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An Overlooked Cost of Contracting Out: Evidence From Employee Turnover Intention in U.S. Federal Agencies

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Abstract

Contracting out has long been used in all levels of government in the United States, with federal contract spending increasing 8% to 9% annually since 2015. The literature on contracting out has examined the impact of this practice on the work-related attitudes and motivation of public employees who have transitioned to work for private contractors. However, we understand very little about the effects of contracting out on the overwhelming number of public employees who are not displaced. Given the importance of work-related attitudes and turnover for organizations, this study explores the potential consequences of contracting out for employee turnover intention over a period of several years. The results of panel data analyses suggest that an increase in contracting activity in federal agencies increases the employee turnover intention rate. Contracting out also impacts employee turnover intention indirectly through its influence on job satisfaction.

Keywords

contracting out, privatization, employee turnover intention, employee job satisfaction, new public management

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Introduction

Contracting out, in which public organizations shift the provision of public goods and services to other organizations, has long been used in all levels of government in the United States. Whereas the history of contracting out in the U.S. federal bureaucracy goes back to the American Revolutionary War in the late 1770s, more extensive use of the practice began during the 1980s under the Reagan administration (Pegnato, 2011). By the 1990s, the contracting trend accelerated further, with a growing number of public functions and services outsourced (Kettl, 1993), a substantial share of federal spending going to contractors (Milward, 1994), and more civilian employees working for government contractors than on the federal payroll (Frederickson, 1997). Both the Clinton and Bush administrations expanded the use of competitive sourcing, which requires competition between federal agencies and private vendors, in regard to federal jobs considered to be commercial; about half of federal jobs were affected by potential competition with the private sector (Gansler & Lucyshyn, 2004).

The literature on government contracting has focused extensively on how to structure and manage the contracting process to ensure competition, mitigate agency problems, and reduce transaction costs (T. L. Brown et al., 2006; Fernandez, 2009; Girth et al., 2012; Sclar, 2000), as well as on the effects of contracting on cost and quality of services (Alonso et al., 2017; Bel et al., 2010; Hodge, 2000; Petersen et al., 2018). More recently, researchers have begun to pay more attention to the effects of contracting out on work-related attitudes and motivation of public employees (Battaglio, 2009; Lindholst et al., 2018). These studies suggest negative consequences for public employees transitioning to private-sector employment. However, how government contracting out impacts public employees not displaced as a result of the transition to external service delivery is a topic that has remained largely unexplored (G. R. Lee & Lee, 2020).

This study seeks to expand our understanding of contracting out by examining how this practice impacts the job satisfaction and turnover intention of federal government employees, those who continue to work in federal agencies that engage in contacting activity. More specifically, we empirically investigate whether and how an increase in an agency's contracting out activity affects the turnover intention rate among remaining employees in an agency. Various streams of theory and research offer insight into how contracting out can affect public employees' intention to voluntarily leave their organizations. Greater reliance on contracting, which can negatively impact public-sector employment and poses a threat to job security (Fernandez et al., 2007), can be viewed as a violation of the psychological contract between public-sector employees and their employers (Lindholst et al., 2018). As predicted by psychological contract theory, reduced job security can precipitate voluntary departure by those who have survived previous efforts to outsource work (Turnley & Feldman, 2000). Moreover, contracting out may generate additional job demands on public employees, create stress, misalign the values of public employees and those of the organizations they work for, and deny public employees a sense of autonomy (Fernandez & Smith, 2006; Government Business Council, 2015; Lindholst et al., 2018; Nelson et al., 1995). For

these and other reasons, there is a need to investigate not only how contracting out impacts public-sector employment and those employees who become displaced, but also the attitudes and intentions of the overwhelming number of public employees who continue working for public organizations, particularly their job satisfaction and intention to voluntarily stay or depart.

For more than two decades, senior officials in Washington, D.C., have labored to reduce voluntary turnover due to its pernicious effects on human capital, administrative capacity, and performance. While actual quits and retirements can impose substantial costs on organizations (Kim & Fernandez, 2017; S. Lee, 2018), turnover intention is also of vital importance to managers. Studies of voluntary turnover in both generic and public management indicate turnover intention is the strongest and perhaps most proximate antecedent or predictor of actual leaving (e.g., Ali, 2019; S. Lee et al., 2018; Tett & Meyer, 1993). Moreover, intention to leave imposes costs in its own right, as employees dedicate time to searching for employment opportunities elsewhere, become distracted at work, and can experience declining productivity (G. Blau, 1993; Felps et al., 2009). Importantly, turnover intention represents a critical stage in the voluntary turnover process at which public managers still have the opportunity to take measures to retain employees inclined to leave and preempt actual departures. To examine the effects of contracting activity on employee turnover intention, we combine data sets from the U.S. Office of Federal Procurement Policy and U.S. Office of Personnel Management to create an original panel data of federal agencies from 2010 to 2017. Panel data methods are used to analyze the direct effect of contracting activity on turnover intention, as well as its indirect effect as mediated by job satisfaction. Before describing the data and method in detail and presenting the findings, however, the discussion turns to the literature on contracting out and to a series of hypotheses linking contracting activity and voluntary turnover intention.

Contracting Out and the Public Workforce

Many governments have sought to reform the public sector using various forms of privatization in the belief that market provision will increase efficiency and reduce costs, increase managerial choice and flexibility, and leverage expertise in the private sector. Definitions of privatization abound, most centering on the theme of greater reliance on market mechanisms in the delivery of publicly funded services (Greene, 1996; Savas, 2000). In the United States, the terms *privatization* and *contracting out* are often used interchangeably, privatization mainly referring to contracting out of public services to private providers, both for profit and nonprofit ones (Brudney et al., 2005; Lopez-de-Silanes et al., 1997). Privatization encompasses various other methods as well, such as the sale of state assets, franchises, deregulation, grants, subsidies, volunteers, vouchers, user fees, and self-help (Chi, 1993; Chi & Jasper, 1998; Savas, 2000). Contracting out for provision of services and performance of functions by federal agencies is the focus of the ensuing empirical analysis.

While contracting out has become a popular mode of service delivery at all levels of government in the United States (Van Slyke, 2007), evidence of its effects remains

mixed. Focusing on the impact of contracting out on public services, Savas (2000) undertook an extensive review of the literature and concluded that private contractors generally perform more efficiently than public agencies, while performing work of equal quality. Others such as Sclar (2000) and Hodge (2000) provide a more sober assessment, the latter's review of the literature on contracting showing that while it produces cost savings, the savings are modest and concentrated in a few service areas, such as garbage collection, cleaning of facilities, and maintenance of equipment; savings in other service areas are either much lower or nonexistent (see also Bel et al., 2010). More recently, Petersen et al. (2018) find that cost savings are modest, decline over time, and are twice as large for technical as for social services. Very little is known about contracting's impact on quality and transaction costs. In short, they conclude that generalizations about the effects of contracting should be made with caution, as they are likely to depend significantly on factors such as characteristics of the service, market conditions, and the institutional and regulatory environment.

Beyond its impact on cost and quality of services, some studies indicate contracting out can be beneficial for public employees. For example, some have noted that contracting out may lead to lower levels of red tape for public managers and employees, granting them more discretion to do their work (Thompson & Riccucci, 1998). Interactions between public employees and private contractors also offer the former new opportunities to learn and discover ways to improve their own performance (G. R. Lee & Lee, 2020; Lindholst et al., 2018; Van Slyke, 2009). In addition, by supplementing the skills and expertise of public employees and enabling them to focus on what they do best, contracting out may improve person–job fit (Cunha & Cooper, 2002).

Notwithstanding these potential or realized benefits of contracting out, the literature suggests a number of negative consequences for public organizations and employees working in them. For example, scholars have reported a depletion of human capital in public organizations (Fernandez et al., 2007; Flecker & Hermann, 2011), lower representation of minorities in the public-sector workforce (Brunjes & Kellough, 2018), employment of less experienced employees (Reeves & Barrow, 2000), and greater reliance on employees with short-term contracts as a result of contracting out (Flecker & Hermann, 2011). Poor working conditions for employees, including lower salaries, less benefits, and more working hours, are also reported as consequences of contracting out (Fernandez et al., 2007; Flecker & Hermann, 2011; O'Toole & Meier, 2004; Reeves & Barrow, 2000). Relatedly, the literature on competitive sourcing, which is sparse, also confirms that public employees, unions, and even their political cronies often express hostility toward continued efforts to shift public-sector jobs to the private sector (Gansler & Lucyshyn, 2004; Snavely & Desai, 2010). Importantly, these studies have relied extensively on analysis of cross-sectional data and individual survey responses, creating a demand for more longitudinal research that captures the broader organizational context (Vrangbæk et al., 2015), including the overwhelming number of public employees who are not displaced or whose work may not be immediately affected by contracting out.

Hypotheses

This section presents our theoretical framework to account for how an increase in contracting activity influences the employee turnover intention rate, both directly and indirectly through the former's influence on job satisfaction. We draw from various streams of theory and research, including psychological contract theory and research on job satisfaction and turnover intention, to develop our model.

Contracting Out and Turnover Intention

Perhaps the most popular rationale for privatization is that it reduces costs and improves efficiency (Hodge, 2000; Savas, 2000; Sclar, 2000). As Donahue (1989) and Kettl (1993) explain, with so much of public spending allocated to personnel, much of the savings from privatization come from cuts to public employment. Fernandez et al.'s (2007) longitudinal analysis found that an increase in contracting out results in a decline in full-time public-sector employment, along with a modest increase in part-time employment. It is important to note that even in cases where contracting out does not displace public employees, much of the rhetoric surrounding privatization suggests that it will and that public employees and public-sector unions have come to expect this, thereby fostering a sense of job insecurity (Fernandez & Smith, 2006).

Psychological contract theory suggests that employees expect a stable, positive, and rewarding work environment while fulfilling their obligations to their employer (Rousseau, 1990). Changes in employees' perception of their employment status or job security can come to be perceived as a violation of the psychological contract between employee and employer (Robinson & Rousseau, 1994; Rousseau, 1990). Violation of the psychological contract causes employees to psychologically withdraw from their work (Datta et al., 2010). Empirical evidence shows it can impact employee behavior in other ways as well. Robinson and Morrison (1995) find that by eroding trust between employee and employer, violation of the psychological contract reduces organizational citizenship behavior. In a similar vein, Turnley and Feldman (2000) and Si et al. (2008) argue that violation of the psychological contract, by weakening trust in an employment relationship, leads many employees to conclude that their relationship with an employer is not worth maintaining, precipitating adverse behavioral responses such as neglect and exit or voluntary turnover. Their findings confirm this, revealing that violation of the psychological contract increases the likelihood of exit and neglect and diminishes loyalty. McKnight et al. (2009) analyzed the impact of job characteristics, including job security and promotion opportunities, and workplace characteristics such as autonomy, skill variety, and feedback, on turnover intention. They found that the relationship between job characteristics and turnover intention is mediated by job satisfaction and exhaustion at work, but workplace characteristics such as job security directly impact turnover intention.

The potential for breach of the psychological contract through job insecurity to directly impact turnover intention seems greater among public-sector employees than their private-sector counterparts. As Appleby (1945) pointed out long ago, while some

people have little motivation to enter government, others are strongly attracted to it. Given this self-selection into public employment, those in public organizations have different motivations and expectations than their counterparts in the private sector, including the implicit understanding of job security for public employees. Job security is an important incentive for individuals who choose to work for government (Hur & Perry, 2020), and the literature has confirmed that public employees perceive contracting out as a threat to their job security (e.g., Fernandez & Smith, 2006). Therefore, if an agency becomes increasingly reliant on contracting out, many employees who are not displaced by contracting out or experience changes in employment status may still feel vulnerable and suspect that they can be the next target, thereby withdrawing psychologically and initiating the search for work elsewhere.

To sum up, we expect that more employees will express a desire to leave their organization as it increasingly engages in contracting activity. Recent turnover research indicates that federal employees seek different turnover paths, including transferring to another federal agency and leaving the federal government altogether, for a variety of reasons (S. Lee et al., 2018). However, the intention to leave one's agency to work for another or to seek work outside the federal bureaucracy are both signs of declining loyalty and likelihood of exit for violation of the psychological contract by an employer (Si et al., 2008; Turnley & Feldman, 2000). Hence, we pose the following hypothesis:

> **Hypothesis 1 (H1):** An increase in contracting out activity will be positively associated with turnover intention (including both the intention to transfer to another agency and to quit the federal government).

Contracting Out and Job Satisfaction

Growing use of contracting out comes to represent a form of organizational change. Compared with in-house service provision, contracting out necessitates development of new skills and competencies, such as writing contract specifications, monitoring contract employees, resolving interorganizational disputes, and coordinating across organizational boundaries (Kettl, 1993; Rainey, 2014). Moreover, public employees must learn to build and sustain new collaborative relationships with contractors and their staff (Government Business Council, 2015; Lindholst et al., 2018). Organizational change can become burdensome and stressful for employees and foster frustration and dissatisfaction (Shah, 2000). Nelson et al.'s (1995) study of organizational change through privatization found that the ensuing period of upheaval and uncertainty brought about a decline in job satisfaction and deterioration of mental and physical health, with frontline employees most directly affected by the change being the ones who experienced the most adverse effects.

Person–organization fit theory offers further insight into how contracting out can affect job satisfaction among public employees. New Public Management (NPM) reforms in general, but especially privatization, emphasize market-oriented values, including efficiency and economy, and extrinsic rewards based on performance. Their

introduction can erode traditional public-service values (Bozeman, 2007; Diefenbach, 2009), as well as undermine intrinsic motivation, which is a strong predictor of individual and organizational performance in the public sector (Moynihan, 2008; Perry & Vandenabeele, 2008). Survey research of senior and mid-level managers in federal agencies indicate that they tend to react negatively when inherent government functions are carried out by contractors (Government Business Council, 2015). Additional studies of public employees' reactions to market-oriented reforms confirm their negative responses, spilling over into attitudes toward their job and organization (Kellough & Lingo, 2002; Kellough & Nigro, 2005; Oh & Park, 2011; Yang & Kassekert, 2010). Hence, greater reliance on contracting out comes to disrupt the fit between the values of public employees and those of the organizations they work for (Terry, 2006). This proves to be consequential for job satisfaction, as misalignment between an employee and an organization's values produces a substantial negative effect on job satisfaction that is greater than the effects on effort, performance, or organizational citizenship behavior (Kristof-Brown et al., 2005).

Research on self-determination theory (SDT) sheds further light on the relationship between contracting out and job satisfaction. SDT is a theory of human motivation that posits that humans have a need for autonomy and that external conditions and stimuli, including those from the work environment, can either facilitate or thwart efforts to satisfy this need (R. M. Ryan & Deci, 2000). For elected officials and senior managers, contracting out offers the potential to lower costs, improve efficiency, and add flexibility in staffing and deployment of human resources (Fernandez et al., 2007). Private contractors and their employees can be hired, disciplined, reassigned, and fired more easily because in their case, civil service rules pose no constraints (Greene, 1996). Most public employees are often not involved in privatization decisions, however, and do not benefit from the managerial flexibility enjoyed by their superiors (Donahue, 1989; Greene, 1996; Sclar, 2000). They may come to feel lack of choice regarding their working conditions and that the prospect of future employment is outside of their control. SDT predicts, and empirical findings confirm, that under these conditions, employees who lack autonomy experience reduced intrinsic motivation and satisfaction (R. M. Ryan & Deci, 2000). Based on the foregoing reasoning, we propose the following hypothesis:

Hypothesis 2 (H2): An increase in contracting out activity will be negatively associated with job satisfaction.

Job Satisfaction and Turnover Intention

Job satisfaction is centrally positioned in the nomological network of work-related attitudes and behaviors studied by organizational behavior researchers. Empirical evidence links job satisfaction to organizational commitment, self-efficacy, self-esteem, psychological burnout, organizational citizenship behavior, and performance (Cantarelli et al., 2016; Judge & Bono, 2001; Spector, 1997). Job satisfaction has also garnered the attention of turnover researchers, with various models of the voluntary

turnover process and corroborating empirical evidence pointing to job satisfaction as both a direct antecedent of turnover behavior as well as an intermediate antecedent that influences turnover behavior indirectly through its effect on turnover intention (Mobley et al., 1979; Muchinsky & Morrow, 1980). Recent studies of public-sector employees confirm the mediating role of job satisfaction, as changes in organizational and environmental context can lower or increase employee job satisfaction, which will affect employees' intention to leave their workplace (Ali, 2019; S. Lee et al., 2018). Therefore, we present the following hypothesis:

> **Hypothesis 3 (H3):** Job satisfaction will be negatively associated with turnover intention (including both the intention to transfer to another agency and to quit the federal government).

Contracting Out, Job Satisfaction, and Turnover Intention

In sum, we argue that as public organizations increase contracting out activity, fewer public employees will be satisfied with their jobs, this, in turn, resulting in an increasing number of them signaling their intention to leave the organization to seek employment elsewhere. Hence, job satisfaction acts as a mediator in the relationship between contracting out and turnover intention, with contracting out negatively related to job satisfaction, and job satisfaction negatively related to turnover intention. We have arrived at our final hypothesis:

> **Hypothesis 4 (H4):** Job satisfaction will mediate the relationship between contracting activity and turnover intention (including both the intention to transfer to another agency and to quit the federal government).

Figure 1 presents our theoretical model, which synthesizes the direct and mediating effects discussed above. The empirical analysis tests the hypotheses depicted in Figure 1.

Method

This section describes the study's data and method.

Data

The data were mainly drawn from the U.S. Office of Personnel Management's (OPM) Federal Employee Viewpoint Survey (FEVS) and Fedscope and from the U.S. Office of Federal Procurement Policy's Federal Procurement Data System (FPDS). The FPDS records every single contracting-related transaction by federal agencies since 1981. The data system provides abundant information not only on each contract, but also about the actors—such as the government agency awarding the contract and the contractors—involved in the contract. Among the main variables, contracting out activity was obtained from the FPDS, and turnover intention rate and job satisfaction

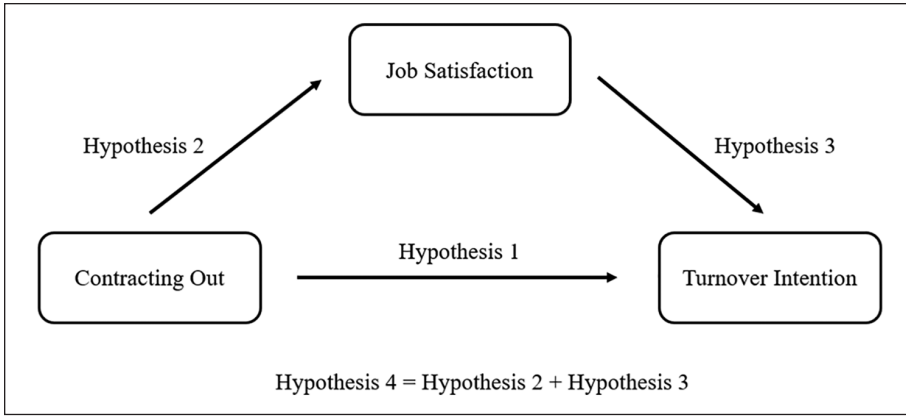

Figure 1. Relationships between contracting out, job satisfaction, and turnover intention.

variables were measured through the aggregation of individual responses from the FEVS to the agency level. The unit of analysis in this study is the federal agency, including both cabinet level and small/independent agencies. Combining data from the FPDS, the FEVS, and Fedscope, a sample of 250 observations between 2010 and 2017 from 41 federal agencies creates an unbalanced panel data structure (see Appendix A1 for the list of agencies included). Because the agencies reported in these three sources are not perfectly matched, the agencies with different/unspecified names or missing information were excluded.

OPM uses a stratified sampling technique that produces representative samples for each agency as well as for nearly the entire federal government: In fact, in smaller agencies, an effort is made to obtain responses from all employees. Given that our sample data set omits federal agencies with missing information on the outcome, independent, and control variables, it overrepresents "supervisor" employees, but underrepresents "male" employees compared with the entire federal workforce. Also, descriptive statistics of key variables of the sample data set reveal slightly more positive responses, but we did not find meaningful differences between the sample data and the entire population data with omitted agencies (see Table 1).

Dependent Variable

Our outcome of interest is *Turnover Intention Rate*, which is measured using responses to the following survey item in the FEVS: "Are you considering leaving your organization within the next year, and if so, why?" From the responses to this question, we first measure turnover intention as a dichotomous variable, where 1 represents either those who plan to leave their agency to take another job within the federal government (or transfer intention) or those who plan to leave their agency for a job outside the federal government (or quit intention), and 0 represents all others. Next, we create our

Table 1. Descriptive Statistics ($N = 250$).

Variables	*M*	*SD*	Minimum	Maximum
Turnover Intention	0.189	0.047	0.068	0.331
Contracting Spending (Spending per Employee)	351,165.700	614,131.600	8,095.306	3,487,555
Job Satisfaction	0.706	0.054	0.556	0.858
Resource Sufficiency	0.493	0.086	0.256	0.745
Physical Conditions	0.720	0.068	0.483	0.898
Relationship with Supervisor	0.714	0.056	0.573	0.907
Relationship with Coworker	0.780	0.050	0.657	0.930
Supervisor	0.219	0.089	0.051	0.650
Minority	0.356	0.125	0.095	1
Gender (male)	0.493	0.103	0.146	0.698
Total Employees (log)	9.480	1.718	6.558	12.852

dependent variable, *Turnover Intention Rate*, by counting the number of employees who reveal the intent to leave the federal government (both transfer and quit intentions) and divide it by the total number of employees in each agency. Roughly 19% of employees, on average, report planning to leave for another federal job or to leave the federal government for an outside position.

We also analyzed additional models with alternative specifications of the dependent variable—transfer intention rate and quit intention rate—in accordance with the recent turnover research emphasizing that employees seek different turnover paths for different reasons (e.g., S. Lee et al., 2018). The results of these models were generally consistent with the ones using a single measure of turnover intention rate reported here (Appendix A3), therefore, we discuss our results pertaining to the comprehensive turnover intention rate in the Results section.[1]

Independent Variable

The main independent variable is contracting out activity, *Contracting Spending*, measured as contracting spending per employee.[2] The FPDS provides the spending patterns of the U.S. federal government, such as dollars spent by agencies through contracting out. For this study, we obtained yearly total spending on contracting reported by each federal agency and divided it by total employees for each agency. An agency spends an average of about $351,165 per employee for contracting over time.

One caveat about our sample data is that they prevent us from distinguishing between different types of contracting: They include contracting out activity related to both services and materials/equipment. Our theoretical premise on the direct link between contracting and turnover intention rate focuses on remaining employees and reduction in their perceived job security as more contracting activity occurs, and, therefore, it is important to test the effect of contracting out for services that generally entail displacing or transferring public employees.

While the final sample data set merged with FEVS does not include the observations from the Department of Defense, where contracting out for equipment/materials comprises a major proportion of total contracting spending, and contracting out is regulated by a different set of procurement regulations (see Brunjes & Kellough, 2018), contracting out for services is the most common type of contracting activity among other departments and agencies in the federal bureaucracy (L. A. Brown & Kellough, 2020; Government Business Council, 2015). Nevertheless, the sample data set still includes contracts for materials/equipment.

Relatedly, as the literature on competitive sourcing shows, not all government programs or activities are subject to contracting out decisions. Commercial activities (e.g., clerical and maintenance activities) are mainly subject to potential private–public competitions and contracting out (Snavely & Desai, 2010). Therefore, it would be worthwhile capturing the number of positions that were categorized as commercial activities and transferred to private-sector vendors. Unfortunately, the limitations posed by the data mean we cannot distinguish commercial activities from their counterparts, inherently governmental activities. As the literature suggests, however, some government activities involve both commercial and inherently governmental activities.

In the case of multiyear contracts, contracts for the purchases of goods or services for more than 1 year but not more than 5 years, annual appropriations are included in our measure of contracting spending. Therefore, including multiyear contracts does not affect the dollar amount that is obligated by agencies each year.

In sum, these potential limitations affect the models' ability to fully capture the impact of contracting activity on the outcome variable. The sample data set addresses these concerns to some extent, but the findings should be interpreted with these data limitations in mind.

Mediating Variable

The other main independent variable is *Job Satisfaction* as a mediator. The latent variable job satisfaction is measured using an observed indicator from the FEVS: "Considering everything, how satisfied are you with your job?" The item is Likert-type with five response categories anchored at *strongly agree* and *strongly disagree*. Job satisfaction, as well as the control variables, is measured as the proportion of all responding employees who expressed some level of agreement (*strongly agree* or *agree*) with an ordinal-level survey item. Approximately 71% of federal employees reported that they are satisfied with their job.

Note that our measure of job satisfaction is a global measure that captures employees' overall level of satisfaction with their job. Job satisfaction researchers also use multiple survey items to measure job satisfaction, but a global measure of job satisfaction is preferred by many to a summated scale capturing multiple facets of job satisfaction (see Scarpello & Campbell, 1983) and is often deemed more valid (Tett & Meyer, 1993) and reliable (Wanous et al., 1997). Importantly, a multi-item measure may omit important aspects of job satisfaction that are tapped by a global measure (Scarpello & Campbell, 1983); it may elicit a more relative frame of reference that encourages

short-term decisions (T. A. Ryan & Smith, 1954; Smith et al., 1969); it may include satisfaction components that are irrelevant to the given individual; it may include a descriptive component that interferes with the affective evaluation of the given job; and it is less ecologically valid in that it entails the simple arithmetic combination of specific attitudes (Tett & Meyer, 1993).

Control Variables

The extensive literature on turnover and turnover intention reveals a number of common factors, including workplace satisfaction, organizational characteristics, and demographic characteristics of employees (Cotton & Tuttle, 1986; Lambert et al., 2001; Mobley et al., 1979; Pitts et al., 2011). Thus, we control for three clusters of factors—workplace factors, organizational/relational factors, and demographic factors—with data from the FEVS and Fedscope. The relevant survey indicators tap into respondents' perceptions and are measured with a Likert-type response set, anchored at *strongly agree* and *strongly disagree*. Measures of control variables from the FEVS are computed from individual respondents by the agency and then aggregated to the agency level at each yearly interval.

Workplace satisfaction factors include perceived adequacy of *physical conditions* and *resource sufficiency*. We also added organizational/relational factors, including *relationship with supervisor* and *relationship with coworker*, as the literature on turnover suggests that employee satisfaction with their relationships with other employees and supervisor is associated with turnover (Cotton & Tuttle, 1986; Lambert et al., 2001). Demographic characteristics appear to strongly influence employee decisions to exit an organization (F. D. Blau & Kahn, 1981). Accordingly, we compute yearly agency averages for the proportion of the total agency workforce that is male (*gender*), supervisory (*supervisor*), and minority (*minority*). We also control for *total employees* measured by the total number of employees to control for the size of the agency. The data source and survey questions for each variable are detailed in Appendix A2.

Model

While both ordinary least squares (OLS) and generalized least squares (GLS; or Feasible Generalized Least Squares [FGLS] estimator) are widely used for analyzing panel data sets, we chose to use a generalized estimating equation (GEE) model for potential issues we may encounter when applying OLS or GLS models to our data set. Foremost, given that our dependent variable, *Turnover Intention Rate*, ranges between 0 and 1, applying OLS-based regression approaches leads to predicted values of the outcome variable to fall outside the unit interval between 0 and 1 (Papke & Wooldridge, 2008). Instead, Papker and Wooldridge (2008) proposed a fractional logit regression model to address this issue when the dependent variable takes one of the following forms: fractions, proportions, rates, indices, and probabilities. While the fractional regression model can be applied only for the balanced panel data set, a generalized linear mixed model (GLMM) is the plausible alternative for unbalanced panel data sets like ours (Agresti, 2013). In particular, a GEE model for panel data, as

an extension of a GLMM, can be advantageous over OLS panel models in testing mediating effects more efficiently (Schluchter, 2008). To estimate beta, in addition, we employ GEE with the Huber-White Sandwich estimator for robustness. The Huber-White Sandwich estimator is particularly appropriate for the unbalanced data structure of this study, and also can fix some possible issues related to working covariance structure misspecification. By using the Huber-White Sandwich estimator of variance, GEE produces valid standard errors, even if the correlations within the group are not as hypothesized by the specified correlation structure. Our GEE models also control for both agency and year fixed effects. We allow a time-difference (1-year) between contracting out and turnover intention rate variables.

To test the mediation hypothesis, we followed the approach of Kenny et al. (1998). When using multivariate regression models, a mediating effect is confirmed when the following conditions in our model are met: (a) a statistically significant relationship between *Contracting Spending* and *Turnover Intention Rate* and between *Job Satisfaction* and *Turnover Intention Rate*; (b) a statistically significant relationship between *Contracting Spending* and *Job Satisfaction*; (c) an absolute value of the estimated coefficient of *Contracting Spending* that becomes lower or becomes statistically insignificant once *Job Satisfaction* is included in the regression model. Therefore, we test regression models with three different specifications to confirm the mediating effects of job satisfaction on the contracting-turnover intention rate relationship at the organizational level:

$$\begin{aligned} \textit{Turnover Intention Rate}_{it} = {} & \alpha_i + \beta_1 \textit{ContractingSpending}_{it-1} \\ & + \Upsilon_1 \textit{Agency}_i + \Upsilon_2 \textit{Yr}_t + \beta X_{it} + \varepsilon_{it} \end{aligned} \tag{1}$$

In regression equation (1), $\textit{Turnover Intention Rate}_{it}$ is agency i's turnover intention rate in year t. $\textit{ContractingSpending}_{it-1}$ represents the total dollar spending of agency i for contracting per employee in year $t–1$. $\textit{Agency}_i$ is a vector of agency dummy variables to control for unobserved heterogeneity among agencies, and $\textit{Yr}_t$ is a vector of year dummy variables (with 2010 as the reference year) to control for unobservable changes between different years. X_{it} denotes a vector of control variables.

$$\begin{aligned} \textit{Job Satisfaction}_{it} = {} & \alpha_i + \beta_1 \textit{ContractingSpending}_{it-1} \\ & + \Upsilon_1 \textit{Agency}_i + \Upsilon_2 \textit{Yr}_t + \beta X_{it} + \varepsilon_{it} \end{aligned} \tag{2}$$

In regression equation (2), $\textit{Job Satisfaction}_{it}$ represents the proportion of employees who reported satisfaction with their job in agency i in year t. Regression equation (2) is required for a complete confirmation of the mediating effects of job satisfaction on the contracting-turnover intention rate relationship while including job satisfaction as its dependent variable.

$$\begin{aligned} \textit{Turnover Intention Rate}_{it} = {} & \alpha_i + \beta_1 \textit{ContractingSpending}_{it-1} \\ & + \beta_2 \textit{Job Satisfaction}_{it} + \Upsilon_1 \textit{Agency}_i \\ & + \Upsilon_2 \textit{Yr}_t + \beta X_{it} + \varepsilon_{it} \end{aligned} \tag{3}$$

Regression equation (3) adds the variable $Job\ Satisfaction_{it}$ to confirm whether it mediates the effect of contracting out on employee turnover intention. For a full mediation, the independent variable, *Contracting Spending*, must not be related with the dependent variable, *Turnover Intention Rate*, when the mediation variable is added to the equation.

Results

Table 2 presents the results for GEE models, each with 250 observations, in which the main independent variables are statistically significant overall. We test regression models with three different specifications to determine whether *Contracting Spending* affects *Turnover Intention Rate* and whether *Job Satisfaction* mediates the relationship between *Contracting Spending* and *Turnover Intention Rate*. Note that all explanatory variables, except for agency and year controls, are standardized, which allow for a comparison of effects across variables.

In Table 2, Model 1, we regress *Turnover Intention Rate* on *Contracting Spending* and other covariates, excluding *Job Satisfaction*. In Model 2, we regress *Job Satisfaction* on *Contracting Spending* and other covariates. In Model 3, we regress *Turnover Intention Rate* on *Contracting Spending* with *Job Satisfaction* as a mediator, along with other covariates. We will focus on Table 3, which presents estimated marginal effects of key independent and mediating variables from Models 1 to 3.

H1 predicts *Contracting Spending*, which is measured by contracting spending per employee, is positively associated with *Turnover Intention Rate* measured by the proportion of employees expressing their intention to leave the agency. We find *Contracting Spending* has a positive impact on *Turnover Intention Rate*. The estimated marginal effect, 0.016 ($p < .01$), of *Contracting Spending* in Model 1 in Table 3 implies that if a federal agency increases contracting spending by about $614,130 per employee (1 standard deviation), the agency will experience an increase of 1.6 percentage points in the turnover intention rate. Thus, H1 is supported.

H2 predicts *Contracting Spending* is negatively related to *Job Satisfaction* measured by the proportion of employees who express satisfaction with their job. We find *Contracting Spending* reduces the proportion of employees who are satisfied with their job. The estimated coefficient for *Contracting Spending* is −0.008 ($p < .01$) in Model 1 in Table 3, indicating that an agency can anticipate a decrease of 0.8 percentage points in the proportion of employees satisfied with their job when the agency increases contract spending per employee by about $614,130 (1 standard deviation). This finding supports H2.

We also predict a negative association between *Job Satisfaction* and *Turnover Intention Rate*, according to H3. The estimated marginal effect, −0.026 ($p < .01$) in Model 3 in Table 3, implies that an increase of 5.4 percentage points (1 standard deviation) in the proportion of employees who are satisfied with their job will lead to a decrease of about 2.6 percentage points in the proportion of employees who intend to leave the agency. That is, as more employees become satisfied with their job, a federal agency will have fewer employees expressing their intention to leave the agency, thereby lending support to H3.

H4 predicts *Job Satisfaction*, measured as the proportion of employees who are satisfied with their job, mediates the influence of *Contracting Spending* on *Turnover*

Table 2. Results of Panel Generalized Estimating Equation Regression Model.

	Model 1	Model 2	Model 3
Variables	Turnover intention	Job satisfaction	Turnover intention
Contracting Spending	0.102***	−0.040***	0.078***
(Spending per Employee)	(0.015)	(0.010)	(0.016)
Job Satisfaction			−0.168***
			(0.066)
Physical Condition	−0.071**	0.007	0.042
	(0.038)	(0.016)	(0.037)
Resource Sufficiency	0.034	0.075***	−0.024
	(0.040)	(0.026)	(0.033)
Relationship with Supervisor	−0.066	0.133***	0.021
	(0.070)	(0.036)	(0.083)
Relationship with Coworker	−0.055	0.080***	−0.005
	(0.069)	(0.032)	(0.059)
Supervisor	−0.020	0.014	−0.009
	(0.026)	(0.013)	(0.026)
Minority	0.053	0.026	0.070*
	(0.047)	(0.023)	(0.044)
Gender	−0.016	−0.009	−0.027
	(0.049)	(0.021)	(0.039)
Total Employees (log)	0.029	0.038****	−0.002
	(0.037)	(0.017)	(0.039)
Constant	−1.495***	1.022***	−1.410***
	(0.053)	(0.031)	(0.067)
Year Fixed Effects	Yes	Yes	Yes
Agency Fixed Effects	Yes	Yes	Yes
Observations	250	250	250
Number of agency	41	41	41
Wald χ^2	876.11***	912.94***	705.51***

Note. Clustered robust standard errors are in parentheses.
*$p < .1$. **$p < .05$. ***$p < .01$.

Intention Rate. As presented in the Method section, three conditions must be met to determine the mediating effect of *Job Satisfaction*. The findings confirm, (a) statistically significant relationships between *Contracting Spending* and *Turnover Intention Rate* and between *Job Satisfaction* and *Turnover Intention Rate*, as well as (b) a statistically significant relationship between *Contracting Spending* and *Job Satisfaction*. Therefore, the remaining condition is whether the estimated impact of *Contracting Spending* becomes smaller or statistically insignificant when *Job Satisfaction* is included in Model 3. As presented in Table 3, the absolute value of an estimated marginal effect of *Contracting Spending* on *Turnover Intention Rate* decreases from 1.6 percentage points in Model 2 to 1.2 percentage points in Model 3. That is, the

Table 3. Estimated Marginal Effects of Contracting Activity and Job Satisfaction on Turnover Intention Rate.

	Model 1	Model 2	Model 3
Variables	Turnover intention	Job satisfaction	Turnover intention
Contracting Spending (Spending per Employee)	0.016*** (0.002)	−0.008*** (0.002)	0.012*** (0.002)
Job Satisfaction			−0.026*** (0.010)

*$p < .1$, **$p < .05$, ***$p < .01$.

magnitude of a negative effect of *Contracting Spending* on *Turnover Intention Rate* is attenuated when controlling for *Job Satisfaction* in Model 3. This finding supports the notion that *Job Satisfaction* partially mediates the relationship between *Contracting Spending* and *Turnover Intention Rate*. In short, the result lends support to H4.

With regard to the control variables, we find that the collective perception of physical conditions in the workplace, relationships with supervisor and coworkers, total employees, and proportions of supervisory and male employees do not explain variation in the turnover intention rate (see Table 2, Model 3). In contrast, the collective employee perception of resource sufficiency is negatively associated with the turnover intention rate, while the proportion of minority employees is positively associated with the outcome variable.

As a robustness check, we tested additional models. First, our current aggregated data structure renders losing individual variations in each agency, and, therefore, the current findings may not hold at the individual level of analysis. For this reason, we conducted additional multilevel regression analyses with a cross-sectional data set of individual responses from the FEVS in 2017. Those results are consistent with the agency-level results reported above. Second, the data structure of this study may be subject to common source bias (see Meier & O'Toole, 2013). Model 3 includes both a dependent variable (*Turnover Intention Rate*) and some of the key explanatory variables (*Job Satisfaction* and other controls) that are drawn from the same survey instrument. Therefore, we took additional steps to rule out the possibility of common source bias, specifically with (a) Harman's single factor test and (b) Brewer's split sample method (Jakobsen & Jensen, 2015).[3] The results from both approaches indicate that using a common source in our analysis does not necessarily lead to bias in estimated effects of key explanatory variables. As some researchers suggest (Fuller et al., 2016; George & Pandey, 2017; Spector, 2006), using self-reported instruments does not always result in common source bias: a list of instruments capturing work-satisfaction or work-attitude are generally not prone to common source bias (Spector, 2006).

Furthermore, we tested additional models with lagged dependent variables to control for the state of the organization in previous years and compared the models without the lagged terms. Including the lagged dependent variables helps account for the influences of unobserved variables associated with the outcome variable (O'Toole & Meier, 1999). The autoregressive models present similar findings with the base models

presented in Table 2, though the sizes of magnitude are slightly smaller in the autoregressive models.[4] Overall, these additional models offer consistent findings with the ones reported above.[5]

Discussions and Conclusion

Government contracting has long been considered a way to increase efficiency and improve quality of government programs and services. Furthermore, some have predicted positive outcomes on working conditions and organizational structure from contracting out, including less red tape, more opportunities for learning, and greater innovativeness. Notwithstanding, researchers and practitioners alike have warned that relying on contracting out to deliver services may have harmful effects on the work attitudes and behavior of public employees. Previous research has shed light on pieces of the complex puzzle pertaining to the relationship between contracting out and work-related attitudes (e.g., Flecker & Hermann, 2011; O'Toole & Meier, 2004; Reeves & Barrow, 2000). Those studies, however, have mainly focused on outcomes observed among public employees who were displaced by contracting out and went to work for private firms.

This study extends previous efforts by exploring whether and how a federal agency will experience changes in collective turnover intention, or turnover intention rate, among those public employees who are not displaced by contracting out. It develops and tests a model of contracting out in U.S. federal agencies that accounts for the direct effect of contracting out on turnover intention rate, as well as its indirect effects on the outcome as mediated by employee job satisfaction at the organizational level. In regard to the indirect effect, we postulate that as agencies increase contracting activity, they will have fewer employees expressing satisfaction with their job. This will result in more employees intending to leave their agency.

The empirical results indicate that contracting out has a direct positive effect on the turnover intention rate. An increase in contracting out activity in a federal agency will lead to more employees reporting their intention to leave to work elsewhere. As hypothesized, this finding reveals that increasing reliance on contracting out may cause remaining employees to perceive a breach of the psychological contract due to a potential threat to their employment status or job security, highlighting the role of the psychological contract as a causal pathway connecting contracting out's impact on voluntary turnover. The results also confirm that increasing contracting out activity appears to indirectly affect the turnover intention rate through its influence on reducing the proportion of employees who are satisfied with their job. In particular, this finding suggests that continued expansion of contracting out activity in the public sector may result in more dissatisfied employees who encounter new roles and experience a misalignment between their values and those of their employers. Although the magnitudes of the estimates appear not to be large, the findings challenge us to go beyond the conventional wisdom of privatization and to reconsider its impact on public organizations and the work-related attitudes of their employees.

Our findings suggest the need for a complete and balanced picture of the contracting process and its concomitant benefits and costs, as economic gains from contracting out

may come at the expense of lower collective work motivation among employees who continue to work in public organizations. Higher turnover intention can critically impact government operations and service provision. Indeed, it can affect organizational performance. High levels of turnover intention in an organization can increase the likelihood that more employees engage in counterproductive behavior and that fewer employees positively contribute to organizational goals. More importantly, considering that turnover intention has been found to be perhaps the strongest and most immediate predictor of actual turnover (S. Lee et al., 2018; Mobley et al., 1979), it is important to take contracting activity into account when devising measures to increase retention of employees. When planning to contract out, decision-makers should be mindful of the practice's impact on the public workforce, in particular, how continuous expansion of contracting activity may lead to an increase in employee withdrawal, dissatisfaction, and voluntary departures. Public managers should frequently interact with employees to determine if they perceive contracting out to be a threat to their job security, and if so, they should provide emotional support, build trust, and lessen the administrative burdens associated with planning and managing contractual relationships (Yang & Kassekert, 2010). In addition, public managers should take steps to allay fears about the adverse consequences of contracting out on the organization and its employees. They should offer evidence of anticipated gains in efficiency and effectiveness, convince employees of new opportunities to learn, and begin to foster a culture of innovativeness and continuous improvement that embraces new approaches to service delivery (Fernandez & Smith, 2006; Lindholst et al., 2018).

Several limitations to this study should be noted. First, the panel model was based on aggregated data, which can lead to the loss of information. This approach further prevents us from offering strong inferences about individual behaviors. To address this potential limitation, we have analyzed hypothesized relationships at the individual level, with the results supporting the hypothesized relationships at the organizational level. Hence, the implications of this study could be applicable to the individual level. In addition, this study faces the potential risk of common method bias. We acknowledged this concern and made efforts to address it using two major tests to determine if using a single survey instrument in our analysis biased the results. Test results indicate that using variables measured from the FEVS did not result in a worrisome level of common method bias. Third, while a case was made earlier for why turnover intention is worthy of study in its own right, future research should venture beyond to explore the relationship between contracting activity and actual departures, as mediated by turnover intention. Recent research suggests such an analysis should explore how external labor market conditions, such as the unemployment rate, moderate—or dampen—the impact of contracting activity (and turnover intention) on turnover behavior (S. Lee et al., 2018). Finally, given the current data structure, which prevents us from parsing out contracting for materials and equipment from contracting for services, the findings regarding the effects of contracting on public employees should be interpreted with caution. Notwithstanding, the study still presents convincing evidence of how growing reliance on contracting out can adversely affect the work-related attitudes of the overwhelming number of public employees who have not been displaced. More robust findings could be obtained once the Office of Federal Procurement Policy begins to report contracting spending by service and product across the federal bureaucracy.

Appendix A1

Agency List.

Agency list
Agency for International Development
Department of Agriculture
Broadcasting Board of Governors
Chemical Safety and Hazard Investigation
Department of Commerce
Commodity Futures Trading Commission
Court Services and Offender Supervision
Defense Nuclear Facilities Safety Board
Department of Education
Department of Energy
Environmental Protection Agency
Equal Employment Opportunity Commission
Federal Communications Commission
Federal Housing Finance Agency
Federal Trade Commission
General Services Administration
Department of Health and Human Services
Department of Homeland Security
Department of Housing and Urban Development
Department of the Interior
Department of Justice
Department of Labor
Merit Systems Protection Board
National Aeronautics and Space Administration
National Archives and Records Administration
National Gallery of Art
National Labor Relations Board
National Science Foundation
Nuclear Regulatory Commission
Occupational Safety and Health Review Commission
Office of Personnel Management
Pension Benefit Guaranty Corporation
Railroad Retirement Board
Securities and Exchange Commission
Selective Service System
Small Business Administration
Social Security Administration
Department of State
Department of Transportation
Department of The Treasury
Department of Veterans Affairs

Appendix A2

Variable Descriptions.

Variables	Description	Source
Dependent Variables		
Turnover Intention	Proportion of employees who intend to leave their organization during the next year (transfer-outs and quits)	FEVS, Q: Are you considering leaving your organization within the next year, and if so, why?
Independent and Control Variables		
Contracting Spending	Annual dollar spending on contracting per employee ($ in thousands)	Federal Procurement Data System
Job Satisfaction	Proportion of employees who (at least) are satisfied (strongly satisfied and satisfied)	FEVS, Q: Considering everything, how satisfied are you with your job?
Physical Conditions	Proportion of employees who (at least) agree (strongly agree and agree)	FEVS, Q: Physical conditions allow employees to perform their job well.
Resource Sufficiency	Proportion of employees who (at least) agree (strongly agree and agree)	FEVS, Q: I have sufficient resources to get my job done.
Relationship with Supervisor	Proportion of employees who (at least)	FEVS, Q: I have trust and confidence in my supervisor.
Relationship with Coworker	Proportion of employees who (at least)	FEVS, Q: The people I work with cooperate to get the job done.
Supervisor	Proportion of supervisor	FEVS
Minority	Proportion of minority employees	Fedscope
Gender (male)	Proportion of male employees	FEVS
Total Employees (log)	Number of total employees	Fedscope

Note. FEVS = Federal Employee Viewpoint Survey.

Appendix A3

Results of Panel Generalized Estimating Equation Regression Models: Quit and Transfer Intention Rate.

	(1)	(2)	(3)	(4)	(5)
Variables	Job satisfaction	Quit intention	Quit intention	Transfer intention	Transfer intention
Contracting Spending	−0.040***	0.029*	0.014*	0.121***	0.097***
(Spending per Employee)	(0.010)	(0.012)	(0.025)	(0.019)	(0.020)
Job Satisfaction			−0.096**		−0.177**

(continued)

Appendix A3. (continued)

Variables	(1) Job satisfaction	(2) Quit intention	(3) Quit intention	(4) Transfer intention	(5) Transfer intention
			(0.046)		(0.076)
Physical Condition	0.007	0.063	0.066	0.020	0.028
	(0.016)	(0.057)	(0.056)	(0.065)	(0.062)
Resource Sufficiency	0.075***	−0.086**	−0.060	−0.057	−0.008
	(0.026)	(0.041)	(0.041)	(0.047)	(0.043)
Relationship with Supervisor	0.133***	−0.153**	−0.104	−0.025	0.072
	(0.036)	(0.060)	(0.067)	(0.103)	(0.119)
Relationship with Coworker	0.080***	0.095	0.130*	−0.123	−0.074
	(0.032)	(0.066)	(0.072)	(0.092)	(0.081)
Supervisor	0.014	0.066*	0.071**	−0.053*	−0.041
	(0.013)	(0.035)	(0.034)	(0.032)	(0.034)
Minority	0.026	−0.179***	−0.165***	0.128**	0.144***
	(0.023)	(0.047)	(0.049)	(0.059)	(0.054)
Gender	−0.009	−0.032	−0.035	−0.004	−0.019
	(0.021)	(0.030)	(0.030)	(0.060)	(0.049)
Total Employees (log)	0.038***	−0.129***	0.113***	0.015	0.043
	(0.017)	(0.037)	(0.036)	(0.047)	(0.047)
Constant	1.022***	−3.856***	−3.808***	−1.629	−1.541
	(0.031)	(0.093)	(0.094)	(0.065)	(0.081)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Agency Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	250	250	250	250	250
Number of Agency	41	41	41	41	41
Wald χ^2	65,827.47***	1,619.06***	2,114.41***	1,131.07***	941.58***

Note. Clustered robust standard errors are in parentheses.
*$p < .1$. **$p < .05$. ***$p < .01$.

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Notes

1. The results of additional models are available upon request.
2. We also considered using a measure of contracting spending divided by total agency spending. However, this approach dramatically reduces the number of agencies in the panel from 41 to 16 as more than half of agencies in our sample lack accessible budget data (according to the only available source for budget information from federal agencies, the Budget of the U.S. Government). Given this precipitous drop in sample size, we decided to use the "per employee" spending measure. This is a reasonable measure of outsourcing activity and one that is positively correlated with the proposed alternative, because an agency's budget often shrinks or expands in proportion to the size of the workforce.
3. The result of Harman's single factor test suggests that the first factor explains about 36% of the entire variance. As presented in a recent publication by Fuller et al. (2016), the current level of variance (36%) explained by the first factor in our sample data set is lower than the cutoff level. The result of the Brewer's Split sample method presents consistent findings between two different models: the first model using the original sample data set that measures both dependent and independent variables from same responses in the survey, and the second model using two split sample responses to measure dependent and independent variables. The two different models present similar levels of fit statistics and a statistical significance of independent variables with the same direction.
4. The smaller sizes of magnitude in autoregressive models imply long-term effects distributed across time periods. Although direct comparison between the base model and the autoregressive model is difficult, the models display similar findings, and the base models were reported to ease interpretation.
5. Given the main focus of this research is the variation in turnover intention rate in accordance with a differing level of contracting out activity, we report the results of the organizational-level analyses. The results of additional models and common source bias tests are available upon request.

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