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Task-Specific Experience, Tacit Knowledge, and Compensation Contracts

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ABSTRACT: This study experimentally examines whether managers' task-specific experience influences their reliance on performance-based contracts to motivate employees to perform cognitively stimulating tasks. Building on experiential learning theory, we predict managers who acquire task-specific experience by doing the employee's task possess tacit knowledge about the task's cognitive stimulation and associated intrinsic motivation. To motivate their employees, these managers will prefer a fixed-wage contract, which relies on intrinsic motivation, over a performance-based contract. Our results support these predictions. Managers who perform the employee's task are less likely to choose the performance-based contract than managers who only read a description of the task. Additional analysis shows managers' perception of the task's cognitive stimulation and employees' intrinsic motivation to complete the task explain the contract choice. We run three additional experiments to better understand the impact of task-specific experience on contract choice. Our study underscores the importance of task-specific experience for compensation contract design.

JEL Classifications: C91; D83; M4.

Keywords: tacit knowledge; task-specific experience; cognitive stimulation; intrinsic motivation; compensation contract.

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I. INTRODUCTION

Managers have extensive decision-making power over the design of compensation contracts, including whether to use a performance-based contract or a fixed-wage contract to motivate employees. The manager's choice of a performance-based contract, which links employee salary to measured performance, suggests the manager believes the employee needs to be extrinsically motivated to deliver the expected performance. A fixed-wage contract, on the other hand, does not link employee salary to measured performance and relies on employees' intrinsic motivation to deliver the expected performance. To choose between a performance-based contract and a fixed-wage contract, a manager must assess whether an employee needs to be extrinsically motivated or, conversely, whether the employee has sufficient intrinsic motivation to deliver the expected performance (Gibbons and Henderson 2013). If managers believe that their employees' intrinsic motivation is strong enough, managers may rely less on performance-based contracts to motivate employees (Lazear and Oyer 2013).

Assessing an employee's motivational sources is particularly difficult for cognitively stimulating tasks, such as creative tasks, complex problem-solving tasks, and insight problems. In today's economy, many firms—Alphabet and Apple being well-known examples—derive their competitive advantage and performance from the cognitively stimulating tasks that their employees execute (Cheema 2022). The importance of cognitively stimulating tasks is not limited to technology firms and is also important for conventional businesses in retail, food and beverage, and manufacturing (Ludema and Johnson 2019; Puriwat and Hoonsopon 2022). Given the increasing importance of cognitively stimulating tasks, managers must accurately assess their employees' motivational sources for such tasks and appropriately motivate them to perform. On the one hand, previous research on job design finds that cognitively stimulating tasks enhance intrinsic motivation (Hackman and Oldham 1976; J. Lepine, Podsakoff, and M. Lepine 2005; Bakker, Demerouti, and Sanz-Vergel 2023). Relatedly, executing tasks with sufficient cognitive stimulation can yield positive outcomes, such as task engagement, commitment, and enjoyment (Lepine et al. 2005; Bakker, van Veldhoven, and Xanthopoulou 2010; Tadić, Bakker, and Oerlemans 2015). These findings point to the use of fixed-wage contracts to motivate employees engaged in cognitively stimulating tasks to deliver the expected performance. On the other hand, given the performance focus of cognitively stimulating tasks in today's economy, managers may underestimate the impact of "tacit" task elements, such as the degree of cognitive stimulation and intrinsic motivation, and instead use performance-based contracts to motivate employees (Heath 1999; Morse 2003).

We aim to improve our understanding of how managers assess employees' motivation to perform cognitively stimulating tasks by focusing on the effect of having managers perform the cognitively stimulating tasks themselves, which we henceforth refer to as "task-specific experience." We examine whether managers rely less on performance-based contracts to motivate employees in cognitively stimulating tasks when they have task-specific experience. We focus on task-specific experience for several reasons. First, scholars in economics and organizational behavior view task-specific experience as a key element in developing managerial talent (Gibbons and Waldman 2004; Gathmann and Schönberg 2010; Zarutskie 2010). Task-specific experience can help managers to develop "task-specific human capital" or "tacit task knowledge" (Hayek 1945; Polanyi 1966; Jensen and Heckling 1995), which can help them to manage themselves, others, and socially complex tasks (Taylor 1975; Wagner and Sternberg 1985; Wright and Goodwin 2002; Gibbons and Waldman 2004; Bol, Estep, Moers, and Peecher 2018). Although the above discussions suggest that task-specific experience can impact the way managers motivate employees, prior studies did not examine this argument in the context of contract choice. Second, although some firms rely on managers who are either laterally promoted or externally hired, many firms value task-specific experience. Their managers are required to attend training programs, undertake on-the-job training, and engage in job and task rotation programs allowing them to experience their employees' tasks before they take up supervisory responsibilities. Our study can help to enrich the tradeoffs firms make when deciding how to prepare managers for taking up supervisory responsibilities.

Drawing on experiential learning theory (A. Kolb and D. Kolb 2005), we predict that managers with task-specific experience will rely less on performance-based contracts to motivate their employees to perform cognitive stimulating tasks. The rationale is that task-specific experience helps managers to acquire knowledge about tacit task elements, such as how cognitively stimulating a task is (Deci and Ryan 1985; Mendelowitz 2016). Managers who do not perform the task themselves and merely rely on a task description or on observing employees doing the task are less likely to discover such elements. The feeling of cognitive stimulation challenges people while executing the task and enables people to discover that the task can be intrinsically motivating (Hackman and Oldham 1976; Folkman and Lazarus 1985; Lepine et al. 2005; Bakker et al. 2023). We thus argue that managers who perceive a task as more cognitively stimulating are more likely to expect that their employees will be intrinsically motivated to perform the task. Finally, assuming that the need for extrinsic motivation decreases when intrinsic motivation is higher and that performance-based contracts can dilute intrinsic motivation, managers who expect their employees to be more intrinsically motivated will feel less inclined to rely on a performance-based contract to motivate their employees.

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To test our theory, we run an experiment that requires manager-participants to choose between a fixed-wage contract, which relies on employees' intrinsic motivation to perform, or a piece-rate incentive contract, which links employees' pay to measured performance and thus relies on extrinsic motivation, in order to motivate employee-participants to rearrange arrays of five scrambled letters into five-letter words. We choose this task because of its tacit elements: the task is cognitively stimulating and thus supports the development of intrinsic motivation (Deci and Ryan 1985; A. E. Gottfried, Fleming, and A. W. Gottfried 1998; Novick and Sherman 2003). Assessing the tacit elements of the scrambled-letter task is difficult but important when choosing a contract to motivate an employee-participant. We manipulate whether the manager has task-specific experience: half of the managers work on the scrambled-letter task themselves whereas the other half only read the description of the same task before deciding on the contract.

Our results are consistent with our theory. First, compared with managers without task-specific experience, managers with task-specific experience are less likely to choose the piece-rate incentive contract. Second, our path analysis confirms that the effect of task-specific experience on contract choice is (partially) driven by tacit task knowledge. Specifically, managers who perform the task themselves assess the task as more cognitively stimulating than managers who do not perform the task. Next, those who assess the task as more cognitively stimulating expect employees to have stronger intrinsic motivation to perform the task, which reduces the manager's propensity to choose the piece-rate incentive contract.

Additional analyses improve the reliability of our main findings. First, results show that experienced managers develop a similar expectation of employee performance as managers without task-specific experience. This mitigates the concern that our results are driven by experienced managers learning about other task attributes that could influence contract choice. Second, the manager's own performance does not affect their contract choice, thereby mitigating the concern that our results are driven by the experience bias (Feichter 2023). Third, analyses of an open response question asked after the contract choice suggest that managers with task-specific experience are more confident that their employees will deliver effort and performance under the fixed-wage contract.

We also run three additional experiments to better understand the impact of tacit task knowledge. In the first additional experiment, manager-participants with task-specific experience work on the task for only a short time. In this case, we do not find that task-specific experience influences contract choice, which confirms experiential learning theory's assumption that learning from experience accumulates over sufficient exposure to the task. In the second additional experiment, manager-participants with task experience work on a different cognitively stimulating task than do their employees. Consistent with experiential learning theory, which suggests that the manager's experience needs to be task specific, the findings of our main experiment do not materialize when managers work on a different cognitively stimulating task. Finally, in a third additional experiment with participants with work experience recruited from an online subject pool, we replicate the main result and the path model for participants that took the experiment seriously.

Our results contribute to the literature that stresses the importance of tacit knowledge for developing human capital in organizations (Hayek 1945; Polanyi 1966; Jensen and Heckling 1995). Studies in economics show that firms value task-specific human capital (Autor, Levy, and Murnane 2003; Autor and Handel 2013), and accounting studies show that supervisors value employees' tacit knowledge in performance evaluations and promotion decisions (Tan and Libby 1997; Bol et al. 2018). We enrich this line of literature by examining the effect of task-specific experience on supervisors' decisions to motivate employees. Our results show that acquired tacit knowledge through task-specific experience encourages supervisors to rely more on fixed-wage contracts and less on performance-based contracts. In support of our theory, we find that managers with task-specific experience make different contract choices because they can better assess tacit task elements that affect employees' motivation. Importantly, the development and use of tacit knowledge is nuanced. Additional experiments indeed show that the period over which one develops task-specific experience must be long enough and that the experience should be tailored to the task the employee performs.

We contribute to the emerging literature on the role of experience for management control decisions. Feichter (2023) finds an experience bias in target setting: supervisors who perform well on the task set excessively challenging targets for subordinates, ignoring the fact that their own performance is not generalizable to subordinates. Our study complements this literature by showing that experience can also help supervisors to acquire tacit knowledge when the task is cognitively stimulating, thereby helping managers to tailor contracting decisions to the features of the task. In this way, we also enrich the literature on intrinsic motivation, which mainly focuses on factors influencing employees' intrinsic motivation (Deci, Koestner, and Ryan 1999; Kadous, Proell, Rich, and Zhou 2019; Kadous and Zhou 2019). We take a different perspective and focus on a manager's assessment of tacit task elements that can drive intrinsic motivation. We show that task-specific experience enables managers to better assess tacit task elements, which can lead to contract decisions that better map to the task features.

Finally, our results should be of interest to practitioners. Firms use a variety of policies that, among other goals, aim to improve tacit task knowledge of managers with supervisory responsibilities. For instance, some firms heavily rely

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on internal promotions to appoint new managers, whereas other firms require managers to have sufficient experience with lower level tasks before taking up supervisory responsibilities. Some firms even use intensive training programs that require managers to conduct the employees' tasks for several weeks or rely on job and task rotation programs to get managers familiar with various tasks in the firm. Our results suggest that such approaches to developing task-specific experience are valuable for managers in leadership positions who need to assess intrinsic motivation and make compensation, promotion, and hiring decisions. Our results also emphasize the importance of the task-specific nature of a manager's experience and the duration over which the manager accumulates task-specific experience.

II. THEORY AND HYPOTHESES DEVELOPMENT

A crucial but often difficult judgment managers must make when designing contracts is the extent to which employees are intrinsically or extrinsically motivated to perform the task (Bénabou and Tirole 2003; Lazear and Oyer 2013). Despite its importance for contract design, only a handful of studies indirectly cover how managers make assessments of the source of employee motivation. These studies show that managers rely heavily on performance-based contracts and thus on the assumption that employees need to be extrinsically motivated (e.g., Evans, Heiman-Hoffman, and Rau 1994; Birnberg, Hoffman, and Yuen 2008; Cardinaels and Yin 2015). In this study, we examine whether and how managers' task-specific experience affects their reliance on performance-based contracts to motivate employees to do cognitively stimulating tasks.

Managers often differ in terms of experience with their employees' tasks. Firms like McDonald's, for example, offer trainee programs to ensure that workers acquire sufficient understanding of other employees' tasks before they advance in the hierarchy. Descriptive evidence also reveals significant differences in promotion and hiring policies, which can affect whether or not managers have experience with their employees' tasks. For example, using data from a Dutch airline company, Dohmen, Kriechel, and Pfann (2004) find that 28.8 percent of all job changes involve transitions to different fields of activity. Bidwell (2011) finds that external hiring and lateral transfers, which lead to managers with less direct experience with their employees' tasks compared with internally promoted managers, account for 42 percent of the appointments of managers. Using human resources data from information technology (IT) firms in the United States, Schulz, Chowdhury, and Van de Voort (2013) document a large variation in task-specific experience. Task-specific experience has real consequences. Economists estimate that task-specific experience accounts for 22–52 percent of wage growth, suggesting that firms prefer to pay for their managers' task-specific experience (Gathmann and Schönberg 2010). Overall, task-specific experience is actively considered in firms, can be influenced via hiring policies, and has wage implications.

Accounting scholars examine how experience affects the manager's decisions. For example, Vera-Muñoz, Kinney, and Bonner (2001) find that management accounting experience helps accountants to identify relevant information for managerial decisions. Feichter (2023) documents an experience bias. When managers have superior task performance on the same task as their employees, they use their own performance to set excessively challenging targets for their employees. Prior studies, however, did not examine whether and how a manager's experience with the employee's task influences how the manager motivates the employee. We argue that task-specific experience helps managers to acquire tacit knowledge about how cognitively stimulating a task is. Cognitive stimulation is an important task feature as it supports the development of intrinsic motivation. When managers use this tacit knowledge of how cognitively stimulating a task is, they will rely less on a performance-based contract and instead use a fixed-wage contract to motivate employees. Figure 1 summarizes our theoretical model.

Hypothesis Development

Task-Specific Experience and the Perceived Degree of Task Cognitive Stimulation

Practitioners and scholars in economics and management often view task-specific experience as enabling the development of tacit task knowledge (Taylor 1975; Wright and Goodwin 2002; Bowlin, Hales, and Kachelmeier 2009). Tacit knowledge is typically subconsciously acquired from daily social experiences, and it helps people better navigate social structures and complex interpersonal relationships (Bol et al. 2018). Gibbons and Waldman (2004) stress the importance of task-specific human capital to improving one's supervisory capabilities.

> When a worker is promoted, she should be promoted into a position that makes use of the human capital the worker acquired in performing her previous job…The reason is that knowledge of those tasks is likely to be useful in helping the promoted worker be a better supervisor.

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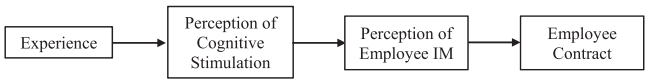
FIGURE 1
Theoretical Model



This figure displays our theoretical model. We predict that the managers' experience with the employees' task is positively associated with their perceived degree of the task's cognitive stimulation for a cognitively stimulating task (the first link). We subsequently predict a positive link between the managers' perception of the task's cognitive stimulation and their perception of employees' intrinsic motivation (IM) to work on the task (the second link). The perception of employees' intrinsic motivation finally leads to less reliance on the incentive contract (the third link).

Experiential learning theory discusses the importance of task-specific experience for supervisors. It posits that learning starts from a concrete experience. Next, learners reflect on this experience before they assimilate and distill abstract concepts, from which they draw new insights that they can use in future actions. Knowledge thus results from the combination of grasping and transforming experience (Kolb 1984, 41). Consistent with experiential learning theory, several studies show that experience is beneficial, particularly when it derives from or closely fits the current task (e.g., Boh, Slaughter, and Espinosa 2007; Dokko, Wilk, and Rothbard 2009; Insch, Mcintyre, and Dawley 2008; Singh and Staats 2012). Experiential learning is especially important when knowledge is tacit, such as in the areas of social work, nursing, adult education, and management education. Experiential learning further posits that concrete experiences that consist of feelings and emotions provide the basis for individuals to reflect and obtain a better understanding of a task's tacit elements. Prior studies also confirm that exposing students to concrete experience aids their understanding of the tacit elements of the task (Tomkins and Ulus 2016; Cheng, Huang, Yang, and Chang 2020). Such understanding is referred to as *tacit knowledge* (Michelson 1998; Fenwick 2003; Kolb and Kolb 2009).

When assessing the source of employee motivation, an important task characteristic is the degree to which people consider a task to be cognitively stimulating. Research on job design argues that cognitive stimulation is a fundamental task characteristic because it supports the development of intrinsic motivation (Hackman and Oldham 1976; Lepine et al. 2005; Bakker et al. 2023).[1] Studies find that cognitive stimulation is associated with various positive outcomes, including higher task engagement, stronger commitment, and more enjoyment. Lepine et al. (2005), in a meta-analytic analysis, show that challenging tasks improve motivation. Bakker et al. (2010) find that task enjoyment and commitment are highest when employees work on challenging and stimulating tasks, and Tadić et al. (2015) find that teachers reported higher positive affect and work engagement when daily tasks are perceived as challenging, and this positive relationship is stronger when they have higher job resources.

We argue that assessing the degree to which a task can be cognitively stimulating requires direct experience with the task. Specifically, directly experiencing a task as cognitively stimulating motivates people to discover the tacit elements of the task (Michelson 1998; Fenwick 2003). For example, people who feel challenged by the task will be stimulated to actively think about how to overcome these challenges. Subsequently, when reflecting on their experience, they will be able to abstract this feeling of being stimulated into a concept about the level of cognitive stimulation the task provides. In contrast, people who get to know a particular task only by observing others doing the task, talking to others about the task, or reading about the task do not experience this cognitively stimulating feeling. They might neglect the tacit element, focus on more visible task elements, and may not develop this abstract concept related to cognitive stimulation (Taylor 1981). Consider, for instance, a programming task. Although many focus on the visible elements of the programming task and perceive it to be repetitive and laborious, programmers experience their work as cognitively stimulating (Bitzer, Schrettl, and Schröder 2007). We posit that managers with task-specific experience will classify a cognitively stimulating task as more cognitively stimulating than managers without such experience. This is the first link in our theoretical model.

Perception of Cognitive Stimulation and Perception of Employees' Intrinsic Motivation

When a task challenges our own cognitive skills, we gain insight into the problem and have the opportunity to sharpen our skills (Folkman and Lazarus 1985), which generates feelings of competence and accomplishment.

[1] Cognitive stimulation is conceptually related to but different from perceived task difficulty. A cognitively stimulating task is often perceived as difficult, but beyond this perceived difficulty, it offers the opportunity to develop a sense of accomplishment and to develop skills when working on it. It is the latter part that differentiates the concept of cognitive stimulation from perceived task difficulty.

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Experiencing cognitive stimulation in a specific task is a precursor of intrinsic motivation (Deci and Ryan 1985). Consistent with this argument, Gottfried et al. (1998) and Elliot and Harackiewicz (1996) find that the perceived cognitive stimulation of a task increases the intrinsic motivation of both children and adults. Perceiving that we are being cognitively stimulated thus enhances the feeling of intrinsic motivation and can facilitate the development of intrinsic motivation to perform a task (Hackman and Oldham 1976; Lepine et al. 2005; Bakker et al. 2023). We further predict that managers will project onto their employees their own cognitive perception of the importance of intrinsic motivation, as opposed to external sources of motivation. Indeed, people tend to project their feelings and opinions onto others (Robbins and Krueger 2005). The second link in our theoretical model, as illustrated in Figure 1, combines these arguments to predict a positive association between the managers' perceived degree of cognitive stimulation and their assessment of employees' intrinsic motivation.

Perception of Employees' Intrinsic Motivation and Compensation Design

The last link in our model is between the managers' expectation regarding the degree of their employees' intrinsic motivation and the managers' likelihood of choosing a performance-based contract over a fixed-wage contract. We expect this link to be negative based on two key arguments. The first argument assumes, per classical economic theory, that although many employees are intrinsically motivated to spend some effort on a task, they can still be productive for the firm at the effort level where additional effort becomes costly for the employee. In this case, it becomes efficient for the firm to induce the employee to work more via a performance-based contract (Lazear and Oyer 2013). In our setting, the implication of this assumption is that the manager's expectation about the employee's intrinsic motivation will influence whether the manager relies on a performance-based contract to motivate the employee. Specifically, when managers expect their employees to have a higher level of intrinsic motivation to perform the task, they feel less need to further motivate their employees with additional extrinsic incentives. As a result, when managers expect employees to have more intrinsic motivation, managers rely less on performance-based contracts to motivate employees and instead rely more on fixed-wage contracts.

The second argument relates to the crowding-out effect of performance-based contracts, namely, that motivating an employee with a performance-based contract will crowd out the employee's intrinsic motivation to exert effort and thereby reduce overall task performance. Managers who assess their employees as having a stronger intrinsic motivation may be more likely to believe that performance-based contracts crowd out the intrinsic motivation to do a cognitively stimulating task and possibly reduce overall task performance. The stronger that belief, the less managers will rely on performance-based contracts to motivate their employees. Importantly, for this effect to materialize, it is sufficient that managers believe that a crowding-out effect can occur. Whether or not a crowding-out effect actually arises or whether or not it takes place in our setting is less relevant for our hypothesis (i.e., Shaw and Gupta 2015).

In sum, the more managers expect their employees to be intrinsically motivated, the less likely the manager is to choose a performance-based contract. Overall, we expect that managers with task-specific experience will develop and use their tacit knowledge to choose a contract that relies more on the intrinsic motivation to perform a cognitively stimulating task (i.e., a fixed-wage contract). H1 summarizes our main prediction.

H1: Given a cognitively stimulating employee task, a manager with task-specific experience is less likely than a manager without task-specific experience to choose a performance-based compensation contract.

A counterforce to our theory is the hardwired belief among managers that employees act in their own self-interest and may not exert effort without an external reward that is linked to measured performance (Evans et al. 1994; Falk and Kosfeld 2006; Birnberg et al. 2008). As a result of this belief, managers may overestimate the extent to which employees care about extrinsic task features and underestimate tacit elements, such as employees being stimulated and intrinsically motivated to perform the task (Heath 1999). Given our focus on a cognitively challenging task, which allows for the development of intrinsic motivation and thus makes intrinsic motivation more salient compared with many other tasks, we argue that this counterforce will at best be weakly present in our setting.

III. METHODS

Our main experiment manipulates task-specific experience as the between-subjects factor. The experiment consists of three phases. In the first phase, half of the manager-participants only read a description of the task (No Experience) and the other half read this description and perform the task (Experience). In the second phase, manager-participants choose a contract for their employee. They choose between a fixed-wage contract (i.e., monetary compensation not linked to performance) and a performance-based contract in the form of a piece-rate incentive (i.e., monetary

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compensation linked to performance). In the third phase, employee-participants work under either the piece-rate incentive contract or the fixed-wage contract. Our analyses focus mainly on the manager-participants' contract choice.

Participants

We recruited 146 participants from undergraduate study programs at a university in Western Europe, including 91 manager-participants and 55 employee-participants. Participants were on average 20.73 years old; 34.25 percent were female, 89.04 percent had worked for more than one year in part-time or full-time jobs, and 98.63 percent reported having some work experience. All but two were native speakers of the language in which we conducted the experiment.[2,3,4] In addition to a course credit for participation, manager- and employee-participants, respectively, earned an average of 13.78 EUR and 7.53 EUR. We organized 12 sessions for managers and seven sessions for employees. The sessions for managers were executed first. To ensure that contract choices have economic impact, each manager was randomly matched with an employee who executed the task in a later session under the manager's choice of contract.[5]

Experimental Task

We use a scrambled-letter task in which participants rearrange arrays of five scrambled letters into five-letter words. We expect this task to be cognitively stimulating because it requires cognitive effort and the solution often comes with insight. This insight can generate feelings of improved skills, competence, and accomplishment, which are important antecedents to developing intrinsic motivation (Novick and Sherman 2003; Sprinkle 2003). To ensure that participants experience cognitive stimulation and a sense of competence when doing the task, we provide arrays that vary in their degree of challenge. Appendix A provides an English example. We validate the cognitively stimulating feature of the scrambled-letter task in the results section.

The employee can work for eight minutes on the task and solve a maximum of 80 arrays.[6] To ensure employees experience intrinsic motivation, we make several design choices. First, to avoid making them feel pressured, we do not disclose the time limit or the number of arrays. Second, we give them full discretion over how they work on the task (Deci and Ryan 1985; Hales, Wang, and Williamson 2015). Employees can skip an array or stop working on the task at any time. This discretion is clearly communicated to the employee-participants. To ensure that contract choice reflects the manager's assessment of the employee's intrinsic motivation, we also inform managers that employees can skip arrays or stop working on the task at any time. Allowing employees to leave the task at any time makes the tradeoff between relying on intrinsic motivation (fixed-wage) versus extrinsic rewards (piece-rate incentive) more salient for managers.

The managers' task is to choose one of two compensation contracts to motivate employees for the task just described. The performance-based contract gives the employee 1 lira for each correct word. Managers choosing the performance-based contract rely strongly on the employee's extrinsic motivation, as employees get paid only when they correctly rearrange scrambled letters into words. The fixed-wage contract provides the employee a fixed wage of 15 lira,[7] irrespective of the number of correct words they identify or the time spent on the task.[8] As the fixed-wage contract does not require the employee to expend any effort to get paid, managers choosing this contract rely mainly on the

[2] The study was approved by the institute of the university responsible for the research lab.

[3] To increase the sample size of our employee sample, we collected a second wave of employee data. This second wave took place when the research lab reopened in 2021 after the closure because of the COVID-19 pandemic. Employee performance as measured by the number of correct words is higher in the second wave ($M = 25.28$ versus 18.70, $t_{53} = 2.45$, $p = 0.02$), but including a dummy for the data collection wave does not change our inferences. Therefore, we pool the two data collection waves in our analyses.

[4] Manager-participants and employee-participants are similar with respect to demographics such as age, gender, and work experience. We have more manager-participants, as their contract choice is the focus of our study.

[5] We randomly assign employees working under a fixed-wage (piece-rate incentive) contract to managers choosing the fixed-wage (piece-rate incentive) contract. Because we have more managers than employees, we assign one employee from the first wave of data collection to multiple managers.

[6] We measured how many words participants could solve in eight minutes in a paper-and-pencil pilot. The average (maximum) number of arrays solved was 20.85 (57). Our choice of 80 scrambled-letter arrays avoids the possibility that participants would run out of arrays. Results from our main experiment show that nobody solved more than 45 arrays.

[7] As prior literature indicates that many participants in a setting as ours will choose a performance-based contract over a fixed-wage contract (Evans et al. 1994; Birnberg et al. 2008; Cardinaels and Yin 2015), we decided to make the fixed-wage contract more attractive. The average performance in a pilot was 21 solved arrays. We decided to set the fixed wage at 15 lira, implying that the fixed-wage contract is more attractive for the manager when at least 15 arrays are solved.

[8] We operationalize the performance-based contract as a piece-rate contract because it allows us to test our theory in a clean manner. Although we argue that our theory generalizes to other types of performance-based contracts, such as bonus or penalty contracts, such contracts are more complex. For example, one additional complication with bonus and penalty contracts is that such contracts generate affective responses among employees that could influence the contract choice of principals and thus contaminate the test of our theory (Christ, Sedatole, and Towry 2012). Piece-rate incentive contracts also have external validity, and some firms, such as Lincoln Electric, even use them for complex tasks and tasks that require innovation.

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employee's intrinsic motivation. Managers receive a starting budget of 15 lira, and each word correctly solved by their employee generates 2 lira for the managers. From this total, we subtract the employee compensation. The compensation of the manager is calculated as in Equation (1).

$$15\,\text{lira} + (2\,\text{lira} \times \text{number of words solved by employee}) - \text{employee compensation} \quad (1)$$

where employee compensation equals 15 lira when managers choose the fixed-wage contract or 1 lira per word when managers choose the piece-rate incentive contract (1 lira=0.40 EUR).

Experimental Manipulation and Procedures

We manipulate whether managers have experience with their employee's task. Managers in the Experience condition work on the task before choosing a compensation contract, whereas managers in the No Experience condition do not work on the task. To increase the probability that managers in the Experience condition discover tacit elements of the task and to prevent managers from focusing on their own performance when choosing the compensation contract, we make several design choices. First, when working on the task, managers do not know that they will choose a compensation contract later on. Second, managers do not know the duration of their work period (i.e., eight minutes at maximum) or the number of word arrays that are available to them (i.e., 80). Third, like employees, managers can skip words and stop the task at any time. Fourth, managers do not receive feedback about their own performance. They simply move on to the next word until they stop or receive further instructions. Finally, managers do not receive compensation for executing the task. We thus prevent them from using their own performance and the way they are compensated as means to decide on employee compensation (Frederickson, Peffer, and Pratt 1999; Feichter 2023). It is worth noting that these design choices are intended to create a clean setting to test our theory.

The rest of the Experience condition is identical to the No Experience condition. In both conditions, managers receive identical task information, including a thorough description of the scrambled-letter task and the task screen of their employee. Importantly, all managers are shown one scrambled-letter array and its solution. Presenting the solution is an important design choice because it prevents managers in the No Experience condition from acquiring task-specific experience by solving the scrambled-letter array in the example.[9] Next, managers assess the scrambled-letter task, including one item on whether they perceive the task to be cognitively stimulating. Then, we introduce contract choices, informing managers that they must choose a contract to motivate an employee to work on the scrambled-letter task. Managers receive instructions on the two contracts and the payoffs for both managers and employees. As mentioned, they know that employees can stop the task at any time, but they do not know how long employees can work on the task. Finally, managers make their contract choice and indicate the strength of their preference on a scale ranging from 0 (i.e., "same preference for both contracts") to 100 (i.e., "very strong preference for the contract I have chosen").[10] After choosing a contract, managers complete a postexperimental questionnaire that measures the assessment of employees' intrinsic motivation and covariates, including the performance they anticipate from employees.

Employees first receive information about the scrambled-letter task and their compensation contract. To isolate the effect of the manager's task-specific experience on contract choice, we carefully control what the employee knows about the manager and what managers know both about the employees and about what the employees know. Employees receive information about whether they will work under a fixed-wage or piece-rate incentive contract but do not know the contract choice set of the manager, the fact that the manager actively made the choice, or whether the manager has task-specific experience. Managers are also informed about what employees know. The reason is that managers need to be informed about the information set of their employee to make the motivational aspect salient and to offer a clean test of the effect of task-specific experience on contract choices. These design choices allow us to offer a clean test of the theory and to map onto the real world, where employees are often only made aware of the final contract offered to them. Employees complete a postexperimental questionnaire after they finish the scrambled-letter task.

[9] The scrambled-letter task contains arrays at four levels of challenge, Level 1 being the easy level and Level 4 being the challenging level. The levels of challenge vary in the number of letters in the correct position and the position of these correct letters (i.e., Level 1 has the first and last letter on the correct position, Level 2 has only the first letter on the correct position, Level 3 has one letter on the correct position, but not the first or the last letter, and Level 4 has no letter on the correct position). We implement a conservative design choice by presenting an example in the task description that is a Level 3 array, which is a relatively challenging array. This conservative design choice may increase the probability that those in the No Experience condition assess the task as cognitively stimulating, thereby biasing against us finding the predicted results.

[10] Our inferences do not change when we use the manager's contract preference as a dependent variable. This variable is equal to the manager's indicated preference if they choose the incentive contract and equals −1 times the manager's indicated preference if they choose the fixed-wage contract. We find that the average preference for the incentive contract is lower for managers in the Experience condition than for managers in the No Experience condition (M = 46.87 versus 65.84, $t_{89} = -1.92$, two-tailed p = 0.06).

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Test Variables

Perception of Cognitive Stimulation of the Task

To assess how cognitively stimulating the scrambled-letter task is, we ask manager-participants to rate the statement "The task is challenging" on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) (see Appendix B, Panel A).[11] This item is adapted from prior studies that measure the concept of task challenge (Taylor 1981; Elliot and Harackiewicz 1996). It is also similar to the measure of task challenge used in the job design literature, which asks individuals to rate the level of challenge they experience in their job/tasks (see, e.g., J. Lepine, M. Lepine, and Jackson 2004 and Bakker and Sanz-Vergel 2013). The higher this measure, the more managers perceive the task to be cognitively stimulating.[12] Because cognitive stimulation is difficult to capture, we ask this question immediately after manager-participants read the task description (in the No Experience condition) or worked on the task (in the Experience condition) and before manager-participants make their contract choice.

Perception of Employees' Intrinsic Motivation

We adapt the intrinsic motivation inventory of Ryan (1982) to measure managers' perception of employees' intrinsic motivation. Specifically, managers rate eight items on a seven-point Likert scale that measures whether they think their employee will find the scrambled-letter task interesting (see Table 1 and Appendix B, Panel B for the eight items). We observe high internal reliability for this measure (Cronbach's alpha = 0.78). Factor analysis confirms that the eight items capture one construct, as we have only one eigenvalue larger than one, which explains 96.18 percent of the variance.[13] Therefore, we use the average of the eight items as our measure of perception of intrinsic motivation. The higher this measure, the more managers expect employees to find the task interesting.

Performance Expectation

In the postexperimental questionnaire, managers indicate how many words they expect their employee to solve. We label this variable *PerformanceExpectation* and use it to mitigate the concern that the manager's own performance drives the results.[14]

IV. RESULTS

Summary Statistics and Test of Hypothesis

Random assignment is successful. Participants in the two experimental conditions do not differ with regard to demographics, such as age, gender, and work experience, or in terms of language ability, experience with word games, expectation of employee performance, and personality traits, including other-regarding preferences, trusting attitude, and risk attitude (smallest $p > 0.21$).[15] Note that we use one-tailed statistics for directional predictions and two-tailed statistics otherwise.

Table 2 displays the summary statistics. In the Experience condition, 78.26 percent (36/46) of managers choose the piece-rate incentive contract, which is lower than the 95.45 percent (42/44) of managers in the No Experience condition ($\chi^2(1) = 5.75$, two-tailed $p = 0.02$). This result aligns with our prediction that managers with task-specific experience will be less likely to choose a performance-based contract and that most people prefer using a performance-based contract over a fixed-wage contract (Evans et al. 1994; Cardinaels and Yin 2015).

Table 3 displays the results for our hypothesis test. We regress the managers' contract choice, *IncentiveContract* (1 = incentive contract, 0 = fixed wage), on the treatment variable, *Experience* (1 = Experience condition, 0 = No

[11] Our results are robust when we measure cognitive stimulation by combining this item and another item that asks managers to respond to the statement "I think my employee will find this a challenging task" (Cronbach's alpha = 0.75).

[12] Although cognitive stimulation is related to perceived task difficulty, it captures the stimulating feeling that is not captured by perceived difficulty. We measure perceived difficulty through one item in the postexperimental questionnaire that asks how difficult the task is. Results show that cognitive stimulation is positively correlated with the perception of employee intrinsic motivation ($r = 0.36$, two-tailed $p < 0.01$), but perceived difficulty does not correlate with the perception of employee intrinsic motivation ($r = 0.06$, two-tailed $p = 0.59$). A regression analysis that regresses the perception of employee intrinsic motivation on cognitive stimulation and perceived difficulty shows that, although cognitive stimulation increases the perception of employee intrinsic motivation ($t_{88} = 3.70$, two-tailed $p < 0.01$), perceived difficulty does not affect this perception ($t_{88} = -1.01$, two-tailed $p = 0.32$). Furthermore, a factor analysis reveals that there is no eigenvalue greater than 1, suggesting that the measures of cognitive stimulation and perceived difficulty do not capture one underlying construct. These results are consistent with the notion that cognitive stimulation captures the stimulating element, which is beyond perceived difficulty.

[13] Perception of cognitive stimulation is an antecedent of how the manager feels about the intrinsic motivation associated with the task. Conceptually, these two constructs are different. Factor analysis confirms this argument as the item of perception of task cognitive stimulation and the items of perception of employees' intrinsic motivation load on two different factors.

[14] One manager from the No Experience condition did not complete this question, leaving us with 90 observations.

[15] Our inferences remain unchanged if we control for language ability and experience with word games.

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TABLE 1

Factor Analysis of Managers' Perception of Employees' Intrinsic Motivation

Panel A: Descriptive Statistics by Conditions—Mean (Std. Dev.)

Questions[a,b] I Think That my Employee Will	Experimental Conditions No Experience (n = 45)	Experience (n = 46)
Q1: *find the task an interesting task*	3.87 (1.25)	4.13 (1.09)
Q2: *find the task an enjoyable task*	4.09 (1.22)	4.00 (0.99)
Q3: *consider the task a boring task when he/she reads the task description*	3.71 (1.25)	3.53 (1.02)
Q4: *not be motivated to do the task when he/she reads the task description*	4.33 (1.28)	4.13 (1.24)
Q5: *definitely consider not to start doing the task*	5.84 (1.33)	6.13 (1.22)
Q6: *find it difficult to maintain focused during the task execution*	4.44 (1.50)	4.57 (1.24)
Q7: *not work on the task for a very long period*	4.36 (1.54)	4.83 (1.25)
Q8: *find the task can be quite fun when he/she starts doing the task*	4.87 (1.24)	4.93 (0.98)

Panel B: Principal Component Factors

Factor	Eigenvalue	Explained Variance (%)	Cumulative Explained Variance (%)
1	2.76	96.18	96.18
2	0.52	18.01	114.19
3	0.18	6.32	120.50
4	0.03	0.90	121.40
5	−0.07	−2.58	118.82
6	−0.14	−5.04	113.78
7	−0.19	−6.46	107.32
8	−0.21	−7.32	100.00

[a] Managers are asked to rate the eight items from the perspective of the employee on a seven-point Likert scale (1 = strongly disagree, 4 = neither disagree nor agree, 7 = strongly agree).
[b] Items 3, 4, 5, 6, and 7 are reverse coded.

TABLE 2

Summary Statistics and Mean Comparisons and Correlation Table of the Main Experiment

Panel A: Means and Comparisons

	No Experience (n = 44)	Experience (n = 46)	Experience − No Experience (t-stat/χ^2)
%IncentiveContract	95.45%	78.26%	−17.19%
	(0.21)	(0.42)	(5.75**)
PerceptionCogStimulation	3.84	5.30	1.46
	(1.68)	(1.28)	(4.65***)
PerceptionEmployeeIM	4.46	4.54	0.09
	(0.87)	(0.67)	(0.53)
PerformanceExpectation	17.91	15.26	−2.65
	(15.41)	(5.76)	(−1.09)

(continued on next page)

Experience condition). Model 1 is the base model, with *Experience* as the only independent variable. Model 2 controls for the manager's expected employee performance to mitigate the concern that experiencing the employee task enables the manager to form expectations about employee performance. Model 3 includes other-regarding preferences, trust attitude, and risk attitude as explanatory variables. In line with our hypothesis, the negative coefficient of *Experience*

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TABLE 2 (continued)

Panel B: Pearson Correlations Table

	1	2	3	4	5
(1) *Experience*	1.00				
(2) *IncentiveContract*	−0.25**	1.00			
(3) *PerceptionCogStimulation*	0.44***	−0.08	1.00		
(4) *PerceptionEmployeeIM*	0.06	−0.12	0.35***	1.00	
(5) *PerformanceExpectation*	−0.12	−0.02	−0.23**	0.07	1.00

***, **, * Indicate significance at the 0.10, 0.05, and 0.01 levels, respectively.
This table shows the summary statistics and the comparison of means (Panel A) and correlations (Panel B).

Variable Definitions:
Experience = 1 in the Experience condition and 0 in the No Experience condition;
%*IncentiveContract* = the percentage of managers who choose the incentive contract;
PerceptionCogStimulaion = the managers' perception of whether the task is cognitively stimulating. It is measured by the responses to the statement that the task is challenging immediately after managers read the task description or complete the scrambled-letter task. The higher the score on this measure, the more cognitively stimulating managers perceive the task to be;
PerceptionEmployeeIM = the managers' perception of whether employees find the task interesting. It is measured by averaging the responses to the eight questions asked in the postexperimental questionnaire (five items are reverse coded, Cronbach's alpha = 0.78). The higher the score on this measure, the more interesting managers perceive that employees will find the task to be; and
PerformanceExpectation = the managers' answer to the question about how many words they expect their employee to find.

TABLE 3

Hypothesis Testing in the Main Experiment

	Coefficient (z-stat)		
Independent Variable	**Model 1**	**Model 2**	**Model 3**
Intercept	3.04 (4.18***)	3.43 (3.81***)	5.36 (2.84***)
Experience	−1.76 (−2.17**)	−1.86 (−2.17**)	−1.78 (−2.12**)
PerformanceExpectation		−0.02 (−1.07)	−0.03 (−1.45)
OtherRegarding			−0.85 (−1.24)
TrustAttitude			−0.23 (−0.94)
Risk			−0.12 (−0.58)
No. observations	90	90	90
Pseudo R^2	0.09	0.09	0.14

***, **, * Denote significance at the 0.01, 0.05, and 0.10 levels, based on one-tailed statistics for directional predictions and two-tailed statistics otherwise.
Logistic regression results for

$$IncentiveContract = \alpha_0 + \alpha_1 Experience + \alpha_2 PerformanceExpectation + \alpha_3 OtherRegarding + \alpha_4 TrustAttitude + \alpha_5 Risk + \varepsilon^a$$

This table presents the logistic regression results on the managers' tendency to choose the incentive contract as a function of the managers' experience with the task and other covariates using the data of the main experiment.
[a] Robust standard errors are used.

Variable Definitions:
IncentiveContract = a dummy that equals 1 if managers choose the incentive contract and 0 otherwise;
Experience = 1 in the Experience condition and 0 in the No Experience condition;
PerformanceExpectation = the managers' answer to the question asking how many words they expect their employee to find;
OtherRegarding = 1 if the participant is classified as a person who cares for others' interests (i.e., cooperative types) and 0 otherwise, based on the social value orientation scale of Van Lange, De Bruin, Otten, and Joireman (1997);
TrustAttitude = measured by six questions (Glaeser, Laibson, Scheinkman, and Soutter 2000). A typical question is "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" The higher the score on this measure, the more trusting this person is; and
Risk = measured by a question asking participants to rate their willingness to take risks using an 11-point Likert scale ranging from "not at all willing to take risks" to "very willing to take risks" (Dohmen et al. 2011). The higher the score on this measure, the more risk seeking this person is.

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suggests that managers with task-specific experience are less likely than managers without such experience to choose the incentive contract ($z = -2.17$, -2.17, and -2.12, one-tailed $p = 0.02$ in Models 1, 2, and 3).

Test of Complete Theoretical Model

We use structural equation modeling (SEM) to perform a comprehensive test of our causal model, as depicted in Figure 1. SEM is appropriate here, because the effect of task-specific experience on contract choice is mediated sequentially by the perceptions of task cognitive stimulation and of employees' intrinsic motivation (Preacher and Hayes 2008; Choi, Hecht, Tafkov, and Towry 2016).[16] We use a conservative approach by including all indirect paths (Kline 2011) and by controlling for the manager's expected employee performance.[17]

The results in Figure 2 support the predicted model. Experience is positively associated with the perception of task cognitive stimulation ($z = 5.09$, one-tailed $p < 0.01$), which supports the first link of our model.[18] The positive association between the perception of task cognitive stimulation and the perception of employees' intrinsic motivation supports the second link ($z = 4.50$, one-tailed $p < 0.01$).[19] Consistent with the third link, we observe a negative effect of the perception of employees' intrinsic motivation on the tendency to choose the incentive contract ($z = -1.66$, one-tailed $p = 0.05$).[20] We corroborate the SEM result by providing a test of sequential mediation that is similar to the Sobel test in the single-mediator case (Taylor, MacKinnon, and Tein 2008).[21] The z-statistic for the test of this sequentially mediated indirect effect is -1.63 (two-tailed $p = 0.10$), offering evidence for the sequential mediation relationship.

It is worth pointing out that results suggest a partial mediation, as we also observe a direct effect of experience on contract choice ($z = -3.03$, two-tailed $p < 0.01$). It suggests that, next to the theoretical mechanism we propose, other mechanisms may drive managers in the Experience condition to rely less on the incentive contract.

Validation Analyses

Analyses to Mitigate Concerns about Learning Other Task Attributes

This section presents analyses to mitigate the concern that managers in the Experience condition acquire information about other task attributes that they use to choose a contract. One concern is that the experience allows the manager to discover that the task is challenging such that task performance is primarily driven by ability instead of effort. This concern would suggest that providing incentives would not significantly improve performance, thereby leading to a lower reliance on the incentive contract. We provide several analyses to mitigate this concern. First, if experience causes managers to perceive that effort does not improve performance on the task, then the manager in the Experience condition would develop a lower expectation of employee performance. Our analyses of managers' expectations suggest that, between these two experimental conditions, managers do not differ in terms of how many words they expect their employee to solve (expected number of words from employees: 15.26 (Experience) versus 17.91 (No Experience), $t_{88} = -1.09$, two-tailed $p = 0.28$). Note that we control for this expectation in our analyses. Second, the test of the complete theoretical model in Figure 2 shows that the path from the perception of task cognitive stimulation to contract choice is insignificant ($z = 0.96$, two-tailed $p = 0.34$), and a regression of contract choice on the perception of cognitive stimulation and the experimental condition also shows that the coefficient on task cognitive stimulation is insignificant

[16] SEM further tests every link in the model simultaneously, thus accounting for correlations in the estimated equations and offering consistent estimations (Shaver 2005; Preacher and Hayes 2008; Kline 2011).

[17] Our inferences remain unchanged if we control for the manager's other-regarding preferences, trust attitude, and risk attitude.

[18] Results show that the task is perceived as cognitively stimulating, on average, as manager-participants in the Experience condition rate the cognitive stimulation of the scrambled-letter task as significantly higher than the midpoint of a seven-point Likert scale ($M = 5.30 > 4$, $t_{45} = 6.91$, two-tailed $p < 0.01$), and 80 percent of manager-participants rate this cognitive stimulation of the task as higher than the midpoint of the scale. In contrast, managers in the No Experience condition rate the cognitive stimulation not higher than the midpoint ($M = 3.84 < 4$, $t_{43} = -0.63$, two-tailed $p = 0.53$). Note that employees also rate the cognitive stimulation of the task as higher than the midpoint of the scale ($M = 5.30 > 4$, $t_{52} = 8.22$, two-tailed $p < 0.01$).

[19] The perception of employees' intrinsic motivation does not differ between the Experience condition and the No Experience condition ($M = 4.46$ versus 4.54, $t_{88} = -0.53$, two-tailed $p = 0.60$). This is in line with our prediction that intrinsic motivation develops when employees feel cognitively stimulated by the task. That is, experience generates cognitive stimulation, which fosters the development of intrinsic motivation. Our path model supports this indirect channel.

[20] Inferences of this path analysis remain unchanged if we control for perceived task difficulty. Specifically, the second link from cognitive stimulation to perceived employee intrinsic motivation (IM) ($z = 4.55$, one-tailed $p < 0.01$) and the third link from perceived employee IM to contract choice ($z. = -1.71$, one-tailed $p = 0.04$) are still significant.

[21] Specifically, it tests the significance of the product of the three path coefficients in the causal model. The three paths are the one from the variable (i.e., *Experience*) to the first mediator (i.e., the perception of cognitive stimulation), the one from this mediator to the second mediator (i.e., perception of employee intrinsic motivation), and the one from the second mediator to contract choice. We use unbiased standard errors to adjust for bias in the calculation of the standard error of the product of the three path coefficients (Taylor et al. 2008).

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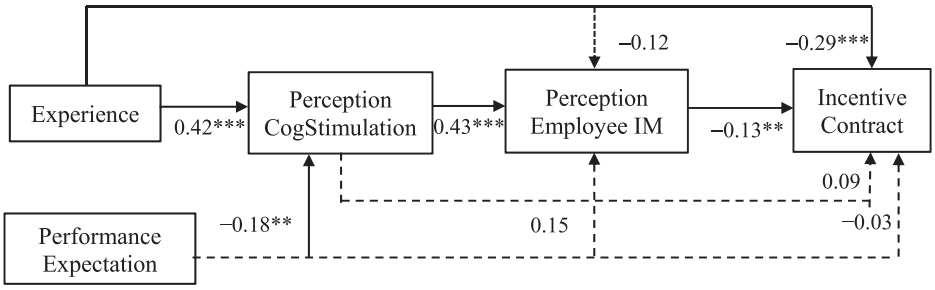
FIGURE 2
Test of the Theoretical Model in the Main Experiment



***, **, * Denote significance at the 0.01, 0.05, and 0.10 levels, respectively, based on one-tailed test for directional predictions and two-tailed tests otherwise.
This figure displays the results of the path analysis testing the theoretical model in the main experiment (n = 90). All coefficients are standardized. The paths with significant coefficients are displayed in solid lines and others in dotted lines. We calculate goodness of fit of this model using the standardized root mean square of the residual (SRMR). The SRMR of the model is 0.00; values lower than 0.10 are considered favorable (Bentler 1995; Weston and Gore 2006).

Variable Definitions:
Experience = 1 in the Experience condition and 0 in the No Experience condition;
PerceptionCogStimulaion = the managers' perception of whether the task is cognitively stimulating. It is measured by the responses to the statement that the task is challenging immediately after managers read the task description or complete the scrambled-letter task. The higher the score on this measure, the more cognitively stimulating managers perceive the task to be;
PerceptionEmployeeIM = the managers' perception of whether employees find the task interesting. It is measured by averaging the responses to the eight questions asked in the postexperimental questionnaire (five items are reverse coded, Cronbach's alpha = 0.78). The higher the score on this measure, the more interesting managers perceive that employees will find the task to be;
IncentiveContract = a dummy that equals 1 if managers choose the incentive contract and 0 otherwise; and
PerformanceExpectation = the managers' answer to the question asking how many words they expect their employees to find.

(z = 0.55, two-tailed p = 0.59). These results suggest that perceiving the task to be cognitively stimulating does not directly affect contract choice.

Analyses to Mitigate Concerns about the Influence of Own Performance

The experience bias documented in Feichter (2023) would suggest that managers in the Experience condition base their contract choice on own performance, resulting in lower reliance on incentives. As mentioned earlier, we take care of this concern by adopting several careful design choices to prevent the managers from basing their contract decision on their own performance. We next examine whether a manager's own task performance affects their contract choice. Within the Experience condition, managers who selected the fixed-wage contract on average found a similar number of words as those who selected the piece-rate incentive contract (M = 26.10 versus 23.17, $t_{44} = 0.94$, two-tailed p = 0.35). A logistic regression confirms that managers' performance does not affect their contract choice (z = −0.94, two-tailed p = 0.35). Untabulated results further show that both high-performing and low-performing managers (i.e., based on a median split of performance in the scrambled-letter task) are less likely than their No Experience counterparts to select the piece-rate incentive contract (low-performing versus No Experience: M = 83.33 percent versus 95.56 percent, $\chi^2(1) = 2.95$, two-tailed p = 0.09; high-performing versus No Experience: M = 72.73 percent versus 95.56 percent, $\chi^2(1) = 7.32$, two-tailed p < 0.01).[22] In sum, our experimental design choices and these analyses mitigate concerns that managers learning about their own performance in the Experience condition drives our results.

[22] The likelihood of selecting the piece-rate contract is slightly lower among high-performing managers than low-performing managers, but this difference is not statistically significant (M = 72.73 percent versus 83.33 percent, $\chi^2(1) = 0.76$, two-tailed p = 0.38). Our inferences are the same when we vary the cutoff points to classify high- versus low-performing managers, including a mean-split and a split based on the threshold of 15 words (15 words lead to the same pay under the piece-rate contract and the fixed-wage contract) (smallest p > 0.38). We further find that high- and low-performing managers do not differ in their perception of cognitive stimulation and perception of employees' intrinsic motivation (perception of cognitive stimulation: M = 5.41 versus 5.21, $t_{44} = 0.53$, two-tailed p = 0.61; perception of employees' intrinsic motivation: M = 4.58 versus 4.51, $t_{44} = 0.53$, two-tailed p = 0.73). These results are consistent with the regression results showing that the manager's own performance does not significantly influence contract choice.

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Further Evidence from the Open Response Question

To better understand the impact of task-specific experience, we analyze the responses to an open question asked immediately after the contract choice where managers explain the reason(s) for their choice. Two raters independently read these responses and coded them along four dimensions: the belief that employees are motivated by the piece-rate contract, the belief that employees are motivated by the fixed-wage contract, a fear about employees stopping the task, and a hope for good employee performance.[23] The justification for the first two dimensions is that assessing the motivational power of the piece-rate contract versus the fixed-wage contract is the core of our theoretical mechanism. We include the dimension "fear about stopping the task" because of the salient feature in our experiment that employees can stop the task at any time. We include the dimension "hope for good performance" to capture the manager's performance focus when choosing a contract.

The results of our analyses are twofold. First, compared with managers in the No Experience condition, managers in the Experience condition are less likely to believe that employees are motivated by the piece-rate contract (61 percent versus 82 percent, $\chi^2(1) = 4.80$, two-tailed $p = 0.03$) and more likely to believe that employees are motivated by the fixed-wage contract (17 percent versus 2 percent, $\chi^2(1) = 5.71$, two-tailed $p = 0.02$). This result corroborates our main findings. Although not significant, fewer managers in the Experience condition worry that employees will stop the task (20 percent versus 30 percent, $\chi^2(1) = 1.21$, two-tailed $p = 0.27$). Second, compared with the No Experience condition, more managers in the Experience condition mention that they hope that their employee will realize good performance (20 percent versus 2 percent, $\chi^2(1) = 6.81$, two-tailed $p < 0.01$).[24] Also, in the Experience condition, all managers except one who chose the fixed-wage contract mentioned this hope for good performance in their responses.[25] The latter result suggests that managers with task-specific experience that choose the fixed-wage contract have a sufficiently strong focus on employee performance, allowing us to mitigate the concern that the choice for the fixed-wage contract in the Experience condition coincides with a lower performance focus. In sum, the analyses of the open response question provide evidence consistent with our theory.[26]

Contract Choice and Employee Performance

We also compare employee performance between the two contracts. Untabulated results show that employee performance does not differ between employees working under the fixed-wage contract and employees working under the piece-rate incentive contract (number of words correctly solved: M = 22.08 versus 22.81, $t_{51} = -0.27$, two-tailed $p = 0.79$). Moreover, neither time spent on the task nor effort intensity differs (Chan, Kachelmeier, and Zhang 2021) (time: M = 7.45 minutes versus 7.70 minutes, $t_{51} = -0.64$, two-tailed $p = 0.52$; effort intensity: M = 3.18 versus 3.04, $t_{51} = 0.34$, two-tailed $p = 0.74$).[27] As employees working under the fixed-wage contract deliver a similar level of performance as employees working under the piece-rate contract, we conclude that our task sparks sufficient intrinsic motivation.[28,29]

Additional Experiment 1: Short Experience with the Task

We conduct an additional experiment to verify a key assumption of experiential learning theory, namely, that learning from experience must be accumulated over a period of sufficient exposure (Kolb and Kolb 2005). In other words, if

[23] One coauthor and one independent Ph.D. student blind to the research question and the treatments independently coded the responses along the four dimensions. The classification from these two raters exhibits high agreements regarding the four dimensions, which ranges from 89 percent to 97 percent, and Kappa values range from 0.48 to 0.92, indicating fair to excellent inter-rater reliability. The two raters later resolved disagreements through discussions.

[24] One manager in the Experience condition that chose a fixed-wage contract stated, "After this, I hope that my employee is sufficiently motivated to reach more than fifteen words."

[25] The one manager who did not mention this provided an incomplete response that cannot be classified.

[26] Without intending to generalize from two examples, we note that two participants' reasoning was consistent with our theoretical argument on the anticipation of crowding-out effects. These two participants chose the fixed-wage contract in the Experience condition and mentioned that providing a piece-rate contract can have negative effects on employees, such as pressure. These two responses are "I'm afraid there will be pressure on the employee if he/she has to think of a word as quickly as possible. I believe that this is easiest if you can just think in a relaxed manner, in which case you will suddenly see the word you are looking for" and "I think it's important to have confidence in your employees to do their job well. Trust is always repaid, they always say. People also often perform less under pressure."

[27] We excluded two employee-participants whose native language was not the language in which we conducted the experiment. These two participants solved zero and three words, respectively, whereas the average performance was 21.69. Our inferences do not change if we include these two participants.

[28] Employees responded to a question in the postexperimental questionnaire asking which contract they will use to motivate others on a scale of 1–100, with a higher rating indicating a stronger preference for the piece-rate contract. We do not find evidence that employees working under the fixed-wage contract respond differently than employees working under the piece-rate contract (M = 83 versus 90, $t_{51} = -1.41$, two-tailed $p = 0.16$).

[29] A regression analysis on profit, which should be interpreted with some caution as this comparison is subject to parameter choice, reveals that the manager's expected profit under the fixed-wage contract (M = 44.15) is higher than that under the piece-rate incentive contract (M = 37.81) ($t_{48} = 1.86$, two-tailed $p = 0.07$). This shows that choosing for the fixed-wage contract can be profitable in our setting.

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the experience is limited to a short period, experiential learning is unlikely to take place. In line with this argument, the additional experiment reduces the time of experience from eight minutes to only 90 seconds. Manager-participants in the No Experience condition (n = 58) of this additional experiment followed the same procedures as in the main experiment. We recruited different participants from the same undergraduate programs of the main experiment and use employee performance data of the main experiment to determine compensation. We find that manager-participants with only 90 seconds of task-specific experience (n = 59) do not make different contract choices from manager-participants without task-specific experience (choice of the incentive contract: 93.22 percent versus 93.10 percent; $\chi^2(1) = 0.00$, two-tailed p = 0.98). In line with experiential learning theory (Kolb and Kolb 2005), a limited task exposure does not lead to differential development of tacit knowledge or the integration of such tacit knowledge into contract choices.

Additional Experiment 2: The Task Specificity of Tacit Knowledge and Contract Choice

In the second additional experiment, we explore whether the task-specific experience has to be task specific. In this experiment, manager-participants in the Experience condition work on another cognitively stimulating task, which requires them to use mathematical operators (i.e., plus, minus, multiplication, division, and brackets) to make four numbers equal to 24. For example, the numbers 1, 1, 4, and 7 equal 24 as follows: $1 * 4 * (7 - 1)$. Manager-participants in the Experience condition rate this task as cognitively stimulating and intrinsically motivating. Except for this different task, we keep everything else the same as in the main experiment. That is, managers in the Experience condition work on this task before receiving information on the scrambled-letter task of their employees and then choose a contract for their employees.

We recruited 116 different manager-participants (57 in the Experience condition and 59 in the No Experience condition) from the same undergraduate programs of the main experiment. To determine participant compensation, we again use the employee performance data of the main experiment. Results show that the choice of the piece-rate incentive contract is similar between the Experience condition and the No Experience condition (91.23 percent versus 96.61 percent, $\chi^2(1) = 1.48$, two-tailed p = 0.22). Untabulated results show that experiencing a different task does not increase the perception of the cognitive stimulation of the current employee task (z = 1.13, two-tailed p = 0.26), which is consistent with our theory that tacit task knowledge can be acquired only if it is directly related to the task.[30] These results show that experiencing another cognitively stimulating task does not lead to the development of tacit knowledge regarding the employee's task. Consistent with experiential learning theory, managers must do the same task as their employees to develop tacit knowledge of the task and integrate that knowledge into the contract decision (e.g., Boh et al. 2007; Dokko et al. 2009; Singh and Staats 2012).

Additional Experiment 3: Replication with Subjects with Work Experience

The third additional experiment aims to replicate the main experiment using participants with work experience. We recruited working adults using Prolific, an online crowdsourcing platform tailored to academic research (Rennekamp, Rupar, and Seybert 2020; Cardinaels, Chi, Li, and Yin 2024). In this experiment, we move the measure of cognitive stimulation to the postexperimental questionnaire to avoid a possible carryover effect. That is, answering the cognitive stimulation question right before the contract choice could trigger participants to think differently about contract choice. A total of 141 participants (74 in the Experience condition and 67 in the No Experience condition) with at least part-time work experience and the language of the scrambled-letter task as their first language completed the experiment. Participants were on average 30.29 years old; 49.30 percent were female and 47.89 percent had at least an undergraduate degree. A total of 42.25 percent had experience managing employees, and their job titles included manager, project leader, senior engineer, consultant, and so on. We use the performance data of employees in the main experiment to determine participants' compensation in this experiment, and participants are informed about this.

A logistic regression shows that the coefficient of *Experience* is negative and marginally significant (z = −1.50, one-tailed p = 0.07, untabulated); experience reduces the likelihood of choosing the piece-rate incentive contract (73 percent versus 84 percent). Figure 3, Panel A shows the path model results. All the links are significant (*Experience* → *PerceptionCogStimulation*: z = 1.82, one-tailed p = 0.03; *PerceptionCogStimulation* → *PerceptionEmployeeIM*: z = 6.40, one-tailed p < 0.01), except for the last link from the perception of employee intrinsic motivation to contract choice (z = −0.92, one-tailed p = 0.18). These results suggest that there was development of tacit knowledge after directly experiencing the task. However, the variation in tacit knowledge across conditions did not result in different contract choices.

[30] We also note that the perception of cognitive stimulation is still positively correlated with the perception of intrinsic motivation (z = 4.30, two-tailed p < 0.01, untabulated), consistent with the theory that cognitive stimulation is an antecedent of intrinsic motivation.

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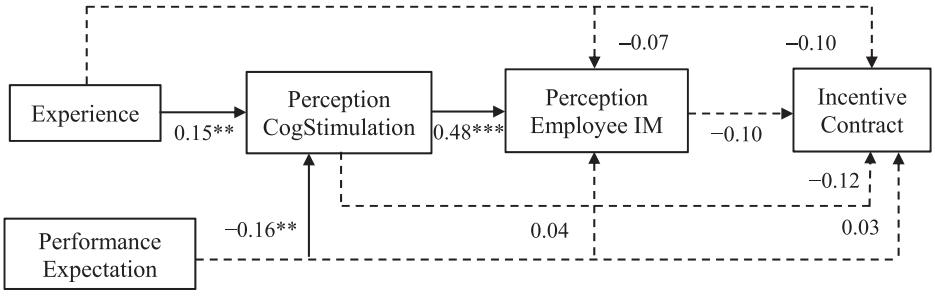
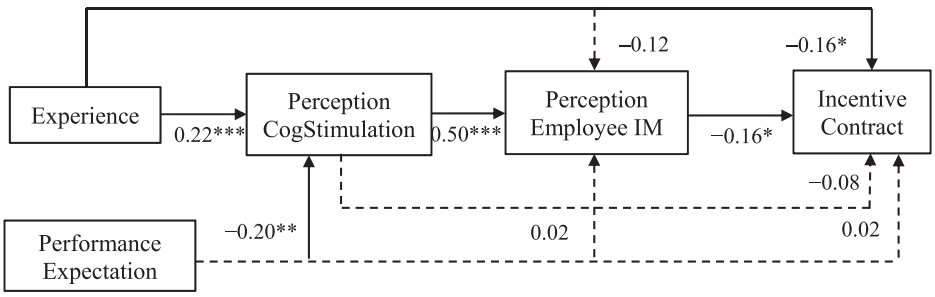
FIGURE 3
Test of the Theoretical Model in the Additional Experiment 3 on Replication with Participants with Work Experience

Panel A: The Full Sample



Panel B: The Sample with Serious Participants



***, **, * Denote significance at the 0.01, 0.05, and 0.10 levels, respectively, based on one-tailed test for directional predictions and two-tailed tests otherwise.
This figure displays the results of the path analysis testing the theoretical model in the additional experiment 3 on replication with participants with work experience. Panel A displays the results using the full sample (n = 141) and Panel B the subsample with serious participants (n = 112). We classify participants as serious if they have had at most one past Prolific assignment rejected. All coefficients are standardized. The paths with significant coefficients are displayed in solid lines and others in dotted lines. We calculate goodness of fit of this model using the standardized root mean square of the residual (SRMR). The SRMR of the models are 0.00 and 0.00; values lower than 0.10 are considered favorable (Bentler 1995; Weston and Gore 2006).

Variable Definitions:
Experience = 1 in the Experience condition and 0 in the No Experience condition;
PerceptionCogStimulaion = the managers' perception of whether the task is cognitively stimulating. It is measured by the responses to the statement that the task is challenging in the postexperimental questionnaire. The higher the score on this measure, the more cognitively stimulating managers perceive the task to be;
PerceptionEmployeeIM = the managers' perception of whether employees find the task interesting. It is measured by averaging the responses to the eight questions asked in the postexperimental questionnaire (five items are reverse coded, Cronbach's alpha = 0.82). The higher the score on this measure, the more interesting managers perceive that employees will find the task to be;
IncentiveContract = a dummy that equals 1 if managers choose the incentive contract and 0 otherwise; and
PerformanceExpectation = the managers' answer to the question asking how many words they expect their employees to find.

We explore two reasons for this insignificant link. First, we run the path model on a subsample of participants that we classify as "serious participants." There have been increasing concerns about the quality of data generated by online labor markets (Ahler, Roush, and Sood 2021; Bentley 2021; Kennedy et al. 2020), and particularly in recent years, evidence has emerged of participant farms, scripts, and bots (Dennis, Goodson, and Pearson 2020; Veselovsky, Ribeiro, and West 2023). Additional screening and selecting of participants can increase data quality and reduce noise in the dependent variable. Because subjects on Prolific can stop the experiment during the experiment (i.e., returning a submission) without a negative impact on their acceptance score, we use a criterion that relies on the absolute number of rejections a participant experiences in the past rather than a criterion that uses a cutoff based on the acceptance score (Palan and Schitter 2018). Specifically, participants are classified as "serious" if they have had at most one past Prolific assignment rejected and "nonserious" otherwise. Of our sample of 141 participants, 112 (i.e., 79 percent) are classified as "serious." Compared with serious participants, nonserious participants have a lower Prolific score (98 versus 100, $t_{139} = -10.35$, two-tailed $p < 0.01$), spent less time on the task (793 seconds versus 957 seconds, $t_{139} = -1.87$, two-tailed

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$p = 0.06$), and are more likely to fail an attention check (97 percent versus 100 percent, $\chi^2(1) = 3.89$, two-tailed $p = 0.05$). Running our analyses on the serious participants, we replicate the direct effect of task-specific experience on contract choice using a logistic regression ($z = -1.95$, one-tailed $p = 0.03$, untabulated), confirming the effect of task-specific experience (%incentive contract: 70 percent in the No Experience condition versus 86 percent in the Experience condition). We also replicate the full path model (Figure 3, Panel B: *Experience* → *PerceptionCogStimulation*: $z = 2.57$, one-tailed $p < 0.01$; *PerceptionCogStimulation* → *PerceptionEmployeeIM*: $z = 5.92$, one-tailed $p < 0.01$; *PerceptionEmployeeIM* → Contract: $z = -1.44$, one-tailed $p = 0.08$).

Second, we examine whether the last link is insignificant owing to other mechanisms driving contract choice. We analyze the open responses from the full sample of participants. Next to the dimensions used in coding the open responses of the main experiment (i.e., the belief that employees are motivated by the piece-rate contract, the belief that employees are motivated by the fixed-wage contract, a fear about employees stopping the task, and a hope for good employee performance), one coauthor and an independent PhD student blind to the experiment coded an additional dimension, namely, the belief that the fixed-wage contract is fair).[31] We find that managers in the Experience condition are less likely than those in the No Experience condition to believe that employees are motivated by the piece-rate contract (61 percent versus 76 percent, $\chi^2(1) = 3.79$, two-tailed $p = 0.05$). We do not find a statistically significant difference with respect to the belief that employees are motivated by the fixed-wage contract (9 percent versus 6 percent, $\chi^2(1) = 0.60$, two-tailed $p = 0.44$), fear about employees stopping the task (15 percent versus 21 percent, $\chi^2(1) = 0.88$, two-tailed $p = 0.35$), and hope for good performance (7 percent versus 4 percent, $\chi^2(1) = 0.34$, two-tailed $p = 0.56$). In addition, a substantial proportion of managers in both the Experience condition and the No Experience condition indicate that they chose the fixed-wage contract for fairness reasons (35 percent in the Experience condition and 27 percent in the No Experience condition). These results suggest that, in addition to the theoretical mechanism we propose, fairness considerations can drive contract choice. Fairness considerations could be another reason why we fail to find evidence for the full path model in the experiment with participants with work experience.

In sum, using a sample of participants with work experience in the experiment, we replicate the main effect of task-specific experience on contract choice and the full path model for participants that took the experiment seriously. Deeper analysis of our results also suggests that fairness considerations could explain the link between task-specific experience and contract choice.

V. CONCLUSION

Our study offers evidence consistent with the hypothesis that managers with task-specific experience are less likely to rely on a performance-based contract to motivate employees. Results from path analyses and open questions show that this experience effect is (partially) driven by managers accumulating tacit knowledge on how cognitively stimulating and how intrinsically rewarding the task is from the experience. Additional analyses mitigate the concern that our results are driven by the improved ability of managers with task-specific experience to anticipate employee performance. Finally, two additional experiments show that this experience effect disappears when the experience is limited to a short period of time or when the experience is obtained from a different task, suggesting that, to affect contract decisions, experience should be accumulated over a sufficient period of time and be task specific. The findings are replicated in a third additional experiment using "serious" participants with work experience.

Our study speaks to the literature on managerial experience (Luft and Shields 2010). Prior research focuses on structured tasks and shows that, depending on the context, experience can either improve or harm decision-making. On the one hand, Vera-Muñoz et al. (2001) find that management accounting experience helps managers to identify relevant information for managerial decisions. On the other hand, Frederickson et al. (1999) find that the experience of being evaluated on outcomes increases the manager's propensity to evaluate employees based on outcome information, and Feichter (2023) shows that managers that have done the task themselves set more challenging targets for their employees. Our study is the first to focus on the tacit knowledge a manager can acquire by experiencing a cognitively stimulating task. Our results show that managers' task-specific experience enables them to assess tacit task elements that drive intrinsic motivation, thereby leading to contract decisions that better map to the features of the employee's task. Our results underscore the value of on-the-job experience in promotion decisions and for leadership positions where assessing tacit task elements is a crucial aspect of the manager's job. When such "tacit elements" are considered important for

[31] The classification from these two raters exhibits high agreement regarding the five dimensions, which ranges from 89 percent to 99 percent, and Kappa values range from 0.44 to 0.94, indicating fair to excellent inter-rater reliability. The two raters later resolved disagreements through discussions. An example that is coded as fairness is "Because I think this is more fair. I also think the same for take-out deliverers, for example, I think they can count on a fixed income, regardless of how they perform on that day."

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contract decisions, internal promotions can yield stronger benefits compared with appointing managers with less task-specific experience via, for instance, lateral transfers or external hiring.

We further provide a potential explanation for the finding that fixed-wage contracts are pervasive in practice and particularly in work that is potentially intrinsically motivating. For example, Gittleman and Pierce (2013) find that the share of workers with performance-based contracts has been declining in United States, and Forth, Bryson, and Stokes (2016) document a similar trend in the United Kingdom. One possible reason for the declining use of performance-based contracts could be that firms increasingly rely more on managers with task-specific experience by, for instance, using internal promotions to appoint managers.

Collectively, our results offer several implications. Our study shows that, compared with managers without task-specific experience, managers with task-specific experience develop tacit task knowledge and use this knowledge to make different contract choices. As such, our results identify a behavioral nuance that can help to explain the observed variation in compensation contracts. Our results thus complement prior work on contract design that studies the economic determinants of contracting, such as information asymmetry and performance measure properties (Abernethy, Bouwens, and van Lent 2004; Moers 2006; Bouwens and van Lent 2007). Finally, our results show that the effect of task-specific experience is nuanced because (1) the period over which the manager experiences the task should be long enough and (2) the experience of the manager should be directly related to the task of the employee and not to another unrelated task. So, although our main result about the effect of task-specific experience provides evidence that is in line with the value of on-the-job training programs for managing others, the results of our additional experiments suggest that on-the-job training programs should fulfill particular criteria in order to generate tangible effects.

The limitations of our study provide opportunities for future research. First, one of our additional experiments shows that the impact of task-specific experience on contract decisions is limited to employee tasks that are the same as the task the manager has experience with. It remains an open question whether task-specific experience can be transferred to tasks that share some, but not all, features of the task the manager has experience with and which of those task features are most important to generating an effect of task-specific experience. Next, we look at a cognitively stimulating task that supports the development of intrinsic motivation. The positive correlation between cognitive stimulation and intrinsic motivation might vary across tasks and individuals. For extremely difficult tasks, for instance, cognitive stimulation might not trigger strong intrinsic motivation. Future research can study whether and how our theory extends to other types of tasks that vary along several dimensions.

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APPENDIX A

A Brief Illustration of the Scrambled-Letter Task

In the table below, you find an array of five scrambled letters, which can be rearranged into an English word. The correct answer to this is TABLE, as displayed in the table.

Array of Five Scrambled Letters					The Correct Five-Letter Word
B	E	A	L	T	TABLE

Participants in all the experiments, including the main experiment and the three additional experiments, conducted the five-letter word task in the same local language where these experiments were conducted.

APPENDIX B

Measurement of Variables in the Theoretical Model

Panel A: Perception of Cognitive Stimulation of the Task

Q1: The task is challenging

Managers rate their agreement with this item on a seven-point Likert scale (1 = "strongly disagree," 4 = "neither disagree nor agree," 7 = "strongly agree").

Panel B: Perception of Employees' Intrinsic Motivation

I think that my employee will

Q1: find the task an interesting task
Q2: find the task an enjoyable task
Q3: consider the task a boring task when he/she reads the task description[R]
Q4: not be motivated to do the task when he/she reads the task description[R]
Q5: definitely consider not to start doing the task[R]
Q6: find it difficult to maintain focused during the task execution[R]
Q7: not work on the task for a very long period[R]
Q8: find the task can be quite fun when he/she starts doing the task

Source: Adapted from Ryan (1982).
Managers judge the above eight items on a seven-point Likert scale (1 = "strongly disagree," 4 = "neither disagree nor agree," 7 = "strongly agree").
[R] Q3, Q4, Q5, Q6, and Q7 are reverse-coded.

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