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**Toward the Trusted Public Organization:
Untangling the Leadership, Motivation, and Trust Relationship in U.S. Federal Agencies**

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Abstract

This study examines two aspects of organizational trust, as identified in the relevant literature: cognition-based (rational) trust and affect-based (relational) trust. Using hierarchical linear modeling (HLM), we explore and analyze the antecedents of organizational trust in the public sector at a hierarchical and multi-level ordering structure, and empirically test the effects of different types of individual, interpersonal, and organizational characteristics – 1) public HR management systems and practices, 2) work motivation attributes, and 3) vertical and shared leadership – on cognitive and affective trust within federal agencies. Also, the moderating impacts of different types of leadership on the relationship between motivation and organizational trust are examined. We found that some of these predictors play significant roles in fostering organizational trust in federal agencies. We provide a discussion of the findings from this study, and conclude by drawing research implications for public management theory and practice.

Keywords: cognitive and affective trust; vertical and shared leadership; intrinsic and extrinsic motivation; public HRM systems and practices; U.S. federal agencies

Introduction

Public management reform initiatives usually focus on macro- and institutional-level changes heralded by new programs, structures, and systems. Yet they tend to ignore that these reforms do not succeed without developing and nurturing excellent employees and organizational leaders, key assets of public organizations. Public managers who shape reliable interpersonal working relationships built on trust are the micro-level change levers – the necessary pre-condition to ensuring effective and accountable government (Newell, Reeher, & Ronayne, 2008). Especially during the NPM and PMA reform period, federal agencies in the U.S. have undergone substantial organizational changes due to decentralization, privatization, and atomization, all of which aimed to increase flexibility and discretion, as reformers have believed that NPM reform drivers would transform public organizations to be more accountable, efficient, and effective. These public management reform movements have moved far beyond the traditional personnel systems (e.g., abolishing a traditional merit system and adopting an at-will employment system) while pursuing more advanced public-private hybrid policies (e.g., public-private partnership initiatives) as well as valuing economic rationality based on rational choice theory and principal-agent approach in operationalizing different types of managerial functions (Park, 2009). Apparently, such conditions can cause a perception of uncertainty and vulnerability among public employees, which might affect work attitudes, dispositions, and behaviors, and hence influence organizational outcomes in significant ways.

Trust in the public sector has long been recognized as a principal goal as well as a necessary means of effective and productive public sector management (Choudhury, 2008). From a public HR management perspective, employee trust in management is one of the core values in social-psychological relationships occurring at the lateral and hierarchical levels in the

organization. It is also believed that a climate with a high level of trust in an organization is often associated with greater employee loyalty to the organization, better customer service, higher quality of work, and increased efficiency and effectiveness. A culture of distrust, on the other hand, promotes secrecy and increases turnover rates and work conflicts among employees in the organization (Reece & Brandt, 1999). In public agencies, trust is increasingly being recognized as a primary but important factor in sustaining and developing interpersonal relationships and in determining organizational success, organizational stability and the well-being of employees (Cook & Wall, 1980; Shaw, 1997; Tyler & Kramer, 1996). Especially when “there is objective uncertainty about the future (that is, vulnerability),” trust should be regarded as a vital mechanism to align and manage organizational culture and climate (Morris, 1995, p. 52). Thus, it becomes imperative to explore the nature of interpersonal trust among public employees as well as to identify important antecedent and moderating conditions based on systematic and rigorous empirical research (Choudhury, 2008; Ladebo, 2005).

While trust can be viewed both from an internal-organizational and an external-environmental perspective, this empirical research mainly focuses on organizational trust, particularly affective and cognitive trust in federal agencies. Given the theoretical and practical significance of organizational trust in bureaucratic theory, a set of normative and empirical research questions about trust in public agencies has long been raised – e.g., do federal bureaucrats trust their supervisors, managers, and their organization? How do we define and identify different types of organizational trust? What accounts for variations in the level of trust in organizations? Which individual, managerial, or organizational characteristics significantly influence organizational trust in the public sector? Using large federal data on a sample of 46 U.S. federal agencies and approximately 74,000 federal employees, this study proceeds with a

literature review and a presentation of interrelated research hypotheses based upon theoretical models of trust, leadership, and motivation in the public sector. First, we conceptualize and operationalize the dimensionality and the construct of organizational trust identified in the key literature: 1) cognitive-based (rational) trust and 2) affective-based (relational) trust (see figure 1). Then, using hierarchical linear modeling (HLM), we explore and analyze the antecedents of organizational trust at a hierarchical and multi-level ordering structure in the public sector and empirically test the effects of different types of individual, interpersonal, and organizational characteristics – 1) public HR management systems and practices, 2) work motivation attributes, and 3) vertical (including senior and supervisory leadership) and shared leadership – on cognitive and affective trust within federal agencies. Also, the moderating impacts of different types of leadership on the relationship between motivation and organizational trust are examined (see figure 2). In the last section, we provide a discussion of findings from this study, and conclude by drawing research implications for public management theory and practice.

Organizational Trust in Public Organization

Organizational trust is shaped, developed, or diminished by different types of reciprocal and social contexts such as information exchange, interpersonal communications, social interactions, or networks. Social exchange and network theorists focus especially on the patterns of relational influence structure and the relationship as the unit of analysis (Mehra et al., 2006). Trust exists in an interpersonal, group, or inter-organizational relationship when an individual or a party (trustor) sufficiently believes in the integrity or character of the other party (target). Researchers from different disciplines have defined, assessed, and categorized organizational trust using various concepts. For example, Robinson (1996) saw trust as embodied in “one’s expectations, assumptions or beliefs about the likelihood that another’s future actions will be

beneficial, favorable, or at least not detrimental to one's interests" (p.576). Mishra (1996) defines trust as "one party's willingness to be vulnerable to another party based on the belief that the latter party is a) competent, b) open, c) concerned, and d) reliable" (p.265). Kramer (1996) finds that "the importance of trust and the problems that attend it derive at least partially from the reciprocal vulnerabilities and uncertainties that are inherent in hierarchical relationships" (p. 217). Griffin (1967) sees trust as "the reliance upon the behavior of a person in order to achieve a desired but uncertain objective in a risky situation" (p. 105). Cook and Wall (1980) suggested that trust is "the extent to which one is willing to ascribe good intentions to and have confidence in the words and actions of other people" (p. 39), while Rotter (1967) defines trust as "the expectation held by an individual or a group that the word, promise, verbal, or written statement of another person or group can be relied upon" (p.651). Whereas Luhmann (1979) believes that trust represents the level of confidence one has in another to act in a fair, ethical, and predictable manner, Culbert and McDonough (1986) contend that "trust pertains to whether or not one individual is able to value what another is up to and demonstrate respect for him or her particularly when the individual's need and those of the person taking the action momentarily compete" (p.175).

In public organizations, evidently most of these social relationships are contingent upon bureaucratic structures and cultures. "The trust-based paradigm" in the public sector can be supported and harnessed by supportive and effective leadership behaviors, public service-oriented and norm-based motives, unbiased organizational incentive and compensation systems, or streamlined hierarchical and lateral communications and transactions among employees, managers, and supervisors. The trust-based model recommends a change from organizational theories and practice, founded on ensuring control by supervisors over workers, to a new

paradigm based on cooperative and communicative working relationships among all employees (Nyhan, 2000). With an emphasis on the reduced need for control, compliance, or obedience in the trusted organization model, it is expected that public employees acknowledge the importance of these organizational values, systems, and practices to reach a higher level of organizational trustworthiness.

Cognition-based and Affect-based Trust

A variety of organizational researchers have suggested that interpersonal trust is multidimensional having separate components and constructs (see Johnson & Grayson, 2005; Webber & Klimoski, 2004). From a social psychological perspective, an important distinction of organizational trust lies in the dichotomy of cognitive versus affective trust. Organizational research on trust values has been defined in affective terms, giving more attention to the role of emotions, intrinsic motives, and feelings; however, there is also strong evidence that trust can be premised on job-related cognitions and rationality (e.g., McAllister, 1995; Weiss, 2002). While these two sub-components of organizational trust are considered to be distinct constructs in this study, we do not dismiss the possibility that they are interdependent and mutually related, especially in public sector organizations.

Cognition-based and rational trust refers to a sort of knowledge-based trust grounded in sharing of rational and cognitive processes which provides a basis for understanding the intentions and attitudes of a colleague and for predicting that person's actions and behaviors. This type of trust involves "a calculative and instrumental assessment" based on some criterion of personal evaluation and rational calculation – the assurance that evidence of the other's predictability, competence, information, and reliability under specific circumstances really matters (Atkinson & Butcher, 2003, p. 294; Chua, Ingram, & Morris, 2008, p. 436; Ladebo, 2005,

p. 3). When employees recognize and understand other participants well enough on the basis of sharing expectations and cognitions, the level of cognition-based trust will be enhanced. By contrast, affect-based and relational trust is founded on the emotional and psychological attachment to their colleagues or their organization. Affective trust, which usually involves “empathy, rapport, and self-disclosure processes,” can be pronounced, especially when managers and supervisors show a genuine concern for the welfare of employees, commit to intrinsic values, and believe in reciprocal virtue of such relationships (Chua, Ingram, & Morris, 2008, p. 436). Affect-based trust, hence, can be developed through an emotional, relational, and social identification process within an organization, thereby strengthening employees’ cohesiveness and attachment to the organization. Due to these characteristics, affective trust tends to be more intensive, more sustainable, and more generalizable over situations than is cognition-based trust (Lewicki & Bunker, 1996). Drawing on the previous theoretical and empirical evidence, this study categorizes organizational trust behaviors in the public sector as cognitive (rational) trust and affective (relational) trust.

Antecedents of Organizational Trust in Public Organizations

Trust is a differentiated attitude toward different objects of the bureaucracy. Luhmann (1979) suggests that attitudes of trust vary within organizations depending on structural relationships and an individual’s degree of trust varies between their supervisors, managers, and the organization as a whole. That is, “employees carry images of the organization based on the decisions and actions of the executive group and these images of the organization as an entity are separate from those that are formed based on the immediate contact the employee has on a daily basis with his or her supervisor” (Nyhan, 1999, p. 60). Considering the typical hierarchical structures of public sector agencies, it is necessary to observe employees’ trust perceptions from

different bureaucratic and institutional levels – building trust requires a strategy to find important factors that positively or negatively affect the level of trust within an organization. We developed a conceptual framework of a public sector trust model, identifying different public sector influences on two types of organizational trust based on the scholarly works from several disciplines. Drawing upon Perry and Porter (1982)'s typology, four major categories of motivational bases as predictors are proposed: individual characteristics, task and job characteristics, work environment characteristics, and external environmental characteristics. Specifically, throughout the study, research hypotheses proposed below are framed in terms of how cognitive and affective trust attitudes in federal agencies are directly and interactively associated with a set of individual, interpersonal, and organizational predictors including 1) human resource management (HRM) practices and systems, 2) work motivation attributes, and 3) organizational leadership characteristics.

Work Environment Characteristics: Human Resource Management Practices and Systems

Many organizational attitudes and perceptions are generated by different types of job characteristics, work experiences, and environments (Hackman & Oldman, 1975; 1976). These factors are distinguished from personal or demographic ones that are difficult to change even during organizational experience. Organizational trust is developed, transformed, diminished, or enhanced by work context and organizational climate. For example, Konovsky and Cropanzano (1991), Konovsky and Pugh (1994), and Mayer and Davis (1999) have emphasized that procedural justice is closely associated with organizational trust. That is, employees' perceptions of the degree of fairness as well as of unbiased treatment might increase the level of trust or trustworthiness in organization. We expect that the more employees perceive their work environments positively and fairly, the more the employees will tend to be trustful of their

supervisors, management, and the organization. This study probes how federal employees' perceptions of work environment characteristics affect organizational trust. Indicators of work environment include employees' perceptions of four public human resources (HR) management practices and systems in federal agencies: 1) procedural justice practices, 2) objective performance appraisal systems, 3) pay-for-performance systems, and 4) training and development practices.

Hypothesis 1a: *In federal agencies, an increase in indicators of equitable procedural justice practices will be related to increased cognitive and affective trust.*

Hypothesis 1b: *In federal agencies, an increase in indicators of unbiased performance appraisal systems will be related to increased cognitive and affective trust.*

Hypothesis 1c: *In federal agencies, an increase in indicators of objective pay-for-performance systems will be related to increased cognitive and affective trust.*

Hypothesis 1d: *In federal agencies, an increase in indicators of effective training and development practices will be related to increased cognitive and affective trust.*

Work Motivation Attributes: Intrinsic and Extrinsic Motivation

As motivation cannot be a unitary construct, people not only have different levels of motivation, but also have varied types (or orientation) of motivation (Ryan & Deci, 2000a; 2000b). The distinction between intrinsic and extrinsic motivation has been popularly introduced in academic disciplines – e.g., organizational and educational psychology – for the sake of probing for discrete antecedents or consequences of these two general types of motivation. Cognitive evaluation theorists have suggested that extrinsic reward systems might be detrimental to an employee's intrinsic motivation and affective commitment; those systems (e.g., a performance-pay system) might reduce and crowd out intrinsic motivations and hence might have a negative impact on performance (Moynihan, 2008; Paarlberg, Perry, and Hondelghem,

2008). Instead, these theorists emphasize social and moral reward systems and the power of a feeling of competence, a sense of autonomy, and an internal perceived locus of causality (e.g., see Deci & Ryan, 1985). On the other hand, in social learning (cognitive) theory, extrinsic incentives as instrumental values may play a significant and positive role in human learning, self-directiveness, and self-motivation. This approach further suggests that “human behavior is extensively regulated and adapted by its consequences” and the expectations of future outcomes of actions, i.e., rewards and punishments (see Bandura, 1986, p. 228; Cameron & Pierce, 2002).

Within the context of the public sector, it is believed that some public administrators have strong motives to perform meaningful public and social service, which ultimately advances the public interest – i.e., public service motivation (PSM). Previous research on PSM and reward motivators provides some support for the argument that public employees are characterized by a public service and intrinsic motive while private counterparts value extrinsic reward systems more highly (e.g., see Crewson, 1997; Houston, 2000; 2005; 2008). Perry and Wise (1990) hypothesized that public agencies with many high-PSM employees would depend less on utilitarian incentives. They argued that public organizations would need to emphasize “normative and affectual incentives” (p. 371).

The logic of dichotomizing work motivation in the public sector into two separate continua in this research draws on Herzberg’s two-factor theory of work motivation (see Herzberg et al., 1959), which suggests that work motivation contains two separate and independent dimensions, which can be called *hygiene factors (dissatisfiers)* and *intrinsic factors (motivators)*. The hygiene factors as the job context factors, including extrinsic incentives or rewards, indicate issues that give external effects to the job. These factors cause dissatisfaction when they are not present, but because they are external, they are not positively strong enough to

motivate employees even when they are present. On the other hand, on the intrinsic factor dimensions, the motivators address values of intrinsic rewards to employees in organizations – e.g., recognition or affective and normative motivators. Motivators can strongly and positively motivate employees because of their association with the need for self-actualization, the ultimate intrinsic drive (Tietjen & Myers, 1998). While hygiene factors can only prevent dissatisfaction, motivators should be critical factors to enhance organizational outcomes (Rainey, 2003). Based upon these theoretical similarities, intrinsic incentives are hypothesized to function as *motivators*, whereas extrinsic incentives function as *hygiene factors* in this study. Motivators can be related to affective behaviors such as affective and relational trust, whereas hygiene factors are more likely to be involved with cognitive behaviors, e.g., cognitive and rational trust.

First, we predict that that public employees who are highly motivated by intrinsic or extrinsic factors tend to have a higher level of organizational trust in their agencies – that is, both types of intrinsic and extrinsic motivation are positively associated with cognitive and affective trust. Second, we hypothesize that intrinsic motivation will be more positively associated with affective trust than cognitive trust, whereas extrinsic motivation will be more significantly related to cognitive trust than affective trust. It is also hypothesized that intrinsic motivation is more significantly related to organizational trust than extrinsic motivation.

Hypothesis 2a: *In federal agencies, intrinsic motivation will be positively related to organizational trust. Intrinsic motivation will be more significantly associated with affective trust than cognitive trust.*

Hypothesis 2b: *In federal agencies, extrinsic motivation will be positively related to organizational trust. Extrinsic motivation will be more significantly associated with cognitive trust than affective trust.*

Hypothesis 2c: *In federal agencies, compared with extrinsic motivation effects, intrinsic motivation will be more positively related to organizational trust.*

Organizational Leadership: Vertical and Shared Leadership

Leadership refers to “influence processes involving determination of the group’s or organization’s objectives, motivating task behavior in pursuit of these objectives, and influencing group maintenance and culture” (Yukl, 1989, p. 5). Leadership in the public sector is an important aspect of the work environment for employees (e.g., Oldham & Cummings, 1996; Scott & Bruce, 1994). Leadership behaviors are established from both “psychological processes and group dynamics” and “macro-level institutional arrangements” (Rousseau et al., 1998, p. 393). Effective public sector leaders possess in common some major characteristics of value-based leadership styles, i.e., directive leadership, transformational and transactional leadership, charismatic and servant leadership, or empowering and integrated leadership (see Bass, 1996; Bass & Riggio, 2006; Burns, 1978; Greenleaf, 1977; Park & Rainey, 2008). The recent literature also demonstrates that organizational leadership can be analyzed based on a hierarchical spectrum in organizations – that is, leadership behaviors vary among different levels of management and supervisory and managerial status, e.g., vertical or top-down leadership and distributed or shared team-based leadership (Pearce & Conger, 2003; Perry & Mankin, 2004).

Vertical leadership constitutes one of the traditional leadership paradigms in the public sector which have focused on the concept of “leader as commander” and “formal leadership structures” with its emphasis on the relation between the leader, followers, and the organization (Ensley et al., 2006, p. 218). Vertical leadership is more evident in a top-down and bureaucratic decision-making process than in a collaborative and decentralized working environment. Immediate supervisors and senior leaders (e.g., managers and executive appointees) are regarded as principal actors in this spectrum and their visions, inspirations, and long-term values should be

the powerful driving forces which create organizational culture that, in turn, promotes organizational performance and effectiveness (Ensley et al., 2006; Reinke, 2003).

Shared or distributed leadership has been defined as “a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals or both” (Pearce et al., 2008, p. 354). The shared leadership dynamics usually generate a participative group and team context such as collaborative and bottom-up work processes which are evident in the team-based culture and structures where the values of cooperation, communication, engagement, and knowledge sharing are highly valued. The leaders, hence, allow their constituents to share their dissenting opinions in a way that facilitates “the process of developing shared strategic cognition” (Ensley et al., 2006, p.221).

Regarding the dyadic leadership-trust relationship, both vertical and shared leadership should be leading contributors toward organizational trust in public organizations through encouraging social communications, increasing organizational support, and enhancing work motivation and commitment (Albrecht & Travaglione, 2003; Greenleaf, 1977). Given that senior leaders and supervisors are expected to involve more rational, calculative, and instrumental values with a focus on managing organizational missions, norms, and institutional goals, public employees would be likely to perceive their senior leaders as being more rational and cognitive, and hence effective vertical leadership is more likely to indicate cognitive organizational trust. Based on this rationale, we hypothesize that vertical leadership is more positively related to rational or cognitive trust than affective or relational trust in federal agencies. Effective shared leadership, on the other hand, is generated from the day-to-day interactions and transactions among colleagues including official as well as unofficial team leaders. In this sense, shared

leadership entails an emotional, affective, and interactive influence process within a team rather than involving a cognitive or rational process. Hence, trust among employees guided by shared leadership in organizations is likely to be more imperative, reciprocal, and affective (Pearce, 2004). Drawing upon this rationale, we hypothesize that effective shared leadership will be more positively related to affective organizational trust than cognitive organizational trust.

Hypothesis 3a: *In federal agencies, effective vertical leadership will be positively related to organizational trust. Vertical leadership will be more strongly associated with cognitive trust than affective trust.*

Hypothesis 3b: *In federal agencies, effective shared leadership will be positively related to organizational trust. Shared leadership will be more strongly associated with affective trust than cognitive trust.*

Moderating Effects of Organizational Leadership: Leadership and Motivation

Self-determination theory (SDT), developed by Deci and Ryan (1985; 2004), introduced the self-determination continuum (from amotivation, to extrinsic motivation, to intrinsic motivation), which explicates the different forms of extrinsic motivation and the contextual influences that either develop or thwart “internalization and integration of the regulation for these behaviors” (Ryan & Deci, 2000b, p.72). The continuum ranges from controlled to autonomous motivation, each of which could be differently affected by external factors such as leadership, culture, institutions, incentives, etc. – that is, SDT suggests that certain types of social or organizational environments facilitate the internalization process of extrinsic motivation. When public managers are intrinsically motivated, the interactions between intrinsic motivation and organizational leadership will have additive moderating impacts and hence significantly affect organizational trust. When employees are extrinsically motivated, the interactions between extrinsic motivation and organizational leadership will have interactive moderating impacts.

Thus, those interactions will assimilate extrinsic motivation into more autonomous motivation (i.e., integrated regulation) or inherently autonomous motivation (i.e., intrinsic motivation). The interaction effects will also be significantly associated with organizational trust. Drawing on the SDT framework, we further hypothesize that organizational leadership behaviors in federal agencies – i.e., vertical and shared leadership – positively affect and moderate the relationships between intrinsic and extrinsic motivation and organizational trust, such that higher levels of organizational leadership will be related to more positive organizational dispositions. Hypotheses 4a to 4d suggest that with higher levels of effective vertical and shared leadership behaviors, the relationship between motivation and trust is much stronger.

Hypothesis 4a: *In federal agencies, vertical leadership will moderate the impact of intrinsic motivation on cognitive and affective trust – with high levels of effective senior and supervisory leadership, the relationship between intrinsic motivation and organizational trust would be greater.*

Hypothesis 4b: *In federal agencies, vertical leadership will moderate the impact of extrinsic motivation on cognitive and affective trust – with high levels of effective senior and supervisory leadership, the relationship between extrinsic motivation and organizational trust would be greater.*

Hypothesis 4c: *In federal agencies, shared leadership will moderate the impact of intrinsic motivation on cognitive and affective trust – with high levels of effective shared leadership, the relationship between intrinsic motivation and organizational trust would be greater.*

Hypothesis 4d: *In federal agencies, shared leadership will moderate the impact of extrinsic motivation on cognitive and affective trust – with high levels of effective shared leadership, the relationship between extrinsic motivation and organizational trust would be greater.*

Research Modeling: Hierarchical Linear Model (HLM)

In federal agencies, a hierarchical ordering structure is evident. The basic practical and statistical assumption of the hierarchical linear models (HLM) in this study is that federal employees are nested within federal agencies, creating a hierarchical data structure with two

levels of random variation: variation among employees within federal agencies (level-1) and variation among federal agencies (level- 2). Level 2 variables were aggregated into agency-based scores. HLM explicitly explains the nested nature of data and can simultaneously estimate the impact of factors at different levels on individual-level outcomes while maintaining appropriate levels of analysis for predictors (Raudenbush et al., 2000). One of the rationales for using the HLM method in this study is that OLS does not take into account the interdependence of individual-level observations nested within higher-level (i.e., agency-level) federal agencies; hence, estimates of standard errors may be biased, and test statistics may not be valid. To avoid these potential problems caused by hierarchically nested data structures, the ANCOVA and the intercepts and slopes-as-outcomes models were estimated in this research. We expect that HLM explains more precisely agency-level and cross-level impacts on trust which have often been neglected in organizational behavior studies.

Data and Measures

Data Sources and Sample

To assess the causal effects of several antecedents on organizational trust in federal agencies, we utilize two data sources to operationalize individual attributes and organizational characteristics at different levels: 1) the U.S. Merit Systems Protection Board (MSPB), Merit Principles Survey 2005 for individual-level characteristics (e.g., motivation, perceptions of public HRM practices and systems, and trust) and 2) the Best Places to Work (BPTW) index scores in the federal government for organization (agency)-level variables (e.g., leadership factors and agency-controls). MSPB used a stratified random sample design to identify and cluster survey respondents – stratifying the sample according to management status and 59 sub-

agency units. A total of 36, 926 federal employees completed the survey (a representative sample of the 1.8 million full-time permanent members of the Federal workforce) about their attitudes toward their jobs, agencies, and motivations to work rendering a response rate of approximately 50 %. The sample of 46 agencies was analyzed and participants included members of the Senior Executive Service, managers, first-line supervisors, and employees with no supervisory duties.

BPTW data are the most comprehensive and authoritative rating and analysis of federal employee engagement and commitment. The unit of analysis is based on the 269 federal agencies including large and small agencies and their subcomponents (46 federal agencies are included in this study). Agencies and subcomponents are ranked on an index score of overall employee engagement. The BPTW score is calculated both for the organization as a whole and also for specific demographic groups. In addition to this employee engagement rating, agencies and subcomponents are also scored in 10 workplace environment (“best in class”) categories such as effective leadership, teamwork, strategic management, performance culture, training and development, diversity management, employee skills/mission match, and work/life balance (Best Places to Work, 2007).

In this study, for missing data, rather than using the listwise deletion method, this study preserves sample size by employing the expectation-maximization (EM) algorithm method.¹ The total effective sample sizes of the level-one (individual level) and level-two (agency level) variables were 22,731 and 46, respectively. The survey respondents represented 46 different federal agencies, and we referred to BPTW agency scores for the level-two variables. Each agency was well represented by a number of respondents, with no serious unevenness (i.e., no serious problematic values for skewness or kurtosis) in responses from different agencies (Details are available from the authors).

Measures of Organizational Trust

First, in order to confirm the construct validity and dimensionality of two types of organizational trust constructs, we utilized the confirmatory factor analysis (CFA). Cognitive (nine items) and affective (eight items) trust were developed and operationalized from the MPS 2005 survey instrument (please see the Appendix). The items were measured by a 5-point Likert scale from 1 to 5. LISREL was used to generate and obtain factor scores for each sub-dimension. A second-order CFA model indicates that both of the two latent organizational constructs are significant and distinct. The results of CFA also indicate that the factor loadings support the use of these items as indicators of the underlying organizational trust constructs. To find a best-fit model, overall fit indexes and modification indexes (MI) were used. The model of fit statistics was within acceptable levels and this proposed CFA model of organizational trust is an excellent fit to the data, supporting the face and construct validity of the model (Details available from the authors).²

Measures of Individual-level (Level-1) Predictors

Six variables of 1) four types of perceptions of human resource management practices and systems in federal agencies and 2) two types of work motivation as main individual-level predictors were included in this study (please see the Appendix). *Procedural justice practices* is developed and measured by an index of seven items ($\alpha = .869$), such as “In the past 2 years, to what extent do you believe you have been treated fairly regarding the following?” *Objective performance appraisal systems* is measured with an index based on eight items, such as “In my work unit, performance ratings accurately reflect job performance” ($\alpha = .896$). *Pay-for-performance systems* is measured by five questionnaire items such as “Recognition and rewards

are based on performance in my work unit” and “If I perform well, it is likely I will receive a cash award or pay increase” ($\alpha = .741$). Six survey items made up the *training and development practices* scale. Sample items are “I would be acquiring a new skill I have not attempted to learn before” and “My agency should support this improvement through special assignments, mentoring, or other on-the-job experiences ($\alpha = .812$).

Motivation variables were measured on a five-point Likert scale with specific statements (see Appendix). Respondents are asked to indicate the degree to which the items listed are important in motivating them to do a good job. Sample items included, “Recognition from my coworkers,” “My duty as a public employee,” “A cash award of \$1,000,” or “Desire for a good performance rating.” We performed CFA to operationalize motivation scales as well as to confirm latent constructs of work motivation in federal agencies. It captures two dimensions of work motivation identified by Ryan and Deci (2000a; 2000b): intrinsic and extrinsic motivation. LISREL was used to generate and obtain factor scores for each sub-dimension of work motivation. Based on CFA, work motivation scales were developed from relevant survey items (see Appendix). The results of CFA indicate that the factor loadings support the use of these items as indicators of the underlying motivational constructs.³ In addition, eight variables such as gender, age, ethnicity, educational level, and union dues are also included as demographic controls at the individual-level.

Measures of Agency-level (Level-2) Predictors

Since a preliminary analysis shows that there is a significant amount of variance in individual characteristics (e.g., intrinsic and extrinsic motivation) among federal agencies, 46 large federal agencies are included as the main unit of analysis at level-two. Drawing upon the shared-vertical leadership behavior continuum, three types of organizational leadership factors,

designated as level-two predictors in this study, are measured by the BPTW (2005) composite scores: 1) shared (team) leadership, 2) supervisory leadership, and 3) senior leadership. The variable of effective shared leadership is measured by the BPTW survey questions, asking respondents whether employees and managers “promote communication among different work units (e.g., about projects, goals, and needed resources)” or “encourage employees in work units to share their knowledge with each other” through mutual cooperation among team members. We also measure effective vertical leadership, i.e., supervisory leadership and senior leadership, using the BPTW scores based on such survey questions as “Supervisor and team leaders in my work unit provide employees with the opportunities to demonstrate their leadership skills” (supervisory leadership) and “My organization’s senior leaders maintain high standards of honesty and integrity” (senior leadership). Also, in testing the hypotheses aforementioned, we included agency dummy variables (the Department of Education was left out of the model as a reference group), agency size (large, small, and subcomponents), and agency location (headquarters/field) as agency-level controls.

Measures of Moderating Effects (Level-1× Level-2 Predictors)

In order to confirm the moderating effects of shared and vertical leadership (level-2) on the relationship between motivation and trust variables (level-1), we measured six interaction terms (i.e., cross-level interaction effects among motivation and leadership in federal agencies), with an expectation that adding interaction variables enables us to incorporate the joint and multiplicative effects of each of the main predictors on outcome variables in this empirical model. The Appendix contains the list of questions associated with each scale variable. Table 2 also provides the descriptive statistics of all the variables used in the present study.

[Place Table 2 about here]

Findings and Results

Because federal employees are partially clustered or nested within their leaders and organizations, we used hierarchical linear modeling (HLM) to account for potential non-independence of the observations. We employed the ANCOVA and the intercepts and slopes-as-outcomes models which can provide a unique intercept and slope estimate for each federal agency.

The Level-1 (Manager-Level) Model: One-Way ANCOVA Model with Random Effects

In an employee (individual) -level model, a one-way ANCOVA model was employed in order to incorporate several covariates and to see how these level-one predictors would affect outcome variables, cognitive and affective trust.⁴ As fixed effects, fourteen (including eight demographic and job characteristics, four public HRM practices and systems, and two motivation attributes) covariates were included: 1) gender (γ_{10}), 2) age (γ_{20}), 3) ethnicity (γ_{30}), 4) educational level (γ_{40}), 5) salary (γ_{50}), 6) job tenure in current position (γ_{60}), 7) supervisory status (γ_{70}), 8) union dues (γ_{80}), 9) procedural justice practices (γ_{11}), 10) performance appraisal systems (γ_{12}), 11) pay-for-performance systems (γ_{13}), 12) training and development practices (γ_{14}), 13) intrinsic motivation (γ_{21}), and 14) extrinsic motivation (γ_{22}). As random effects, level-one and level-two variances were included.⁵ The final level-one ANCOVA model is as follows:

Level-1 Model:

$$Y_{ij} \text{ (Cognitive Trust, Affective Trust)} = \beta_{0j} + \beta_{1j} \text{ (Gender)} + \beta_{2j} \text{ (Age)} + \beta_{3j} \text{ (Ethnicity)} + \beta_{4j} \text{ (Educational Level)} + \beta_{5j} \text{ (Salary)} + \beta_{6j} \text{ (Job Tenure)} + \beta_{7j} \text{ (Supervisory Status)} + \beta_{8j} \text{ (Union Dues)} + \beta_{9j} \text{ (Procedural Justice Practices)} + \beta_{10j} \text{ (Performance Appraisal Systems)} + \beta_{11j}$$

$$\text{(Pay-for-Performance Systems)} + \beta_{12j} \text{(Training and Development Practices)} + \beta_{13j} \text{(Intrinsic Motivation)} + \beta_{14j} \text{(Extrinsic Motivation)} + \epsilon_{ij}$$

1) Reliability and the Conditional ICC Coefficient

In the two ANCOVA models, all reliability estimates (β_0) are greater than 0.05. The conditional inter-class correlation (ICC) coefficient indicates that, in the cognitive trust model, there is approximately 28.4 % of variation in the level of employees' rational trust across federal agencies. Similarly, in the model of affective trust, the proportion of the variance across 46 federal agencies is approximately 27.2%.

2) Proportion of Variance Explained

First, proportions of level-one variance explained by the fourteen predictors at level-one in trust models are 37.43% (cognitive trust) and 39.33% (affective trust). Second, the proportions of level-two variance explained by the fourteen predictors at level-two in three models are 25% (cognitive trust) and 33.3% (affective trust).⁶

3) Hypotheses Testing: The Fixed and Random Effects

ANCOVA covariates would statistically adjust for the initial advantage. Especially when the covariates are grand mean centered, ANCOVA can control for the influence of the covariate and the variance term on the intercept is adjusted. To test Hypotheses 1a to 1d, and Hypotheses 2a and 2b, we regressed cognitive and affective trust on four types of public HRM systems and practices and two work motivation attributes, together with eight control variables. First, as Hypotheses 1a, 1b, 1c, and 1d predicted, well-managed public HRM systems and practices in federal agencies are significantly and positively related to either cognitive trust or affective trust. For example, the variable of equitable procedural justice practices relates positively to affective trust ($\gamma = .451, p < 0.05$) and to cognitive trust ($\gamma = .383, p < 0.05$) while the variable of objective

pay-for-performance systems is positively associated with cognitive trust only ($\gamma = .291, p < 0.05$). Second, with regard to the relationship between work motivation and organizational trust, we found that intrinsic motivation is shown as the most significant predictor of affective trust, such that federal employees' intrinsic motivation is more positively associated with affective trust ($\gamma = .432, p < 0.05$) than cognitive trust ($\gamma = .191, p < 0.05$). Extrinsic motivation, on the other hand, has a more statistically significant relationship with cognitive trust than affective trust, as we hypothesized ($\gamma = .218, p < 0.05$; $\gamma = .133, p < 0.05$, respectively). In addition, we statistically tested the coefficient difference between intrinsic motivation and extrinsic motivation. In order to test for statistically significant differences between the two coefficients on organizational trust, we used an independent samples T-test method by dividing the sample on the basis of the two groups – intrinsic motivation (group 1) and extrinsic motivation (group 2). The result of the test showed that the effects of intrinsic motivation and extrinsic motivation on cognitive and affective trust are statistically different and the difference is significant. The results again fully supported Hypotheses 2a, 2b, and 2c (see Table 3 and 4).

The Level-2 (Agency-Level) Model: Intercepts- and Slopes-as-Outcomes Model

An intercepts- and slopes- as-outcomes (agency-level) model, which assumes that the intercept and slope have random effects, was used.⁷ In step 1, the variables of agency types, agency size, and agency location are included as agency controls. In step 2, as leadership predictors (at level-2), the three fixed effects are included: 1) senior leadership (γ_{04}), 2) supervisory leadership (γ_{05}), and 3) shared leadership (γ_{06}). As random effects, level-one and level-two variances were included. In step 3, to examine the cross-level interaction effects between work motivation and organizational leadership, six interaction terms were included.⁸ We analyzed the effects of interaction terms – the moderating effects of organizational

leadership (vertical and shared leadership) on the relationships between work motivation (i.e., intrinsic and extrinsic motivation) and organizational trust (i.e., cognitive and affective trust) variables in federal agencies. Below is the final intercepts- and slopes-as outcomes model:

Level-2 Model:

Intercept: $\beta_0 = \gamma_{00} + \gamma_{01}$ (Agency Types) + γ_{02} (Agency Size) + γ_{03} (Agency Location) + γ_{04} (Senior Leadership) + γ_{05} (Supervisory Leadership) + γ_{06} (Shared Leadership) + u_{0j}

Slope 1: β_{9j} (Intrinsic Motivation) = $\gamma_{90} + \gamma_{91}$ (Agency Types) + γ_{92} (Agency Size) + γ_{93} (Agency Location) + γ_{94} (Senior Leadership) + γ_{95} (Supervisory Leadership) + γ_{96} + (Shared Leadership) + u_{0j}

Slope 2: β_{9j} (Extrinsic Motivation) = $\gamma_{91} + \gamma_{92}$ (Agency Types) + γ_{93} (Agency Size) + γ_{94} (Agency Location) + γ_{95} (Senior Leadership) + γ_{96} (Supervisory Leadership) + γ_{97} + (Shared Leadership) + u_{0j}

Other Slopes: $\beta_{1j} = \gamma_{10}$; $\beta_{2j} = \gamma_{20}$; $\beta_{3j} = \gamma_{30}$; $\beta_{4j} = \gamma_{40}$; $\beta_{5j} = \gamma_{50}$; $\beta_{6j} = \gamma_{60}$; $\beta_{7j} = \gamma_{70}$; $\beta_{8j} = \gamma_{80}$

1) Reliability and the Conditional ICC Coefficient

In the two intercepts- and slopes-as-outcomes models, all reliability estimates are greater than 0.05. The conditional ICC coefficient indicates that, in the cognitive trust model, there are approximately 25.4% of the variations in the level of employees' rational-cognitive trust across federal agencies. Similarly, in the model of affective trust, the proportion of the variance across 46 federal agencies is approximately 27.8%.

2) Proportion of Variance Explained

First, proportions of level-one variance explained by the level-one and the level-two predictors (including interaction effects) in the models are 43.58% (cognitive trust) and 47.23% (affective trust). Second, the proportions of level-two variance explained by the level-one and the

level-two predictors (including interaction effects) in the models are 33.33% (cognitive trust) and 100% (affective trust). Overall, the proportions of level-one and level-two variances explained by the intercepts- and slopes-as-outcomes model are greater than those explained by the ANCOVA model. This may have occurred because level-two covariates were included in the intercept and slopes-as-outcomes model.

3) Hypotheses Testing: The Fixed and Random Effects

In terms of the level-two fixed effects, we found that level-two predictors explain well the variation in the grand mean of outcome variables, β_0j . These level-two slope coefficients are the expected change in the outcomes for a one-unit increase in the level-two covariates. To test Hypotheses 3a and 3b, which probe the relationship between leadership and trust in federal agencies, we regressed cognitive and affective trust on three types of public sector leadership, together with a set of level-one predictors. First, the findings indicate that effective vertical leadership (including senior and supervisory leadership traits) is significantly and positively associated with both types of organizational trust – e.g., effective senior leadership increases the mean levels of cognitive and affective trust (i.e., grand mean of the outcome variables) by .415 and .312, respectively. Furthermore, as hypothesized, we found that vertical leadership is more strongly associated with cognitive trust than affective trust. Second, as social network theory implies, the HLM results also indicate that effective shared leadership significantly and positively affect organizational trust – shared leaders are more likely to enhance the level of affective trust ($\gamma = .541, p < 0.05$) than cognitive trust ($\gamma = .213, p < 0.05$). These findings suggest that cognition-based trust of federal employees is more actively managed by hierarchical and focused leadership behaviors, whereas affect-based trust is more influenced by a relational,

interpersonal, and distributed leadership in federal agencies. The overall results supported Hypotheses 3a and 3b.

We further tested Hypotheses 4a to 4d which predict the cross-level interaction effects between leadership and work motivation (i.e., the moderating effects of leadership in federal agencies), where the association between level-one motivation attributes and the trust variables depends on the effects of level-two leadership predictors. The results indicate that, first, the positive relationships between cognitive and affective trust and extrinsic motivation become more pronounced and significant when organizational leaders are showing effective vertical or shared leadership behaviors. This finding supports and extends previous research that has emphasized the crucial moderating roles of leadership for cultivating employees' interpersonal and institutional attitudes and behaviors in organizations (see e.g., Holtz & Harold, 2008; Reinke, 2003; Wright & Pandey, 2009). That is, whereas federal employees' extrinsic motivation in itself is not significantly associated with affective trust, there arises a significant and positive effect on the relationship between extrinsic motivation and organizational trust only when extrinsic motivation interacts with vertical or shared leadership together. The results are fairly consistent with the self-determination theory (SDT) prediction described earlier.

Second, while we have found that with high levels of effective shared leadership, the relationship between intrinsic motivation and affective trust is marginally significant, without any significant moderating interaction effect (although there might be marginal additive effects) of vertical leadership on the relationships between intrinsic motivation and organizational trust (see Table 3 and 4). The result suggests that intrinsic motivation already has "inherently autonomous" characteristics as SDT predicted and that intrinsic motivation is not easily moderated or internalized through interaction with other organizational characteristics (e.g.,

vertical or shared leadership traits). The overall results are in partial support of Hypotheses 4b, 4c, and 4d – with higher levels of effective vertical and shared leadership, the relationship between extrinsic motivation and organizational trust is significantly enhanced.

[Tables 3 and 4 about Here]

Discussion and Conclusion

The present study is motivated by four main goals: conceptualize and operationalize the dimensionality and the construct of organizational trust, i.e., cognitive and affective trust, identified in the key literature; using HLM, empirically test the relationship among individual-level (level-one) characteristics such as public HRM practices, employee work motivation, and organizational trust; investigate the effects of agency-level (level-two) vertical and shared leadership on organizational trust; assess leadership as a key moderator of the influence of work motivation on employee trust; and probe these relationships using a sample from U.S. federal agencies. This research demonstrates that some antecedent conditions such as elements of HRM systems and practices, motivational incentives, and organizational leadership are valuable managerial tools to nurture and enhance organizational trust within federal agencies. The overall findings of the analysis suggest that there are meaningful relationships among these organizational characteristics which should be addressed as significant findings of this study. The results we obtained lead to four main conclusions.

Conclusion 1: HRM Systems-Practices and Organizational Trust

We examined public HRM systems and practices as antecedent conditions for cognitive and affective trust. First, we found that there is a positive relationship between an indicator of equitable procedural justice practices and organizational trust. The finding supports the theory of

procedural justice which suggests that the employees' perceptions and judgments of workplace justice rules and their implementation would give a significant impact on other attitudes and behaviors of employees such as job satisfaction, job involvement, affective commitment, and interpersonal conflict (Lind & Tyler, 1988; Park & Rainey, 2007; Tyler & Balder, 2003; Rubin, 2009; Word & Park, 2009). In this regard, more research on the positive effects of organizational rules and procedures on organizational trust in government should be necessary.

Second, our findings show that unbiased performance appraisal systems and objective pay-for-performance systems are particularly important for the development of cognitive trust in the public sector. Financial incentives and evaluation plans are important motivational tools for public employees and the design of merit-pay systems and performance evaluation systems involves strategic choices for the organization in both structure and process. In a goal-setting-attainment process which is suggested by goal-setting theory (see Locke & Latham, 1990), for example, it is expected that providing objective and unbiased monetary incentive systems and performance appraisal systems, through organizational and task designs, will bring positive job attitudes in public organizations such as cognitive trust. Therefore, determining how to establish, implement, and administer these public HRM systems is critical to organizational trust. Future studies must extend the current work by examining the role of other types of management systems (as moderators or mediators) in shaping and managing cognitive and affective trust in public-sector organizations.

Conclusion 2: Work Motivation and Organizational Trust

The results of this study strongly support PSM and SDT research hypotheses confirming that two types of federal employees' motivational constructs responding to organizational incentives, intrinsic motivation and extrinsic motivation, are differently associated with job

attitudes such as affective and cognitive trust (Park & Rainey, 2008). Intrinsically motivated federal employees are more likely to have a high level of affective trust while extrinsically motivated employees are more prone to trust other organizational constituents based on cognition-rationality basis. The findings suggest that public agencies should keep devising, developing, and maintaining both types of motivational incentive systems in their organizations to bolster organizational trust. For future research, we need to explore 1) whether and how public employees' work motivation would be specifically segmented and clustered depending on the types of public agencies (e.g., based on Lowi's policy typology [1964]) and 2) whether and to what extent the relationship between work motivation and trust would vary across different referents of trust in public organizations, e.g., trust in immediate supervisors, managers, or trust in management systems and institutions.

Conclusion 3: Vertical-Shared Leadership and Organizational Trust

Recent organizational research has identified four main types of organizational leadership that can stem from vertical or shared leadership: *Directive, transactional, transformational, and empowering* (Pearce, 2004). The findings of this study confirmed that organizational leadership behavior is a critical intangible asset to public organizational members in increasing the level of trust. We found that the degree of vertical and shared leadership in federal agencies is positively related to organizational trust. As hypothesized in H3a and H3b, vertical leadership is more strongly associated with cognitive trust than affective trust whereas shared leadership is shown to be a more strongly positive predictor of affective trust than cognitive trust. Taken as a whole, these findings suggest that we need to address several research questions for future research, such as 1) how can we best develop vertical or shared leadership in the public sector? 2) how can public organization leaders identify a more appropriate model of leadership for developing

organizational trust? and 3) how can public organization leaders effectively utilize both vertical and shared leadership to leverage the employees' trust in public-sector organizations?

Conclusion 4: Vertical and Shared Leadership as Key Moderators

The results of the cross-level interaction effects between vertical and shared leadership and intrinsic and extrinsic motivation based on HLM analysis suggest that effective vertical and shared leadership in the public sector should be critical organizational ingredients to modify and then assimilate extrinsically-oriented work motivation into forms of intrinsic (or, at least forms of autonomous) or nonmonetary work preferences, which significantly increase the level of organizational trust of federal employees. For future research, there is a need to investigate the effects of other particular trust moderating attributes such as organizational communication or social networks on the relationship between leadership and trust.

Managerial Implications

The findings suggest that several managerial behaviors are likely to foster and bolster cognitive and affective trust in federal agencies. For example, federal agencies may develop and promote more effective organizational leadership skills to increase organizational trust by disseminating "best practices." Managers and supervisors in federal agencies may want to find some other factors that facilitate the development of leadership and work motivation. Mentoring and coaching, for example, might be a significant aid in the process. The relationships between trust and other organizational consequences, such as performance, job satisfaction, or turnover, should be explored in future research.

Attitudes and behaviors of trust might vary within federal organizations depending on structural and cultural relationships. The findings of this study also suggest that organizational

researchers should investigate federal agencies more carefully and systematically while we should also be involved with (agency- or organization-based) in-depth case studies (e.g., using the qualitative research method) by examining the organizational characteristics embedded in each federal agency (e.g., goals, missions, leadership, organizational culture and systems, and political orientation). In addition, from a comparative public management perspective, researchers need to develop and analyze the cognitive, affective, or sociological models of organizational trust in different cultural, economic, and political contexts at the local, state, and federal levels. Having an opportunity to observe commonalties and anomalies of specific organizational phenomena, researchers and readers may be able to expand on their knowledge and reference for the theory and practice of antecedents, interactions, and consequences in the field of public management and human resource management.

Appendix: Selected Representative Survey Items^a
(Merit Principle Survey 2005; BPTW 2005)
Construction of Indices

Level-1 (Individual Level) Controls: Demographic Characteristics

- a. Gender: Female: 2; Male: 1 (a dummy variable)
- b. Age: Respondent's Age
- c. Ethnicity (Racial identification): Minority: 1; Majority: 2 (a dummy variable)
- d. Educational Level: Respondent's highest level of formal education
- e. Salary
- f. Job Tenure: Years with Current Federal Agency (natural log)
- g. Supervisory Status (natural log)
- h. Union Membership (Dues): A Member of a Union?

Level-1 (Individual-Level) Predictors: Public HRM Practices and Systems

Procedural Justice Practices (seven items)
(Standardized Coefficient Alpha: .869)

In the past 2 years, to what extent do you believe you have been treated fairly regarding the following?

- a. Career advancement; b. Awards; c. Training; d. Performance appraisals; e. Job assignments; f. Discipline; g. Pay

Objective Performance Appraisal Systems (eight items)
(Standardized Coefficient Alpha: .896)

- a. In my work unit, performance ratings accurately reflect job performance
- b. I understand the basis for my most recent performance rating
- c. The standards used to appraise my performance are appropriate
- d. I participate in setting standards and goals used to evaluate my job performance
- e. I understand what I must do to receive a high performance rating
- f. I have sufficient opportunities (such as challenging assignments or projects) to earn a high performance rating
- h. I am satisfied with my organization's performance appraisal system
- i. Objective measures are used to evaluate my performance

Pay-for-Performance Systems (five items)
(Standardized Coefficient Alpha: .741)

- a. Recognition and rewards are based on performance in my work unit
- b. In my opinion, basing pay on performance motivate employees to work harder

- c. I understand how my pay relates to my job performance
- d. My organization takes steps to ensure that employees are appropriately paid and rewarded
- e. If I perform well, it is likely I will receive a cash award or pay increase

Training and Development Practices (six items)
(Standardized Coefficient Alpha: .812)

The level of agreement or disagreement with each of the following statements about developing and improving this skills or ability

- a. I would be overcoming a deficiency or closing a gap in my skill set
- b. I would be extending or fine-tuning my skills in an area of personal strength
- c. I would be acquiring a new skill I have not attempted to learn before
- d. I would be “trying again” to learn something I was not fully successful in learning in the past
- e. My agency should support this improvement by paying for training or education
- f. My agency should support this improvement through special assignments, mentoring, or other on-the-job experiences

Level-1 (Individual Level) Predictors: Work Motivation Attributes

Intrinsic Motivation (seven items)
(Standardized Coefficient Alpha: .783)

How important are each of the following in motivating you to do a good job?

- a. Recognition from my coworkers
- b. My duty as a public employee
- c. Desire to help my work unit meet its goals
- d. Personal pride or satisfaction in my work
- e. Non-cash recognition (e.g., letter of appreciation, plaque)
- f. Desire not to let my supervisor down
- g. Desire not to let my coworkers down

Extrinsic Motivation (five items)
(Standardized Coefficient Alpha: .798)

How important are each of the following in motivating you to do a good job?

- a. A cash award of \$100
- b. A cash award of \$1,000
- c. Desire for a good performance rating
- d. Increased chances for promotion
- e. A time off reward of 8 hours

Level-2 (Agency-Level) Controls

- a. Agency Types (Agency Dummy Variables)
- b. Agency Size
- c. Headquarters/Field

Level-2 (Agency-Level) Predictors: Leadership Factors Best Places to Work (2005) Scores

- a. Shared (Team) Leadership: Teamwork Management Scores
- b. Vertical Leadership I: Supervisory Leadership Scores
- c. Vertical Leadership II: Senior Leadership Scores

Outcome Variables: Cognitive and Affective Trust (A five-point Likert scale)

Cognition-based (Rational) Trust (nine items) (Standardized Coefficient Alpha: .815)

- a. I trust my supervisor to fairly assess my performance and contributions
- b. I trust my supervisor to support me in pay and award discussions with upper management
- c. I trust my supervisor to apply discipline fairly and only when justified
- d. I trust my supervisor to keep me informed
- e. I trust managers above my immediate supervisors to clearly communicate organizational performance expectations
- f. I trust managers above my immediate supervisors to fairly assess my performance and contributions
- g. I trust managers above my immediate supervisors to apply discipline fairly and only when justified
- h. I trust managers above my immediate supervisors to keep the organization informed
- i. I trust third party investigative or adjudicatory agencies (such as the OSC, EEOC, FLRA, MSPB) to respond appropriately to complaints

Affect-based (Relational) Trust (eight items) (Standardized Coefficient Alpha: .803)

- a. I trust my supervisor to listen fairly to my concerns
- b. I trust managers above my immediate supervisors to listen fairly to my concerns
- c. I trust my supervisor to clearly communicate conduct expectations
- d. I trust my supervisor to act with integrity
- e. I trust managers above my immediate supervisors to act with integrity
- f. I trust my supervisor to refrain from favoritism
- g. I trust managers above my immediate supervisors to refrain from favoritism
- h. I am comfortable discussing workplace conflicts with my supervisor

^a A complete listing of items in the indices is available from the authors.

Trust in the Public Sectors

Figure 1: Cognitive and Affective Trust Dimensions

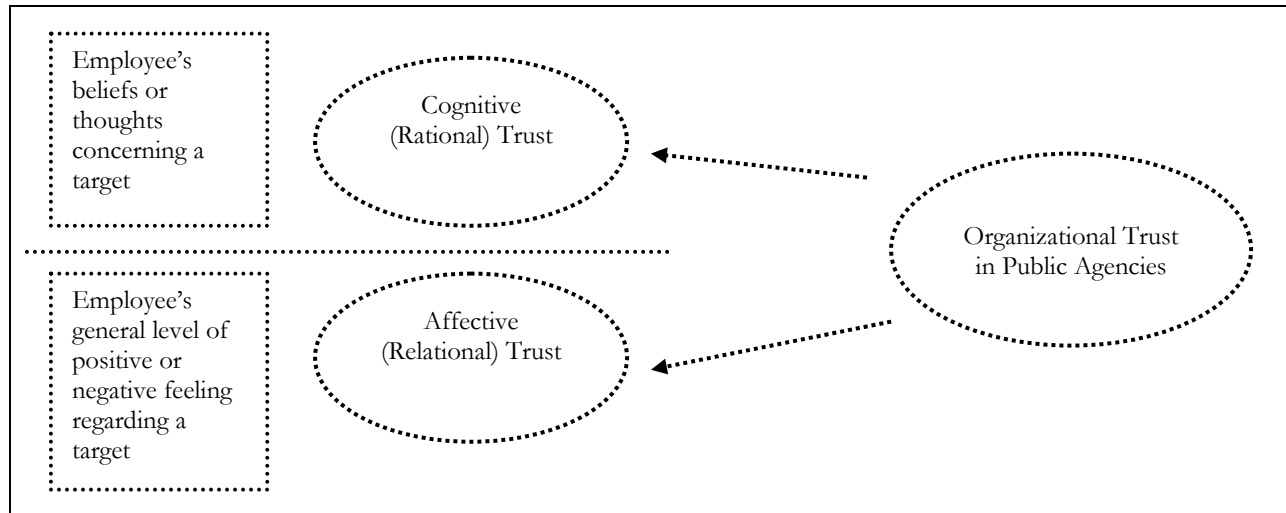
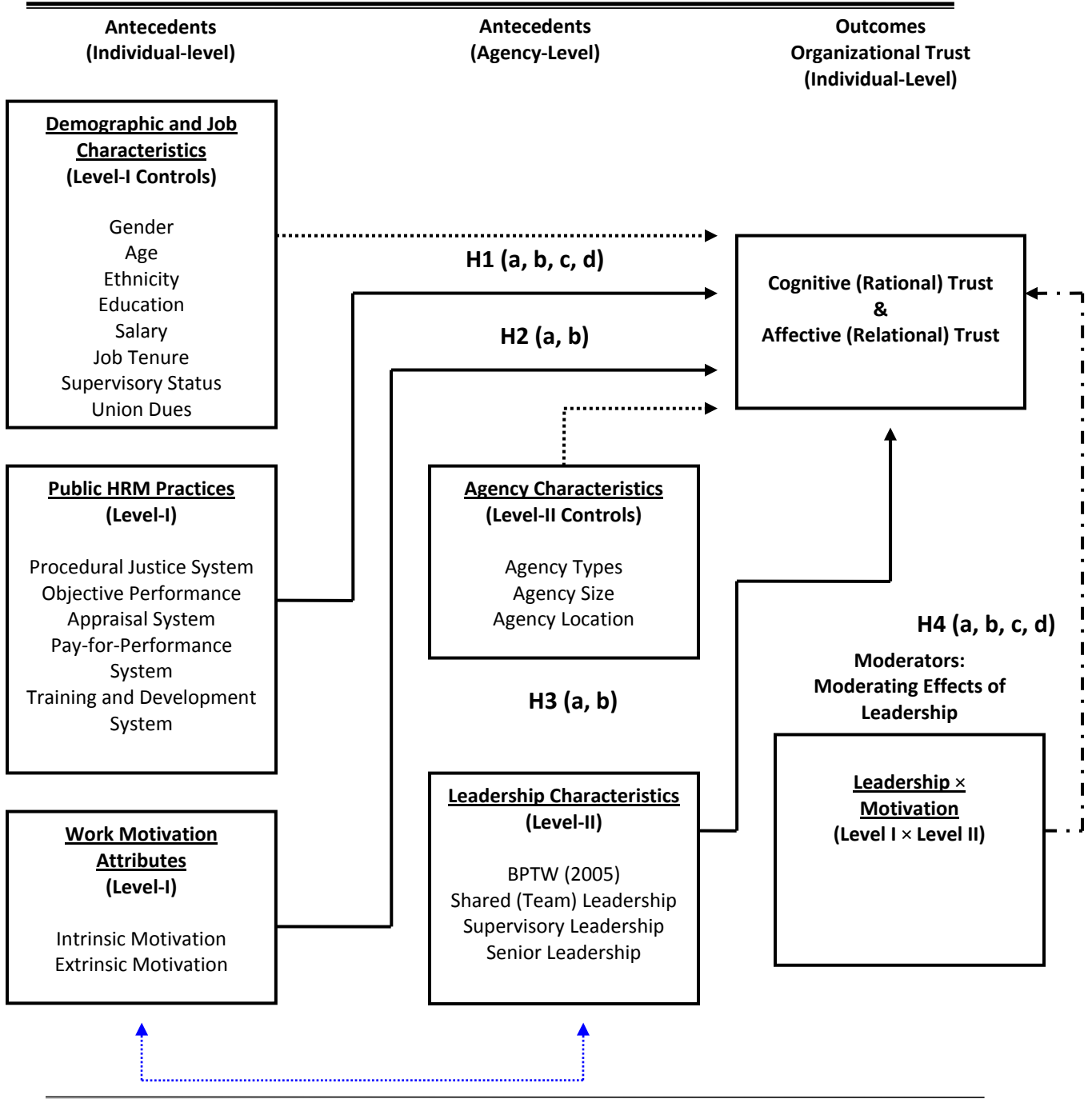


Table 1: The Configuration of Organizational Leadership, Motivation, and Trust

		Cognitive Trust	Affective Trust
Shared (Team) Leadership	Intrinsic Motivation	Interpersonal-Internal-Rational Trust Impact: Low-Moderate	Interpersonal- Internal-Relational Trust Impact: Moderate-High
	Extrinsic Motivation	Interpersonal-External-Rational Trust Impact: Moderate	Interpersonal-External-Relational Trust Impact: Moderate
Vertical Leadership (Supervisor-Level)	Intrinsic Motivation	Managerial-Internal-Rational Trust Impact: Moderate	Managerial-Internal-Relational Trust Impact: Moderate
	Extrinsic Motivation	Managerial-External-Rational Trust Impact: Moderate-High	Managerial-External-Relational Trust Impact: Low-Moderate
Vertical Leadership (Senior Level)	Intrinsic Motivation	Institutional-Internal-Rational Trust Impact: Moderate	Institutional-Internal-Relational Trust Impact: Moderate
	Extrinsic Motivation	Institutional-External-Rational Trust Impact: Moderate-High	Institutional-External-Relational Trust Impact: Low-Moderate

Figure 2: A Conceptual Model for the Antecedents-Trust Model



- - - - : denotes interaction effects
 _____: denotes direct effects
: denotes control effects
: denotes nested hierarchical organizational structures

Table 3: Hierarchical Linear Model (HLM): Cognitive (Rational) Trust ^a

Cognitive (Rational) Trust Model	1. An Employee-level Model: One-way ANCOVA Model	2. An Agency-level Model: Intercepts and Slopes-as-Outcomes Model
Reliability Intercept (β_0)	.387	.236
Fixed Effects		
Intercept (γ_{00})	2.87**	2.33**
Level-1 Slope (Individual) Model		
Demographic and Job Characteristics		
Gender (γ_{10})	.005 (.044)	
Age (γ_{20})	.102 (1.448)	
Ethnicity (γ_{30})	.011 (.279)	
Educational Level (γ_{40})	.001 (.172)	
Salary (γ_{50})	.048 (1.347)	
Job Tenure (γ_{60})	.172** (2.288)	
Supervisory Status (γ_{70})	.163** (2.636)	
Union Dues (γ_{80})	.023 (1.552)	
Work Environment Characteristics: Public HRM Practices & Systems		
Procedural Justice Practices (PJP) (γ_{11})	.383** (3.189)	
Performance Appraisal Systems (PAS) (γ_{12})	.291** (2.941)	
Pay-for-Performance Systems (PPS) (γ_{13})	.243** (2.112)	
Training and Development Practices (TDP) (γ_{14})	.132 (1.342)	
Work Motivation Attributes		
Intrinsic Motivation (IM) (γ_{90})	.191** (2.841)	
Extrinsic Motivation (EM) (γ_{91})	.218** (3.124)	
Level-2 Intercept (Organizational) Model		
Agency Controls		
Agency Types (Agency Dummy Variables) (γ_{01})		.012 (.024)
Agency Size (γ_{02})		.003 (.065)
Agency Location (Headquarter/Field) (γ_{03})		.108 (.121)
Leadership Characteristics		
Vertical Leadership: Senior Leadership (γ_{04})		.415** (3.232)
Vertical Leadership: Supervisory Leadership (γ_{05})		.265** (2.416)
Shared Leadership: Teamwork Management (γ_{06})		.213** (2.187)

The Interaction (Level 1 × Level 2) Model: Leadership × Motivation		
Senior Leadership × IM (γ_{92})		.003 (.142)
Senior Leadership × EM (γ_{93})		.134 (1.227)
Supervisory Leadership × IM (γ_{94})		-.012 (-.307)
Supervisory Leadership × EM (γ_{95})		.188* (2.012)
Shared Leadership × IM (γ_{96})		.110 (1.132)
Shared Leadership × EM (γ_{97})		.192** (2.533)
Random Effects		
Level-1 effect (τ_{ij}) variance	.093	.088
Level-2 effects (μ_{0j}) variance	.007**	.003**
Inter-class correlation (ICC)		
Conditional ICC	28.4%	25.4%
Proportion of the variance in τ_{ij} explained by the model (%)	37.43%	43.58%
Proportion of the variance in μ_{0j} explained by the model (%)	25%	33.3%
Deviance		
Number of parameters	304.44	214.98
	2	2

^a 1) Individual-level N= 22,731 federal employees; 2) Organizational level N= 46 federal agencies

•Critical values are 1.96 for $P < .05$ and 1.65 for $P < .10$ (t-statistics are in parentheses).

** $P < .05$: significant at 0.05-level

* $P < .10$: significant at .10-level

Table 4: Hierarchical Linear Model (HLM): Affective (Relational) Trust ^a

Affective (Relational) Trust Model	1. An Employee-level Model: One-way ANCOVA Model	2. An Agency-level Model: Intercepts and Slopes-as-Outcomes Model
Reliability Intercept (β_0)	.384	.331
Fixed Effects		
Intercept (γ_{00})	3.14**	1.33
Level-1 Slope (Individual) Model		
Demographic and Job Characteristics		
Gender (γ_{10})	.034 (.944)	
Age (γ_{20})	.182* (1.987)	
Ethnicity (γ_{30})	.001 (.091)	
Educational Level (γ_{40})	.001 (.062)	
Salary (γ_{50})	.008 (.9812)	
Job Tenure (γ_{60})	.157* (1.998)	
Supervisory Status (γ_{70})	.113 (1.636)	
Union Dues (γ_{80})	.123 (1.652)	
Work Environment Characteristics: Public HRM Practices & Systems		
Procedural Justice Practices (PJP) (γ_{11})	.451** (3.897)	
Performance Appraisal Systems (PAS) (γ_{12})	.131 (1.676)	
Pay-for-Performance Systems (PPS) (γ_{13})	.112 (1.435)	
Training and Development Practices (TDP) (γ_{14})	.198* (2.121)	
Work Motivation Attributes		
Intrinsic Motivation (IM) (γ_{90})	.432** (3.777)	
Extrinsic Motivation (EM) (γ_{91})	.133** (2.133)	
Level-2 Intercept (Organizational) Model		
Agency Controls		
Agency Types (Agency Dummy Variables) (γ_{01})		.001 (.012)
Agency Size (γ_{02})		.005 (.044)
Agency Location (Headquarter/Field) (γ_{03})		.101 (.021)
Leadership Characteristics		
Vertical Leadership: Senior Leadership (γ_{04})		.312** (2.972)
Vertical Leadership: Supervisory Leadership (γ_{05})		.198 (1.816)
Shared Leadership: Teamwork Management (γ_{06})		.541** (3.658)

The Interaction (Level 1 × Level 2) Model: Leadership × Motivation		
Senior Leadership × IM (γ_{92})		-0.001 (.122)
Senior Leadership × EM (γ_{93})		.102 (.927)
Supervisory Leadership × IM (γ_{94})		.053 (.878)
Supervisory Leadership × EM (γ_{95})		.201** (2.444)
Shared Leadership × IM (γ_{96})		.171* (1.901)
Shared Leadership × EM (γ_{97})		.292** (3.173)
Random Effects		
Level-1 effect (τ_{ij}) variance	.356	.298
Level-2 effects (μ_{0j}) variance	.05**	.038**
Inter-class correlation (ICC)		
Conditional ICC	27.2%	27.8%
Proportion of the variance in τ_{ij} explained by the model (%)	39.33%	47.23%
Proportion of the variance in μ_{0j} explained by the model (%)	33.3%	100%
Deviance		
	404.11	232.48
Number of parameters	2	2

^a 1) Individual-level N= 22,731 federal employees; 2) Organizational level N= 46 federal agencies

•Critical values are 1.96 for $P < .05$ and 1.65 for $P < .10$ (t-statistics are in parentheses).

** $P < .05$: significant at 0.05-level

* $P < .10$: significant at .10-level

References

- Albrecht, S. L. (2002). Perceptions of integrity, competence, and trust in senior management as determinants of cynicism toward change. *Public Administration & Management: An Interactive Journal*, 7(4), 320-343.
- Albrecht, S. L. & Travaglione, A. (2003). Trust in public-sector senior management. *International Journal of Human Resource Management*, 14(1), 76-92.
- Atkinson, S. & Butcher, D. (2003). Trust in managerial relationships. *Journal of Managerial Psychology*, 18(4), 282-304.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Upper Saddle River, NJ: Prentice Hall.
- Bass, B. M. (1996). *A new paradigm of leadership: An inquiry into transformational leadership*. Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership*. (2nd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.
- Burns, J. M. (1978). *Leadership*. New York: Harper & Row.
- Blau, P. M. (1964). *Exchange and Power in Social Life*. New York: Wiley.
- Cameron, J., & Pierce, W. D. (2002). *Rewards and intrinsic motivation: Resolving the controversy*. Bergin & Garvey: Westport, CT.
- Carnevale, D. G., & Wechsler, B. (1992). Trust in the public sector. *Administration & Society*, 23, 471-494.
- Choudhury, E. (2008). Trust in administration: An integrative approach to optimal trust. *Administration & Society*, 40(6), 586-620.
- Chua, R. Y. J., Ingram, P., & Morris, M. W. (2008). From the head and the heart: Locating cognition- and affect-based trust in managers' professional networks. *Academy of Management Journal*, 51(3), 436-452.
- Cook, J. and Wall, T. (1980). New work attitudes measures of trust, organizational commitment, and personal need non-fulfillment. *Journal of Occupational Psychology*, 75, 39-52.
- Costa, A. C. (2000). A matter of trust: Effects on the performance and effectiveness of teams in organizations. *Dissertation*, Tilburg, Ridderkerk.
- Costa, A. C. (2003). Understanding the nature and the antecedents of trust within work teams. In Bart Nooteboom and Frédérique Six (Ed.), *The trust process in organizations: Empirical*

- studies of the determinants and the process of trust development* (pp. 105- 124). Northampton, MA: Edward Elgar Publishing.
- Costa, A. C., Roe, R. A., & Taillieu, T. (2001). Trust within teams: the relation with performance effectiveness. *European Journal of Work and Organizational Psychology*, 10(3), 225-244.
- Coyle-Shapiro, A-M. J. (2002). A psychological contract perspective on organizational citizenship behavior. *Journal of Organizational Behavior*, 23, 927-946.
- Creed, W. E., & Miles, R. E. (1996). Trust in organizations: A conceptual framework linking organizational forms, managerial philosophies, and opportunity costs of control. In R. M. Kramer & T. R. Tyler (Eds.), *Trust in organizations: Frontiers of theory and research* (pp. 16-38). Thousand Oaks, CA: Sage.
- Crewson, P. E. (1997). Public service motivation: Building empirical evidence of incidence and effect. *Journal of Public Administration Research and Theory*, 4, 499-518.
- Culbert, S. A. & McDonough, J. J. (1986). The politics of trust and organizational empowerment. *Public Administration Quarterly*, 10, 171-188.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.
- Deci, E. L., & Ryan, R. M. (2004). *Handbook of self-determination research*. Rochester, NY: University of Rochester Press.
- Ensley, M. D., Hmieleski, K. M., & Pearce, C. L. (2006). The importance of vertical and shared leadership within new venture top management teams: Implications for the performance of startups. *Leadership Quarterly*, 17, 217-231.
- Ferres, N., Connell, J., & Travaglione, A. (2003). Coworker trust: A social lubricant for positive workplace attitudes and perceptions of support. Retrieved January, 6, 2004, from site: <http://www.wiwiss.fu-berlin.de/w3/w3SYD0W/EURAM/pdf-2003/FerresConnellTravagoline-EURAM03>.
- Golembiewski, R. T. & McConkie, M. I. (1975). The centrality of interpersonal trust in group processes. In C. L. Cooper (Ed.), *Theories of group processes* (pp. 131-185). New York: John Wiley.
- Greenleaf, R. K. (1977). *Servant leadership: A journey into the nature of legitimate power and greatness*. New York: Paulist Press.
- Griffin, K. (1967). The contribution of studies of source credibility to a theory of interpersonal trust in the communication process. *Psychological Bulletin*, 68, 104-120.
- Hackman, J. R., & Oldham, G. R. (1975). Development of the job diagnostic survey. *Journal of*

- Applied Psychology*, 60, 159-170.
- Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance*, 16, 250-279.
- Hansen, M. H., Morrow, J. L., & Batista, J. C. (2002). The impact of trust on cooperative membership retention, performance, and satisfaction: An exploratory study. *International Food and Agribusiness Management Review*, April, 379-403.
- Hansen, M. H., Morrow, J. L. (2003). Trust and the decision to outsource: Affective responses and cognitive processes. *International Food and Agribusiness Review*, 6(3), 1-30.
- Herzberg, F., Mausner, B., & Snyderman, B. (1959). *The motivation to work*. New York: John Wiley and Sons.
- Holtz, B. C., & Harold, C. M. (2008). When your boss says no! The effects of leadership style and trust on employee reactions to managerial explanations. *Journal of Occupational and Organizational Psychology*, 81, 777-802.
- Hosmer, L. R. T. (1995). Trust: The connecting between organizational theory and philosophical ethics. *Academy of Management Review*, April, 379-403.
- Houston, D. J. (2000). Public-service motivation: a multivariate test. *Journal of Public Administration Research and Theory*, 10, 713-727.
- Houston, D. J. (2005). "Walking the walk" of public service motivation: Public employees and charitable gifts of time, blood, and money. *Journal of Public Administration Research and Theory*, 16, 67-86.
- Houston, D. J. (2008). Behavior in the public square. In J. L. Perry & A. Hondeghem (Eds.) *Motivation in Public Management: The Call of Public Service*, pp. 177-199. Oxford University Press.
- Johnson, D., & Grayson, K. (2005). Cognitive and affective trust in service delivery. *Journal of Business Research*, 58, 500-507.
- Konovsky, M. A. & Cropanzano, R. (1991). Perceived fairness of employee drug testing as a predictor of employee attitudes and job performance. *Journal of Applied Psychology*, 76, 698-707.
- Konovsky, M. A. & Pugh, S. (1994). Citizenship behavior and social exchange. *Academy of Management Journal*, 37, 656-669.
- Kramer, R. (1996). Divergent realities and convergent disappointments in the hierarchic relation: Trust and the intuitive auditor at work. In R. M. Kramer & T. R. Tyler. (Eds.), *Trust in organizations: Frontiers of theory and research* (pp. 216-245). Thousand Oaks,

CA: Sage.

- Ladebo, O. J. (2005). Perceptions of trust and employees' attitudes: A look at Nigeria's extension workers. *Journal of Business and Psychology* (forthcoming).
- Lewicki, R. J., & Bunker, B. B. (1996). Developing and maintaining trust in work relationships. In R. M. Kramer & T. R. Tyler. (Eds.), *Trust in organizations: Frontiers of theory and research* (pp. 114-139). Thousand Oaks, CA: Sage.
- Lind, E. A., & Tyler, T. R. (1988). *The Social Psychology of Procedural Justice*. New York: Plenum Press.
- Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.
- Lowi, T. (1964). American business, public policy, case-studies, and political theory. *World Politics* 16 (4), 677-715.
- Luhmann, N. (1979). *Trust and power*. New York: John Wiley.
- Mayer, R. C. & Davis, J. H. (1999). The effect of the performance appraisal system on trust for management: A field quasi-experiment. *Journal of Applied Psychology*, 84, 123-136.
- McAllister, D. J. (1995). Affect- and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of Management Journal*, 38, 24-59.
- Moynihan, D. P. (2008). The normative model in decline? Public service motivation in the age of governance. In J. L. Perry & A. Hondeghem (Eds.) *Motivation in Public Management: The Call of Public Service*, pp. 247-267. Oxford University Press.
- Morris, L. (1995). *Creating and maintaining trust*. *Training & Development*, 49, 52-53.
- Mishra, A. (1996). Organizational responses to crisis: The centrality of trust. In R. M. Kramer & T. R. Tyler. (Eds.), *Trust in organizations* (pp. 261-287). Thousand Oaks, CA: Sage.
- Nachmias, D. (1985). Determinants of trust within the federal bureaucracy. In Rosenbloom, D. H. (ed.), *Public personnel policy: The politics of civil service*. Port Washington, NY: Associated Faculty Press.
- Newell, T., Reeher, G., & Ronayne, P. (2008). *The trusted leader: Building the relationships that make government work*. Washington, DC: CQ Press.
- Nyhan, R. C. (1999). Increasing affective organizational commitment in public organizations: The key role of interpersonal trust. *Review of Public Personnel Administration*, 19(3), 58-70.

- Nyhan, R. C. (2000). Changing the paradigm: Trust and its role in public sector organizations. *The American Review of Public Administration*, 30, 87-109.
- Oldham, G. R., & Cummings, A. (1996). Employee creativity: Personal and contextual factors at work. *Academy of Management Journal*, 39, 607-634.
- Paarlberg, L. E., Perry, J. L., & Hondeghem, A. (2008). From theory to practice: Strategies for applying public service motivation. In J. L. Perry & A. Hondeghem (Eds.) *Motivation in Public Management: The Call of Public Service*, pp. 268-293. Oxford University Press.
- Park, S. M. (2010). The effects of personnel reform systems on Georgia State employees' attitudes: An empirical analysis from a principal-agent theoretical perspective. *Public Management Review* (forthcoming).
- Park, S. M. & Rainey, H. G. (2008). Leadership and public service motivation in U.S. federal agencies. *International Public Management Journal*, 11(1), 109-142.
- Park, S. M., & Rainey, H. G. (2007). Antecedents, mediators, and consequences of affective, normative, and continuance commitment: Empirical tests of commitment effects in federal agencies. *Review of Public Personnel Administration*, 27(3), 197-226.
- Pearce, C. L. (2004). The future of leadership: Combining vertical and shared leadership to transform knowledge work. *Academy of Management Executive*, 18(1), 47-57.
- Pearce, C. L., & Conger, J. A. (2003). All those years ago: The historical underpinnings of shared leadership. In C. L. Pearce, & J. A. Conger (Eds.). *Shared leadership: Reframing the hows and whys of leadership* (pp. 1-18). Thousand Oaks, CA: Sage.
- Pearce, C. L., Manz, C. C., & Sims, H. P. (2008). The roles of vertical and shared leadership in the enactment of executive corruption: Implications for research and practice. *The Leadership Quarterly*, 19, 353-359.
- Perry, J. L., & Porter, L. W. (1982). Factors affecting the context for motivation in public organizations. *Academy of Management Review*, 7, 89-98.
- Perry, R. W., & Mankin, L. M. (2004). Understanding employee trust in management. *Public Personnel Management*, 33, 277-290.
- Perry, J. L., & Wise, L. R. (1990). The motivational bases of public service. *Public Administration Review*, 50(3), 367-373.
- Rainey, H.G. (2003). *Understanding & managing public organizations*, 3rd edition. San Francisco, California: Jossey-Bass.
- Raudenbush, S. W., Bryk, A. S., Cheong, Y., & Congdon, R. T. (2000). *HLM 5: Hierarchical linear and non-linear modeling*. Chicago: Scientific Software International.

- Reece, B. & Brandt, R. (1999). *Effective human relations in organizations* (7th Ed.). New York: Houghton Mifflin Co.
- Reinke, S. J. (2003). Does the form really matter? Leadership, trust, and acceptance of the performance appraisal process. *Review of Public Personnel Administration*, 23(1), 23-37.
- Robinson, S. L. (1996). Trust and breach of the psychological contract. *Administrative Science Quarterly*, 41(4), 574-99.
- Rotter, J. B. (1967). A new scale for the measurement of interpersonal trust. *Journal of Personality*, 35, 651-655.
- Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1998). Not so different after all: A cross-discipline view of trust. *Academy of Management Review*, 23(3), 393-404.
- Rubin, E. (2009). The role of procedural justice in public personnel management: Empirical results from the Department of Defense. *Journal of Public Administration Research and Theory*, 19, 125-143.
- Ryan, R. M., & Deci, E. L. (2000a). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25, 54-67.
- Ryan, R. M., & Deci, E. L. (2000b). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68-78.
- Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of Management Journal*, 37, 580-607.
- Shaw, R. B. (1997). *Trust in the balance: Building successful organizations on results, integrity and concern*. San Francisco: Jossey-Bass.
- Spreitzer, G. M., & Mishra, A. K. (1999). Giving up control without losing control. *Group and Organization Management*, 24, 155-187.
- Thompson, R. C., Joseph, K. M., Bailey, L. L., Worley, J. A., & Williams, C. A. (2000). Organizational change: An assessment of trust and cynicism. Retrieved January 6, 2004, from DOT/FAA/AM-00/14 site: <http://www.Amelia.db.erau.edu/reports/faa/am/AM00-14.pdf>.
- Tietjen, M. A., & Myers, R. M. (1998). Motivation and Job Satisfaction. *Management Decision*, 36(4), 226-231.
- Tyler, T. R., & Blader, S. L. (2003). The group engagement model: Procedural justice, social identity, and cooperative behavior. *Personality and Social Psychology Review*, 7(4), 349-361.

- Tyler, T. R., & Kramer, R. M. (1996). Whither trust? In R. M. Kramer & T. R. Tyler. (Eds.). *Trust in organizations: Frontiers of theory and research*. Thousand Oaks, CA: Sage.
- Webber, S. S., & Klimoski, R. J. (2004). Client-project manager engagements, trust, and loyalty. *Journal of Organizational Behavior*, 25, 997-1013.
- Weiss, H. M. (2002). Deconstructing job satisfaction: Separating evaluations, beliefs, and affective experiences. *Human Resource Management Review*, 12, 173-194.
- Whitener, E. M. Brodt, S. E., Korsgaard, M. A., & Werner, J. M. (1998). Managers as initiators of trust: An exchange relationship framework for understanding managerial trustworthy behavior. *Academy of Management Review*, 23, 513-530.
- Word, J., & Park, S. M. (2009). Working across the divide: Job involvement in the public and nonprofit sectors. *Review of Public Personnel Administration*, 29(2), 103-133.
- Wright, B. E., & Pandey, S. K. (2009). Transformational leadership in the public sector: Does structure matter? *Journal of Public Administration Research and Theory*. Advance Access Published (April 30, 2009).
- Yukl, G. A. (1989). *Leadership in organizations* (2nd ed.). Englewood Cliffs, NJ: Prentice Hall.

Notes

¹ Although listwise deletion (by which cases with a missing score on any variable are excluded from all analyses and the effective sample size includes only cases with complete records) is the most common method for handling missing data, this approach sacrifices a large amount of data by eliminating all cases with any missing data (Kline, 2005; Roth, 1994). The EM algorithm 1) replaces missing values with estimated values, 2) estimates parameters, 3) re-estimates the missing values assuming the new parameter estimates are correct, and 4) re-estimates parameters, and so forth, iterating until convergence. The EM method allows us to obtain an effective sample size and to minimize possible bias in parameter estimates in an HLM analysis. This approach also fully captures the asymptotic properties of the underlying population.

² One of the major differences between exploratory and confirmatory factor analysis is that, in CFA more aspects of the model can be specified a priori. For example, in CFA, we can specify 1) which variables load on which factors, 2) which (if any) factors are correlated, 3) which (if any) measurement errors (uniqueesses) are correlated, and 4) how many factors there are. Two first-order factors (each subdimension of the second-order factors) and one second-order factor were analyzed – examining the factor loadings, the measurement error variances, the factor variances, the factor correlations or covariances, and the measurement error correlations (and covariances).

³ Since EFA is an atheoretical method that might sometimes result in poor indexing, we employed the CFA method, which is based on self-determination theory (SDT), to develop more theory-oriented intrinsic and extrinsic motivation scales in this study. The table with factor loadings of EFA and CFA models is available from the authors.

⁴ In this ANCOVA model, each slope of the covariate is assumed to have the same effect on each level of the factor (i.e., homogeneity of regression). Each predictor (covariate) was sequentially added and only one variable was retained when it shows that it has reliability greater than .05 and has a statistically significant random effect. Based on the results, fourteen predictors were retained at the employee-level.

⁵ In this model, both of the *un-centering* (for dummy variables) and *grand-mean centering* methods were used because there is no random effect in the slope (that is, β_{1j} is fixed across agencies). In other words, the level-one covariates (X variables) were included to control for their effects on the outcomes, rather than to model between group variance on the slope of these variables. The intercept here is interpreted as the expected value of two outcome variables for each employee with an average score on each of the level-1 predictors. In this regard, grand-mean centering adjusts the variation in the intercept between agencies to control for differences in the level-one predictors across agencies.

⁶ By comparing the variance estimates from the unconditional model with the variance estimates from the conditional model, we can determine the proportion of the variance explained by the set of covariates and determine the proportion by which the unconditional variance has been reduced.

⁷ In the intercepts and slopes-as-outcomes model, we can include level-two predictors. After we have established that significant variation existed between group intercepts and slopes, we then use those parameter estimates as level-two outcomes. The level-two models are used for the purpose of modeling the associations between level-two predictors and the outcomes, and to track the degree to which those predictors explain variance in the level-two outcomes. In this model, a grand-mean centering option was used and variables were added one at a time for model building while examining their coefficient for significance (of random effect) and reliability.

⁸ In the cross-level interaction model, an interaction (moderating effects) is when the association between level-one predictors (i.e., employees' work motivation) and the outcome variables depend on the level of level-two predictors (i.e., organizational leadership). The cross-level interaction will be between the level-one random effect and the level-two predictors in the slopes-as-outcomes model.