monatliches Feedbackgespräch [Base Salary]
- Job B: Keine Feedbackgespräche [Base Salary + X euros]

Finden Sie Job A oder Job B besser?

- Job A
- Job B

Valuation: four-day workweek Jetzt geht es um die 4-Tage-Woche. Das bedeutet, dass Sie Ihre Arbeitswoche so gestalten können, dass Sie bei gleichen Wochenstunden 4 oder 5 Tage arbeiten können.

- Job A: Option auf 4 Tage je 10 Stunden [40 hours / week] [Base Salary]
- Job B: 5 Tage je 8 Stunden [40 hours / week] [Base Salary + X euros]

Finden Sie Job A oder Job B besser?

- Job A
- Job B

Amenity Provision An Ihrem Arbeitsplatz: Gibt es die folgenden Zusatzleistungen oder gab es sie in der Vergangenheit schon einmal? [4-Tage-Woche, Langfristige Planbarkeit der Arbeitseinteilung, Regelmäßige Feedbackgespräche, Fortbildungsmöglichkeiten, Home-Office]

- Ja, derzeit
- Ja, in der Vergangenheit
- Nein
- Weiß ich nicht

Third-order beliefs. Versteht ihr Arbeitgeber, wie wichtig Ihnen [randomly selected amenity] ist?

- Slider 0 – 100

Within-firm communication. Haben Sie Ihrem Arbeitgeber in den letzten 3 Jahren mitgeteilt, wie wichtig Ihnen [randomly selected amenity] ist?

- Ja
- Nein

Within-firm communication. [If within-firm communication = no] Warum haben Sie Ihrem Arbeitgeber nicht mitgeteilt, wie wichtig Ihnen [randomly selected amenity] ist. Bitte erklären Sie in 2-3 Sätzen Ihre Gründe.

Open-text box

Job satisfaction. Wie zufrieden sind Sie mit Ihrem Job?

- Slider 0 – 100

Probability to quit job. Wie groß ist die Chance, dass Sie Ihren jetzigen Job in den nächsten 12 Monaten wechseln werden (in Prozent)?

- Slider 0 – 100

Manager and owner: gender. Das Geschlecht des... [direkten Vorgesetzten / Eigentümers der Firma]

- Männlich
- Weiblich

Tenure. Wie lange arbeiten Sie bereits in Ihrer Firma?

- Weniger als 1 Jahr
- 1 – 5 Jahre
- 6 – 10 Jahre
- Mehr als 10 Jahre

Number of children. Wie viele Kinder haben Sie?

- 0
- 1
- 2
- 3 oder mehr

Parental leave. [If Number of children > 0] Haben Sie schon einmal Elternzeit genommen oder Ihre Arbeit für eine gewisse Zeit unterbrochen, weil Sie ein Kind bekommen haben? Falls ja, wie lange haben Sie insgesamt in dieser Zeit nicht gearbeitet?

- Weniger als 1 Jahr
- 1 – 3 Jahre
- 4 – 6 Jahre
- Mehr als 6 Jahre
- Trifft nicht zu

Youngest child. [If Number of children > 0] Das Alter Ihres jüngsten Kindes:

- (0 – 99)

Collective bargaining agreement. Werden Sie nach Tarifvertrag bezahlt?

- Ja
- Nein

Part-time work. Arbeiten Sie in Voll- oder Teilzeit?

- Vollzeit
- Teilzeit

Works council. Hat Ihr Unternehmen einen Betriebsrat?

- Ja
- Nein

Administrative data linkage. Zur Vervollständigung der erhobenen Informationen möchte die Universität Bonn Betriebs- und Personendaten einbeziehen, die bereits am Institut für Arbeitsmarkt- und Berufsforschung (IAB) vorliegen. Das IAB ist dabei eine besondere Dienststelle der Bundesagentur für Arbeit (BA), die im Rahmen ihres gesetzlichen Auftrags die Funktionsweise des Arbeitsmarkts sowie die Erwerbschancen und Lebensbedingungen in einer sich dynamisch verändernden Welt aus rein wissenschaftlicher Sicht untersucht. Durch die Verknüpfung der Daten verkürzt sich der Umfang dieser Befragung. Alle Angaben werden streng vertraulich behandelt und der gesetzliche Datenschutz ist auch bei Verknüpfung der Daten zu jedem Zeitpunkt in vollem Umfang gewährleistet. Ebenso sollen aggregierte Arbeitsmarktdaten Ihrer Region, die ebenfalls bei der BA vorliegen, verknüpft werden. Hiermit stimme ich der Verknüpfung meiner Angaben mit Betriebs- und Personendaten, die am Institut für Arbeitsmarkt- und Berufsforschung (IAB) vorliegen, zu.

- Ich stimme zu.
- Ich stimme nicht zu.

Self-reported effort. Haben Sie Ihr Bestes gegeben, um diesen Fragebogen auszufüllen?

- Ja
- Nein